

**EDUCATING FOR HIV PREVENTION
IN PAPUA AND WEST PAPUA PROVINCES, INDONESIA:
AN EXPERIMENTAL APPROACH**

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Declaration

Except where indicated, this thesis is based on original research conducted by the author as a research scholar at the Australian Demographic and Social Research Institute, the Australian National University, from 2008 to 2012. This thesis contains no material that has been accepted for the award of any other degree or diploma in any university.



Wienta Diarsvitri

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For my parents, Nugroho and Aisha

The first thing I want to say is thank you to my parents, Nugroho and Aisha, for their unconditional love and support. They have been my pillars of strength and my greatest source of inspiration. Without their love and encouragement, I would not have been able to pursue my dreams and reach this far. I am forever grateful to them for their sacrifices and their unwavering belief in me. Their love has been my guiding light, and their support has been my anchor. I hope to bring them pride and joy in my life, and I will always strive to be the person they would be proud of. Thank you, Mom and Dad, for everything. I love you both so much.

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The Most Gracious, the Most Merciful

The Only Owner (and the Only Ruling Judge) of the Day of Recompense.

You (Alone) we worship, and You (Alone) we ask for help (for each and everything).

Guide us to the Straight Way

The Way of those on whom You have bestowed Your Grace, not (the way) of those who earned Your Anger, nor of those who went astray.

(Qur'an Surah Al Fatihah (the Opening chapter), verses 1-7).

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Abstract

The acquired immunodeficiency syndrome (AIDS) case rate is increasing in Indonesia, especially in Papua and West Papua Provinces. As of September 2011, Papua's AIDS case rate was the highest among all 33 provinces in Indonesia, at 180.7/100,000 population, which was 16.3 times higher than the national rate of 11.1/100,000 population. The second highest rate was in West Papua at 51.5/100,000 population. Even more alarming is the fact that young Papuans aged 15-29 years of age comprised 55 percent of cumulative AIDS cases up to March 2011.

Studies have shown that sexual permissiveness is becoming more common among young people in Indonesia and in both provinces. However, young Papuans still have a low level of comprehensive knowledge on Human Immunodeficiency Virus (HIV) and AIDS, do not perceive themselves at risk of HIV infection, and rely mostly on the media as the main source of information on HIV and AIDS. Therefore, education of young Papuans for HIV prevention is important in reducing new HIV infection.

This thesis is based on the '2009 *Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' program that I developed. This research is the first cluster-randomized trial on senior high school students carried out in Indonesia, and the first study to evaluate the efficacy of a comprehensive reproductive health education module on senior high school students in Indonesia.

This research explores perspectives related to the social norms of sexuality and reproductive health education; evaluates the effectiveness of the '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' program in changing young people's knowledge, attitudes, behavior intentions and sexual practices based on the results of pre-tests and post-tests and self-reported sexual practices among senior high school students in different intervention groups; and analyzes determinants of students' sexual practices. The study uses a combination of quantitative and qualitative methods.

The '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' module consists of a handbook and a PowerPoint presentation that has several advantages. It is delivered through interesting methods that enable active participation of the students. It helps students develop positive feelings about their changes during puberty and how to deal with the changes. It provides unbiased information about HIV and AIDS and other sexually transmitted infections (STIs), risk involved in unprotected sexual intercourse, revealing the truth about sexual myths related to Papuan cultures, teenage pregnancy, unsafe abortion, sexual and reproductive rights, how to use condoms and lubricants, available health services, and motivation to achieve a better future. It provides a framework for decision-making and communication about safer sexual practices. Therefore, the program helps students perceive whether they might be at risk for HIV, increases the motivation and intentions to reduce risk, and builds the skills required to protect themselves from acquiring HIV infection or other STIs, as well as unintended pregnancies in the real world.

'*Reducing the Risk of HIV Infection Logic Model*' is created and used by the author to show clearly and concisely the causal mechanisms through which specific interventions (*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' program) can affect certain determinants (students' risks and protective factors) that affect behaviors, which in turn (through maintenance) will achieve a health goal (reduction of new HIV infection).

The results of in-depth interviews of educators and policy makers confirm the need for a comprehensive reproductive health education module in the school curriculum, the need to raise quality of teachers, and to achieve openness between parents and children. Health professionals suggest young Papuans are reluctant to visit Voluntary Counseling and Testing (VCT) clinics, health centers and private doctors to discuss STIs, due to ignorance, stigma and availability over-the-counter medicine. Further, many young patients come to hospital with late stage of AIDS.

A stratified cluster randomized trial is used to assess the efficacy of my intervention strategy. A total of 16 senior high schools (1,082 Year 11 students) was selected out of 89 senior high schools in Jayapura city and Jayapura district of Papua Province, and Manokwari district and Sorong city of West Papua Province. These schools were randomly assigned to either receive the reproductive health education program after pre-test (being in the intervention group) or acted as a control group that received the program two months later, after the post-test.

The questionnaire consisted of 128 questions: 25 true or false questions in the knowledge test; 30 questions in the attitude test; 18 questions in the behavior intention test; and 55 questions covering demographic characteristics, previous sexual experience, contraception, pregnancy, unsafe abortion, STI symptoms, treatment-seeking behavior, interest in reproductive health matters, alcohol and drug use.

Total loss to follow-up on individual level was 8.7 percent (94 students), corresponded to 988 students in the analysis. Changes in knowledge, attitudes, behavior intentions and sexual practices between the two groups were compared using linear mixed models and generalized linear mixed models to account for the cluster randomized design.

Of the 988 students in the analysis, 48.8 percent were in the control groups, and 51.2 percent were in the intervention group. The mean age of respondents was 18.9 years. The characteristics of intervention and control groups were similar with respect to sex, school type, ethnicity, sexual orientation, previous sexual experience, alcohol and drug use, source of HIV and sexuality information and enthusiasm to know about reproductive health education. However, the two groups were dissimilar with respect to religion; which was likely to be due to the clustered nature of the data.

Results of linear mixed model indicated that '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' module achieved an efficacy with almost three more correct answers (difference score was 2.6 points, 95% CI 2.1, 3.1) for the overall knowledge test, 2.5 points (95% CI 0.3, 4.8) better mean score for the overall attitude test, and 2.4 points (95% CI 0.5, 4.2) better mean score for the overall behavior intention test different from pre-test to post-test between intervention and control group. *Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans* module showed an efficacy of 0.4 times (95% CI 0.3, 0.7) in reducing the risk of having sexual intercourse and five times (95% CI 1.5, 14.9) in increasing condom use in the last sexual intercourse.

The study supports the hypothesis that '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' module has been effective in changing young people's knowledge, attitude, behavior intention and sexual practices related to HIV and sexuality towards more positive results.

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List of Acronyms and Abbreviations

ACASI	: Audio Computer-Assisted Self-Interview
AIDS	: Acquired Immune-Deficiency Syndrome
ARH	: Adolescent Reproductive Health
ART	: Anti Retroviral Therapy
BAPPENAS	: <i>Badan Perencanaan Pembangunan Nasional</i> (National Development Planning Agency of the Republic of Indonesia)
CDC	: United States Centers for Disease Control and Prevention
CNS	: Central Nervous System
CONSORT	: Consolidated Standards of Reporting Trials
CST	: Care, Support and Treatment
DHS	: Demographic Health Survey
ELISA	: Enzyme Linked Immuno Sorbent Assay
FHI	: Family Health International
FSW	: Female Sex Worker
GFATM	: The Global Fund to fight AIDS, TB and Malaria
HIV	: Human Immunodeficiency Virus
IBBS	: Integrated Bio-Behavioral Surveillance
ICPD	: International Conference on Population and Development
ILO	: International Labor Organization
LSE	: Life Skilled-based HIV Education
MDG	: Millennium Development Goals
MOHRI	: Ministry of Health of the Republic of Indonesia
MSM	: Men who have Sex with Men
MSW	: Male Sex Worker
MUI	: <i>Majelis Ulama Indonesia</i> (Ulema Council of Indonesia)
KPAN	: <i>Komisi Pemberantasan AIDS Nasional</i> (National AIDS Eradication Commission of the Republic of Indonesia)
BKKBN	: <i>Badan Kependudukan dan Keluarga Berencana Nasional</i> (National Population and Family Planning Board)
NGO	: Non-Governmental Organization
IPPF	: International Planned Parenthood Federation
PLHIV	: Person Living with HIV
PWID	: Person(s) Who Injects Drugs
SNSS	: Sterile Needle and Syringe Services
STI	: Sexually Transmitted Infections
UNAIDS	: Joint United Nations Programme on HIV and AIDS
UNDP	: United Nations Development Programme
UNESCO	: United Nations Educational, Scientific and Cultural Organization
UNFPA	: United Nations Fund for Population Activities
UNICEF	: United Nations Children's Fund
UNGASS	: United Nations General Assembly Special Session
USAID	: United States Agency for International Development
VCT	: Voluntary Counseling and Testing
WHO	: World Health Organization

Prologue

Almost two decades ago, when I was working in a public health center as a medical doctor in a rural area of Sidoarjo district, East Java, Indonesia, my colleagues and I found some cases of teenage pregnancies and STIs. The teens confessed that they did not know they were at risk and did not know how to prevent it. They were afraid and ashamed to discuss sexuality matters with their parents, and there was no information on how to prevent pregnancy and STIs for teenagers at schools. The head of the public health center discouraged us from including reproductive health education in our annual visits to schools as part of our school health unit program (*UKS-Usaha Kesehatan Sekolah*) and from making leaflets about STIs for patient counseling, as it was not the priority. We were only allowed to give information about non-STIs, such as typhoid fever, dengue fever and diarrhea. Seven years ago, when I routinely visited some public health centers in Gresik district, East Java, Indonesia, as part of our community medicine program, the cases of teenage pregnancies and STIs had increased, compared to a decade ago when I started my work as a medical doctor.

The alarming increase of HIV infection and AIDS cases in all provinces in Indonesia has urged the government to provide a new VCT clinic in one public health center in each district to handle STIs including the new comers, HIV infection. The majority of young people who had been tested in the VCT clinic in the Gresik city public health center reported they were not aware of the HIV and other STI risk. Therefore, the question arose: How do we equip young people for making responsible choices about their sexual practices? This question continued to stay in my mind and become an inspiration for my PhD research

Canberra,
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3 July 2012

Chapter 1

Research Issues

In too many countries an official conspiracy of silence about AIDS has denied people information that could have saved their lives. We must empower young people to protect themselves through information and a supportive social environment that reduces their vulnerability to infection (Koffi A. Annan in UNICEF, UNAIDS, and WHO 2002, :8)

1.1 Introduction

The topic of this thesis 'reducing the risk of HIV infection' focuses on three broad issues: the risk of HIV infection, reproductive health education for young people, and a randomized controlled efficacy trial of the comprehensive reproductive health education that I have developed. This thesis consists of three parts. The first part examines the risk of HIV infection related to young people's knowledge and sexual practices, reproductive health education and risk reduction of HIV infection, the objective and justification of the study, the theoretical concepts employed and the comprehensive reproductive health education module that I have developed. The second part focuses on the methods of analysis and the results of the study that I carried out. The third part provides the conclusions and the policy implications of my study. In this first chapter, global concerns about young people as well as young Indonesian's high-risk sexual practices and the risk of HIV infection, the main objective of the study, and the justification for the study are presented.

1.1.1 Global concerns about young people's high-risk sexual practices and the risk of HIV infection

As of 1 July 2011, over 1.8 billion people or 26 percent of the world's population of more than seven billion are young people aged 15-24 years. Around 61 percent of this age group or more than 1.1 billion young people live in Asia (United Nations Department of Economic and Social Affairs Population Division 2011). The term, used to refer to people in the age range of 0 to 24 years, varies depending on the context and the source of information. The United Nations Convention on the Rights of the Child (CRC) includes all individuals from birth to 18 years in the category of

'children'. The United Nations Population Fund (UNFPA), World Health Organization (WHO) and United Nations Children's Fund (UNICEF) includes adolescents between 10 and 19 years, and youths between 15 and 24 years of age in the category of 'young people' (UNFPA and Save the Children USA 2009). This thesis defines young people as persons aged 15-24 years, as described by the Joint United Nations Programme on HIV/AIDS and the United Nations Department of Economic and Social Affairs Population Division (UNAIDS 2010a; United Nations Department of Economic and Social Affairs Population Division 2011).

A distinctive feature of young people is change. Young people are characterized by physical, cognitive, emotional, social and behavioural change. However, their capacity for complex thinking is still developing, and this condition affects how young people deal with the opportunities and challenges that they face (Steinberg 1996; Pierno 2009). Increasing levels of individual autonomy and a growing sense of identity and self-esteem also mark young people's changes. They search for identity, learn to apply values acquired in early childhood and develop skills that will help them become caring and responsible adults (UNFPA and Save the Children USA 2009; UNICEF 2002). All of the developmental changes that young people experience prepare them to experiment with new things and behaviour that result in risk-taking, which is a normal part of their development (Dryfoos 1998; Roth and Brooks-Gunn 2000). Unfortunately, some of the risks that young people pursue include high-risk behaviour and high-risk sexual practices (Family Health International 2010; WHO Regional Office for Europe 2008). It is recognized that every person has sexual desire. Therefore, abstinence (meaning not having sexual relationship) is a very hard practice for many young people. Moreover, without a comprehensive knowledge of reproductive health, it cannot be ensured that young people will be able to negotiate safer sex practices with their partner and understand the consequences of their decision (Berer 2006).

This thesis uses the term 'reproductive health' as opposed to 'sexual health', because the purpose of sexual health is specific to enhancing personal relations, and sexual health is included in the reproductive health definition (United Nations Population Information Network 1994, : 67). The 1994 International Conference on Population and Development (ICPD) Program of Action paragraph 7.2 defined reproductive health as:

A state of complete physical, mental and social well being and not merely the absence of the disease or infirmity, in all matters relating to the reproductive system and to its functions and processes. Reproductive health therefore implies that people are able to have a satisfying and safe sex life and they have the capacity to reproduce and the freedom to decide if, when, and how often to do so. Implicit in this last condition are the right of men and women to be informed and to have access to safe, effective, affordable and acceptable methods of family planning of their choice, as well as other methods of their choice for regulation of fertility which are not against the law, and the right of access to appropriate health-care services that will enable women to go safely through pregnancy and childbirth and provide couples with the best chance of having a healthy infant (United Nations Population Information Network 1994, : 67).

Further, on the last paragraph 7.2 of the ICPD Program of Action, it was stated that reproductive health also includes sexual health:

Reproductive health also includes sexual health, the purpose of which is the enhancement of personal relations, and not merely counseling and care related to reproduction and transmitted diseases (United Nations Population Information Network 1994, : 67).

WHO (2006a) further defined sexual health as follows:

Sexual health is a state of physical, emotional, mental and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence. For sexual health to be attained and maintained, the sexual rights of all persons must be respected, protected and fulfilled (WHO 2006a, : 5).

This thesis also uses the term 'comprehensive reproductive health education'. The term 'comprehensive' encompasses the full range of information, skills and values to enable young people to exercise their sexual and reproductive health and rights and to make decisions about their health and sexuality (IPPF 2009a). Globally, the terms and definitions of reproductive health education are not used uniformly. The content from one reproductive health education program to another, whether it is integrated to a certain subject or subjects or given as a stand-alone program, and the policy that such education be given as part of a school-based curriculum is also still unclear.

In some countries reproductive health education can be referred to as 'sex education' or 'sexuality education', 'human relationships', 'family relationships', 'reproductive health education' or 'HIV and AIDS education'. The way sex education is given in school can include a variety of issues. Comprehensive sexuality education comprises a range of topics such as anatomy, physiology, reproduction, family, HIV and AIDS, STIs, contraception, identity, and also interpersonal relationships (Smith, Kippax, and Aggleton 2000; Kirby, Laris, and Roller 2007; Kirby, Laris, and Roller

2007b; National Guidelines Task Force 2004). The term 'reproductive health education' was used by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 2003 (UNESCO 2003), but UNESCO used the term 'sexuality education' in its 2009 international technical guidance on sexuality education (UNESCO 2009).

Since reproductive health education is the term that is used in the Indonesian primary to secondary school education curricula (Utomo, McDonald, and Hull 2011), and as this thesis mainly refers to the Indonesian setting, therefore it uses the term 'reproductive health education' as opposed to sexuality education.

This thesis also uses the term 'having sex' to mean 'sexual activity', but the working definition of the term 'sex' is the biological characteristics that define humans as female and male (WHO 2006a, : 5). However, the biological characteristics are not mutually exclusive, as there are individuals who possess both, such as individuals with congenital genetic condition (e.g. Klinefelter syndrome and Turner's syndrome), hormonal conditions (e.g. congenital adrenal hyperplasia and androgen insensitivity syndrome) and individuals who have employed hormonal and surgical therapies to alter their appearances (Centre for Genetics Education 2007; Bushong 2011). The thesis also uses the term 'sexuality' as defined by WHO (2006a), as 'sexuality is a central aspect of being human throughout life and encompasses sex, gender identities and roles, sexual orientation, eroticism, pleasure, intimacy and reproduction' (WHO 2006a, : 5).

Even though meanings are instable at different times, however, this thesis uses the term 'sexual practices' as opposed to 'sexual behavior'. 'Practices', unlike 'behavior', are negotiated between people, both intersubjectively, and collectively. In addition, 'practices' inform particular behaviors or actions by particular individuals on particular occasions in particular locations and context. People do not engage in sexual behaviors, for example penis in vagina, but they perform sexual practices by 'making love' or 'having a one-night stand' (Kippax and Race 2003; Kippax and Stephenson 2005; Hollway and Jefferson 1998; Rosengarten, Race, and Kippax 2000).

A large number of studies have found that many young people worldwide have engaged in considerable high-risk behaviors, such as alcohol and drug use; as well as high-risk sexual practices, including experiencing early age at sexual initiation, having unprotected sex, having an unintended pregnancy, having multiple sexual partners and experiencing unsafe abortion (Dehne and Riedner 2005; WHO 2006b; WHO, UNFPA,

and UNICEF 2006; WHO Dept of Child and Adolescent Health and Development 2008; CDC 2009b; Grimes et al. 2006; Guttmacher Institute 2010; Kirby et al. 2011; McKeon 2006; Utomo 2003; Hull, Sarwono, and Widyantoro 1993).

The high-risk behavior and sexual practices many young people engage, coupled with inadequate access to sexual and reproductive health information and services, as well as unsupportive laws or social values will force young people to practice sex in ways that place them at risk of acquiring and transmitting HIV infection and other STIs in the future (The Inter-Agency Working Group 2007; Inter-Agency Task Team on HIV and Young People 2008; Family Health International 2010; WHO Regional Office for the Western Pacific 2001).

Accordingly, focusing research on young people becomes more important, not only because they make up a significant proportion of each country's population (WHO, UNFPA, and UNICEF 2006; UNFPA 2003), but also because sexually active young people who engage in high-risk behavior and sexual practices are at the forefront of the HIV epidemic (Lloyd 2005; UNAIDS 2010a). Young people accounted for 41 percent of new HIV infections in the world in 2009, and each day around 5,000-6,000 new infections occur among young people. Globally, in 2010, there were around 5.0 million young people aged 15-24 years living with HIV, and young women disproportionately account for 64 percent of HIV infections among young people worldwide (UNAIDS 2010a, 2011d).

HIV is a fairly fragile virus, due to the delicate structure of its envelope and inability to survive outside the body, especially when it is exposed to heat, detergents, alcohol, ether, hydrogen peroxide and chlorine. Therefore, HIV persists permanently in the body because it has a regulatory mechanism that can switch it into a latent phase of infection (Schoub 1994).

Infectious HIV has been isolated from most body fluids rich in lymphocytes. Blood, semen, vaginal fluid and breast milk of HIV-infected person with high viral load have been shown to contain high concentrations of HIV, whereas cerebrospinal fluid (the fluid in the central nervous system), the fluid surrounding bone joints and surrounding an unborn baby may also transmit the HIV (Schoub 1994; CDC 2010c). Accordingly, HIV is transmitted in three main ways: having sex with someone infected with HIV, using HIV-contaminated injecting equipment, and being exposed (fetus or

infant) to HIV infection before or during birth or through breast-feeding (Sibthorpe et al. 1991; CDC 2011a, 2010c).

Although the risk of acquiring HIV infection through vaginal and anal sex is higher than through oral sex, it is possible for either sexual partner to become infected with HIV through micro lesion when performing or receiving oral sex, but this hazard is often ignored by young people (CDC 2010c).

HIV infects vital cells in the human immune system, primarily the CD4+ and CD8 T-lymphocytes (types of white blood cells that manage the immune system). Several weeks after the initial infection of HIV there will be an acute HIV syndrome, a condition in which the person with HIV is often unaware that he/she has the potential to transmit the virus to others, long before he/she has progressed into the AIDS stage (Schoub 1994; Hunt 2010). In this stage there is a 'window period' of seronegativity during which the infected person reacts to the virus by creating HIV antibodies. Even though the viral load is high and the patient may show some symptoms, it does not give a positive antibody test. This seronegative period can last for six months before seroconversion although the latter usually occurs between one and four weeks after infection. During the window period, a person with HIV infection can transmit HIV to others although their HIV infection may not be detectable with an antibody test (Hunt 2010; Kishore, Cunningham, and Menon 2009).

HIV is part of the lentivirus genus ('lenti' meaning 'slow' in Latin), because of the very slow and elongated nature of the disease it causes, often having an effect on the central nervous system and finally leading to death (Schoub 1994). Accordingly, the silent phase or clinical latency caused by HIV infection may last from eight to 15 years (Schoub 1994); however, ten percent of HIV-infected persons yield to AIDS within two to three years (Hunt 2010).

In the latency period, an individual is not aware clinically of being infected, although virus replication and multiplication are occurring in the body and the antibody test is positive. Later, clinical signs and symptoms develop, and the HIV-infected person progresses to the subsequent stage, the progressive generalized lymphadenopathy. This stage is characterized by enlargement of lymph glands in the head and neck region, but some infected individuals may go directly from the silent stage to the development of AIDS (Schoub 1994).

There are two basic characteristics of AIDS: the direct effect of damage by HIV infection and the indirect effect of immunosuppression. The HIV infection may directly affect the central nervous system, the gut, the kidneys, the blood forming elements, joints and skin, also the skeletal-like appearance of AIDS patients. The indirect effect of immunosuppression is related to the clinical presentation of opportunistic infections. The latter rapidly activates the HIV virus that finally leads to death, on average after about 18 months to two years after the onset of AIDS (Schoub 1994; WHO 2007a).

HIV also belongs to an important group of viruses, the retroviruses, members of the Retroviridae family (Levy et al. 1984). HIV has ribonucleic acid (RNA) genes, and an enzyme called reverse transcriptase that make it an extremely variable virus, due mostly to the imprecise nature of its genetic copying mechanism and the effect of this mechanism of making errors during each step of its replication (Schoub 1994). Thus, HIV has a tremendous disease induction, persistence, latency, variation, recombination, and escape from immune and drug pressures' (Hahn et al. 2000).

Trials of the most promising HIV vaccine candidates were ended in September 2007 due to the lack of efficacy, and an effective vaccine is likely years away (WHO 2011c; Hamelaar et al. 2006). Similarly disappointing results were reported for early-generation microbicides (Nelson 2007) and female diaphragms (Padian et al. 2007). The antiretroviral therapy (ART) that is available, while critical for extending the longevity and quality of life for people with HIV, is not cures (WHO Department of Communicable Disease Surveillance and Response 2000; WHO 2011a; Morgan et al. 2002; Bhaskaran et al. 2008). Therefore, behavior change remains the primary tool for reversing HIV epidemics worldwide (Global HIV Prevention Working Group 2008).

Since the exact numbers of people living with HIV (PLHIV), people who have been newly infected or have died of AIDS are not known, therefore, UNAIDS estimated the numbers by using all available data, which include surveys of pregnant women attending antenatal clinics and population-based surveys conducted at the household level (Gouws et al. 2008); sentinel surveillance among key populations at higher risk of HIV infection: sex workers (Vandepitte et al. 2006), clients of sex workers (Craiel et al. 2006), MSM (MSM) (Caceres et al. 2006), persons who inject drugs (Aceijas et al. 2006); case reporting, vital registration systems (the official recording of births and deaths), as well as other surveillance information.

As of 2010, new HIV infections in the world are declining, although several regions and countries do not fit the global trend. AIDS-related mortality has been reduced by the availability and coverage of ART including in low and middle-income countries (UNAIDS 2010a, 2011c).

The spread of HIV infection among young people in five high-burden regions by main mode of transmission is different, and demonstrates a pattern of high-risk behavior and sexual practices engaged in by young people, as depicted in Table 1.1. Sub-Saharan Africa continues to be the epicenter of the HIV epidemic in the world. Most countries in this region have generalized epidemics (UNAIDS 2010a; USAID 2011), in which more than one percent of the general population is HIV-positive (UNICEF 2008; UNAIDS 2011b). Despite being the most HIV high-burden region, five countries in this region (Côte d'Ivoire, Ethiopia, Kenya, Malawi, and Zimbabwe) showed a statistically significant decline of 25 percent or more in HIV prevalence (the percentage of PLHIV) by 2008 among young pregnant women attending antenatal clinics. This in some part was attributed to a statistically significant change in sexual practices among young people (UNAIDS 2010a).

Table 1.1. HIV prevalence among young people and main mode of transmission in five high-burden regions

Region	HIV prevalence among young people in 2010	Main mode of transmission
Sub-Saharan Africa	1.4% (1.1-1.8) among males and 3.3% (2.7-4.2) among females	Unprotected heterosexual intercourse with multiple partners, including transactional sex
Eastern Europe and Central Asia	0.6% (0.5-0.8) among males and 0.5% (0.4-0.7) among females	Injecting drug use, transactional sex, and unprotected sex between men
Caribbean	0.2% (0.2-0.5) among males and 0.5% (0.3-0.7) among females	Transactional sex, unprotected sex between men, and crack/cocaine use
North America	0.3% (0.2-0.6) among males and 0.2% (0.1-0.4) among females	Unprotected sex between men, injecting drug use and transactional sex
Latin America	0.2% (0.1-0.4) among males and 0.2% (0.1-0.2) among females	Unprotected sex between men, injecting drug use, and transactional sex

Source: (UNAIDS 2011c, : 10-11)

The main mode of HIV transmission among young people in Sub-Saharan African region is through unprotected heterosexual intercourse with multiple partners, including transactional sex (USAID 2011; Corbett et al. 2002; WHO Regional Office for Africa

2011; Cleland et al. 2004; Lingappa et al. 2008; UNAIDS 2011c). As presented in Table 1.1, young women in sub-Saharan Africa are at particularly higher risk of HIV infection than are men. In 2009, 13 women were infected by HIV for every 10 men infected, and seventy six percent of all HIV-positive women globally live in sub-Saharan Africa (UNAIDS 2010a). The higher risk of HIV infection among young women is associated with their biological condition that is compounded by social, cultural, economic and legal discrimination or inequities in Sub-Saharan Africa (amfAR AIDS Research 2008; Sachdeva and Wanchu 2006; Coombs, Reichelderfer, and Landay 2003; Quayle 2002; Stratford et al. 2008). Poverty has encouraged unprotected sex of young women with much older men, including transactional sex and sex within marriage, whereas older men were more likely than younger men to be infected with HIV (Muula 2008; Nkosana and Rosenthal 2007; Gouws et al. 2008; Sachdeva and Wanchu 2006).

High-risk sexual practices were reported among young people in Sub-Saharan Africa. Around 30 percent of girls and boys aged 15-19 years in Nigeria and 48 percent in Gabon reported having had sexual intercourse before their 15th birthdays (Population Reference Bureau 2006; Lloyd 2005). Condom use at last sexual intercourse among girls aged 15-19 years who had had sex in the 12 months prior to the survey ranged from 23-27 percent in Burkina Faso, Malawi and Uganda and 37 percent in Ghana. These proportion were much higher among their male counterparts, which ranged from 35 percent in Malawi and 46-49 percent in Burkina Faso, Ghana, and Uganda (Bankole, Ahmed, et al. 2007). Moreover, fewer than 20 percent of 12-14 year-old boys and girls in Burkina Faso, Ghana, Malawi, and Uganda had comprehensive knowledge about HIV and pregnancy prevention (Bankole, Biddlecom, et al. 2007; Awusabo-Asare et al. 2006; Munthali et al. 2006).

In four other regions, Eastern Europe and Central Asia, Caribbean, North America, and Latin America, the HIV epidemic was considered 'low' or 'concentrated', in which less than one percent of the general population were HIV positive. However, in these regions, more than five percent of any key population at higher risk of HIV infection, including Persons Who Inject Drugs (PWIDs) or sex workers, was HIV positive (UNICEF 2008). The main mode of transmission among young people in the four other regions was through injecting drug use, unprotected sex between men, and transactional sex (Figueroa 2008; UNAIDS and WHO 2008; Barrientos et al. 2007; Vogel 2005; UNAIDS 2011c).

In the four regions, drug use was started early in life and the percentage of HIV infection was high among PWIDs. In Togliatti, Russia, 65 percent of all PWIDs were younger than 20, and 55 percent of PWID aged 20–24 years were HIV positive (Rhodes et al. 2004). In Santos, Brazil, 56 percent of PWIDs and younger than 25 years were HIV positive (Mesquita et al. 2001). In Eastern Europe, 40 percent of newly diagnosed HIV infections on PWIDs were among those aged 15– 24 years (Monasch and Mahy 2006). In these regions, sex work often started at an early age (Duong 2002; Family Health International 2002), and many clients of sex workers were also young people. In Kosovo, 18 percent of the sex workers' clients surveyed were younger than 20 years, and 20 percent were aged 20–24 years (Monasch and Mahy 2006).

In Peru, a substantial proportion of PWID were younger than 25 years; homosexual experiences among young males aged 13–19 years ranged from two percent in Lima to 13 percent in Lambayeque (Brown et al. 2001). In a study in Lima, Peru, 18 percent of all men who have sex with men (MSM) were HIV positive (UNAIDS 1998). Further, the proportion of young people who had an early sexual debut was high, but condom use was low. In Romania, 70 percent of boys and 41 percent of girls aged 15 to 19 reported having had sexual intercourse, but only 39 percent of boys and 26 percent of girls had used a condom at their sexual debut. Another survey in the Ukraine found that only 28 percent of young women aged 15 to 24 had used a condom at their first sexual intercourse (UNICEF, UNAIDS, and WHO 2002).

Although in general epidemiological terms, the spread of any infectious disease mostly depends on the number of people infected, the infectivity of different transmission modes, the number of contacts between infected and non infected people and the duration of the infection (Anderson, May, and Anderson 1991), however, as a matter of fact, the transmission of HIV in the world reflect aspects of human ecology (McMichael 2001). More than just public health concerns, HIV infection and AIDS are a social and development issue. The AIDS epidemic has spread to every region in the world without borders (UNICEF 2008).

Poverty, gender discrimination, illiteracy, and overall inequalities are among the underlying factors that have intensified the HIV epidemic (UNICEF Regional Office for South Asia 2003). HIV infection and AIDS primarily affect people in their most productive and reproductive years. Mortality has been increasing and life expectancy has fallen in many countries highly affected by HIV infection and AIDS (UNAIDS

2010a; United Nations Department of Economic and Social Affairs 2007). The needs of affected young people are often disregarded in many countries' HIV and AIDS strategies, policies and budget allocation (UNICEF, UNAIDS, and WHO 2002). Young people may be denied access to school due to fears and stigmatization in the community. Income and household assets are reduced as employment opportunities diminish due to illness, while health expenditures increase. As a result, HIV-affected households are often pushed into poverty (UNAIDS 2011c; UNICEF Regional Office for South Asia 2007; UNICEF 2010; UNDP 2011).

There have been alarming reports that many sexually active young people at risk of HIV did not perceive themselves to be at risk, and around 20-80 percent of people with HIV around the world did not know they were infected (Marks et al. 2005; Samet et al. 2001; UNICEF, UNAIDS, and WHO 2002). Further, many persons with HIV did not get tested until late in their infection when they developed opportunistic infections related to AIDS. Approximately 40 to 50 percent of patients with HIV infections around the world were late-diagnosed with HIV infection and were diagnosed with AIDS within one year of their first testing of HIV infection (Greenwald et al. 2006; Lee et al. 2010; Sobrino-Vegas et al. 2009; Valdiserri 2007; Schwarcz et al. 2006; Riyarto et al. 2011). The ignorance and late diagnoses were likely related to the long latent stage of HIV infection (Schoub 1994), misconceptions about how HIV is transmitted (UNICEF, UNAIDS, and WHO 2002), and the fact that many young people did not feel that their sexual practices were at risk (UNICEF, UNAIDS, and WHO 2002; Knox 2008). Related to the HIV replication ability and secondary infection with a different HIV strain, such a late diagnosis might restrict an infected person's access to life-prolonging therapy, cause antiretroviral therapy resistance and lead to death (Greenwald et al. 2006; Lee et al. 2010; Sobrino-Vegas et al. 2009; Valdiserri 2007; Schwarcz et al. 2006; Riyarto et al. 2011; De Cock, Bunnell, and Mermin 2006).

As of 2009, only around 34 percent of young people worldwide had comprehensive and correct knowledge about HIV and AIDS (UNAIDS 2010a). In contrast, a lack of education and information, a core component of sexual and reproductive rights (Ahumada and Kowalski-Morton 2006; Sharma 2002), and the stigma attached to the disease have fueled an HIV epidemic among young people (UNESCO 2001). These conditions, coupled with the unavailability of vaccine and

treatment, have pushed us back to prevention strategies that depend on behavior change to reduce HIV transmission (Johnson 1998).

Even though young people's behavior and sexual practices are complex and challenging to change (Global HIV Prevention Working Group 2008), the achievement of change in behavior and sexual practices may lead to maximizing the advantage to society while minimizing the harm to the individual (Johnson 1998). There has been a huge impact of HIV and AIDS on young people, but young people can also serve as agents of change in preventing and leading the way to halt the spread of HIV infection through their knowledge, positive attitude, behavior and sexual practices (UN-NGLS 2011). Peter Piot, the executive director of UNAIDS stressed the importance of changing young people's sexual practices in tackling HIV transmission, as he believes the efforts result well in a lifetime benefit (Santis et al. 2004). Finally, the Global HIV Prevention Working Group (2008) pointed out the urgent need for sexual practice change to reverse the global HIV epidemic. Even when HIV vaccine and microbicides eventually available, safer sexual practices will remain crucial, as biomedical prevention is unlikely to be 100 percent effective in preventing HIV transmission.

In sum, focusing research on young people becomes more important, not only because they make up a significant proportion of each country's population, but also because sexually active young people who engage in high-risk behavior and high-risk sexual practices are at the forefront of the HIV epidemic. Ignorance of HIV infection and AIDS, and deprivation of access to information and the right to protect them from unsafe sex have inflamed the HIV epidemic among young people. These conditions, combined with the unavailability of a vaccine and treatment, push us back to prevention strategies that depend on behavior change to reduce HIV transmission. However, young people themselves can serve as the agent of change to halt the spread of HIV infection through improving their self-confidence and ability to adopt safer behavior and sexual practices, which can be obtained from effective comprehensive reproductive health education.

1.1.2 Young Indonesians' high-risk sexual practices and the risk of HIV infection

As of 2010, young people aged 15-24 years constituted around 17 percent of 237,641,326 population in Indonesia (BPS-Statistics Indonesia 2010b). Indonesian

young people have experienced conflict in the values of the social environment that have shifted in comparison with the values experienced by the older generation at the same age (Purdy 2006; Utomo and McDonald 2009). The older generation of Indonesians had long been known to hold a normative moral code, called 'idealized morality'. Young people who held to this code would try to avoid engaging in sexual relationship before marriage, as this practice brought shame to their families and their families may have rejected them (McDonald 1994). New values that came from outside of idealized morality, such as those stemming from globalization and Middle Eastern Islamic fundamentalist ideas, have often been seen as a counter to the idealized morality (Utomo and McDonald 2009).

In referring to the values influencing young people, I prefer to use the term 'globalization' rather than the term 'Western' world. The term 'Western' has been used by many researchers and school textbooks in Indonesia when referring to 'liberal Western values' (Handajani 2008; Utomo and McDonald 2009; Hawari 2006; Gilang 2007; Suryoputro, Ford, and Shaluhyah 2006; Harding 2008), thus creating a fear of moral destruction of young Indonesians (Harding 2008). Sadli, the founder of the Graduate Program in Women Studies, University of Indonesia, and Indonesia National Commission on Violence Against Women (*Komnas Perempuan*) expressed disappointment that school textbooks referred to free sex (socializing too freely among the sexes) as a result of Western influence (Hartiningsih and Pembudy 2009). Indonesia as an Eastern country, has its own sexual permissiveness (Suryakusuma 2004), which is described further in Chapter 2 of this thesis. Further, the term 'Western' creates a false unity of diverse regions (Clarke 1997), whereas the term 'globalization' has a more broader meaning. The latter refers to increased possibilities for action among people in different situation and locations (Scholte 1996, : 45; Scheuerman 2010).

The term 'Islamic fundamentalist' that I use in my thesis refers to the conservative wing of Islam, which is reluctant to adapt the Islamic teaching in the modern life (Ontario Consultants on Religious Tolerance 2001; Saikal 2003; Alfajri 2006).

A generation ago, the sexual practices of young people were highly restricted. Young people were not free to mix with their opposite sex, peer pressure was not strong, women's educational achievements rarely went beyond the secondary-school

level, and women often had arranged marriages and married at an early age (Arian 1982, Muliakusuma 1982, and Tiwon 1996, cited in Utomo and McDonald 2009, :134).

The impact of globalization enables global cultural products to enter Indonesian society with increased ease. This impact has led to changes of traditional values, and a new focus has been given to education, which has led to later age at marriage (Hull 2002, Jones 2002, and Kurniawan 2000, cited in Utomo and McDonald 2009). Greater freedom has been allowed young people in choice of clothing and activities, as well as in socializing, developing romantic relationships, enjoying night-time entertainment, enjoying pornographic movies and magazines, attending Western schools and study abroad. At the same time, increasing numbers of young people have used narcotics and engaged in high-risk sexual practices. Accordingly, modern clinics and religious boarding schools (*pesantren*) have both provided rehabilitation services for persons who use drugs, which were not readily available a generation ago (Utomo and McDonald 2009; The Jakarta Post/Asia News Network 2010).

Besides being influenced by global values, the current social environment in which Indonesian young people lives has been substantially contested by social and policy change addressing young people's reproductive health, and the spread of Islamic fundamentalist idea (Utomo and McDonald 2009). The government saw young people's reproductive health problems and rights as 'non-issues' (Gubhaju 2001), even though studies indicated an increase in teenage pregnancies, unsafe abortions, HIV infections and other STIs among unmarried young people (Utomo 2003; Hull, Sarwono, and Widyantoro 1993; Situmorang 2003; Ministry of Health of the Republic of Indonesia 2011c). The government has treated young people as 'non-sexual beings', with the result that their reproductive health needs are under-served, they remain under-informed, marginalized and disadvantaged (Utomo 1997).

Indonesia's cultural conservatism creates social taboos and politicians often deny young people's sexuality, so sexuality cannot be talked about in open forums (Lubis 2006). Parents and teachers are generally unwilling or unable to discuss sexuality due to either denial or shame. Many young Indonesians continue to obtain their sex education from the media, especially pornographic films and magazines. On the other hand, young people's knowledge of comprehensive reproductive health education is limited, meaning that young Indonesians are naively putting themselves at risk of HIV

infection, other STIs and unintended pregnancy (Situmorang 2001, 2005, 2003; Utomo 2003; Lubis 2006; BPS-Statistics Indonesia and Macro International 2008).

Indonesian society condemns anyone who engages in sexual activities outside marriage or outside heterosexual marriage (Lubis 2006; The Jakarta Post/Asia News Network 2010); and any sexual activity of unmarried people is stigmatized, and even has social and legal sanction (Rahmatullah 2010; Global TV Second News 2010). This condition creates marginalization of sexually active unmarried people, especially with regard to sexual activity of people with a non-heterosexual orientation (Holzner and Oetomo 2004). Accordingly, sexual activity of young people with a homosexual orientation has often been underground, including in religious boarding schools (Nurish 2010). An example of government rejection of non-heterosexual activity was a ban on the scheduled 2010 regional conference of the International Lesbian, Gay, Bisexual, Transgender and Intersex Association (ILGA) in Surabaya (The Jakarta Post 2010b).

The conflict surrounding sexuality and its expression emerged with the passing of *The Bill on Pornography (Indonesia Law No. 44 of 2008)* in October 2008. The bill states that anyone engaging in pornography and pornographic acts (actions deemed indecent) is punishable by law. This includes, but is not limited to, public acts such as spouses kissing, women showing their navels or shoulders, and people sunbathing in bikinis or swimwear (Hayid 2008; Tedjasukmana 2006). While Indonesian Islamic fundamentalist supported the bill, it was attacked by feminist groups as imposing undue restrictions upon women and upon the way they dress. The bill was also debated in regions with non-Islamic majorities such as Bali, North Sumatra, and East Nusa Tenggara, as a shift toward the introduction of Islamic *syariah* law across Indonesia (Utomo and McDonald 2009).

In spite of cultural conservatism, young Indonesians are becoming more tolerant of public displays of sexual permissiveness (Utomo 1997). Although the Indonesia Young Adult Reproductive Health Survey (IYARHS) 2007 found that only 1.3 percent of female respondents and 6.4 percent of male respondents reported having had premarital sex (BPS-Statistics Indonesia and Macro International 2008), however, many case studies reported a rising incidence of younger age at first sexual intercourse, having multiple sexual partners, having sex with sexual workers, and the consequences of unprotected sex, including unintended pregnancy and unsafe abortion among young Indonesians in Java and outside Java, and some young Indonesians having also been

involved in the sex industry (Bennett 2001; Bennett 2005; Singarimbun 1991; Situmorang 2001; Utomo 1997, 2003; Diarsvitri et al. 2011; Butt, Numbery, and Morin 2002; ILO 1998; Pisani 2008; Hull, Sarwono, and Widyantoro 1993; Utomo et al. 2012; Utomo, McDonald, Reimondos, et al. 2011).

High-risk sexual practices have become a crucial and critical concern in relation to the rapid increase of HIV epidemic in Indonesia. Indonesia is the only one among five HIV high-burden countries in the South-East Asia region with a rising HIV epidemic, whereas in four other countries, India, Myanmar, Nepal and Thailand, the number of new HIV infections has showed a downward trend (Figure 1.1) (WHO SEARO 2010).

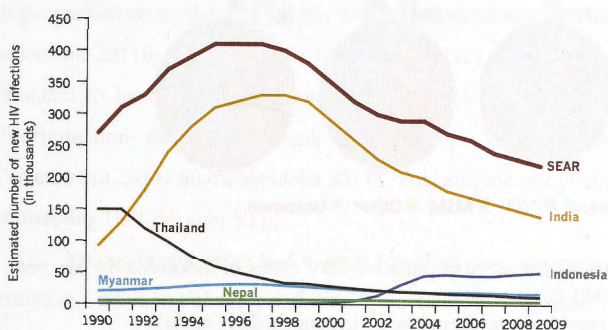


Figure 1.1 Estimated number of new HIV infections in the South-East Asia region, 1990-2009.

Source: (WHO SEARO 2010, :3)

The first AIDS case in Indonesia was reported in Bali in 1987, when a tourist from the Netherland died of the disease; this was soon followed by reports of AIDS cases in Jakarta and Surabaya (Murray 1993). Only four years after the first case was diagnosed, a total of 153 AIDS cases and 466 HIV infections were reported in Indonesia, of which the higher proportion was among males and the greater part was in the 20-39 age group (Abednego et al. 1998). Although as of 2011, HIV prevalence among general population in Indonesia was less than one percent (0.2 percent), HIV prevalence was more than five percent in any key population at higher risk of HIV infection, including sex workers and PWID. Therefore the HIV epidemic in Indonesia was considered as a ‘low or concentrated epidemic’ (USAID/Indonesia 2010; Ministry

of Health of the Republic of Indonesia, National AIDS Commission, and Family Health International 2007).

The HIV transmission has shifted, from predominantly heterosexual contacts and MSM contacts in the 1990-1995 period to mainly heterosexual contacts and PWIDs in 1996-2010 (Figure 1.2) (Ministry of Health of the Republic of Indonesia 2011c). The risky behavior and sexual practices of key populations at higher risk of HIV infection made substantial contribution to HIV transmission to the general population (Pisani et al. 2003; National AIDS Commission 2009b; Ministry of Health of the Republic of Indonesia 2008b).

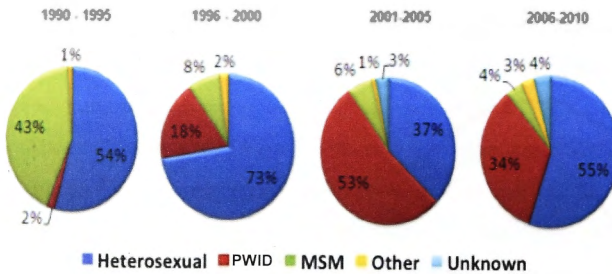


Figure 1.2 Mode of transmission of cumulative HIV cases in Indonesia by five year period, 1990-2010

Source: (Ministry of Health of the Republic of Indonesia 2011c, :6)

In response to the increase in HIV infection and AIDS cases, a multi-stakeholder process was begun in late 1993, and culminated in presidential decree (*Keppres* No. 36/1994) announcing the birth of the National AIDS Commission (Mboi and Smith 2006). The subsequent presidential (*Perpres* No. 75/2006) decree provided the basis for restructuring and functioning the commission that was finally chaired by the Coordinating Minister for People’s Welfare, which comprised cabinet ministers, government ministries and agencies, and non-governmental organizations (NGOs). As a response to the rising tide of the HIV epidemic, Indonesia joined various international agreements, in particular the United Nations General Assembly Special Session on HIV/AIDS (UNGASS) and the Association of Southeast Asian Nations (ASEAN) Summit Declaration on HIV/AIDS, which called for new levels of action, monitoring, and reporting (Mboi and Smith 2006; National AIDS Commission 2007).

Starting in 2003, a number of commitments and activities to halt the spread of AIDS, such as provincial VCT clinics, as well as specific prevention and treatment for key populations at higher risk of HIV infection in all provinces were also established. At that time, the expenditure on all activities still relied heavily on international sources (67.8 percent from bilateral partnerships, and 32.3 percent from multilateral partnerships), compared to public sector (central and local governments, 26.6 percent) (National AIDS Commission 2007). As of 2010, the funding sources were shifted to 51 percent from international support and 49 percent from public support. Further, there were 388 VCT clinics available at hospitals, public health centers, and NGO clinics; and 196 hospitals provided care, support and treatment (National AIDS Commission 2010a). However, the number of VCT clinics in many provinces outside Java was disproportionate to the size of the population (Ministry of Health of the Republic of Indonesia 2011b; BPS-Statistics Indonesia 2011c). Further, many young people were reluctant to have an HIV or other STI test in a VCT clinic, due to the stigma and discrimination that would result if they were HIV positive. (Purworejo District Government 2011; Suara Merdeka 2011). This attitude put young people on high risk of contracting HIV or other STIs.

Young people who had engaged in drug use, sex between men and sex work establish a crisis in behavior and sexual practices, and therefore, there is an urgent need for changes in behavior and sexual practices. A survey carried out in 2003 revealed that 95.1 percent of 650 male PWIDs in Jakarta, Surabaya and Bandung were less than 30 years old. A majority (61.6 percent) of these lived with their parents and 23.2 percent lived with relatives (Pisani et al. 2003). The authors suggested that the families of PWIDs could play a role in prevention and treatment of PWIDs.

Over two thirds (68.3 percent) of the PWIDs were sexually active and 70 percent of them had had multiple sexual partners, 40 percent reported buying sex from female sex workers; consistent condom use was below 10 percent (Pisani et al. 2003). In addition, Pisani (2003) revealed that ninety-two percent of PWIDs reported using non-sterile injecting equipment in the last week, which was far higher than rates of sharing needles recorded in other Asian countries. Twenty-eight to 66 percent of PWIDs in different cities in Bangladesh, and 46 percent of PWIDs in Kathmandu, Nepal, reported the use of non-sterile injecting equipment. In Vietnam, between eight to 44 percent of PWIDs in various cities reported the use of non-sterile injecting equipment in

the previous six months (Ministry of Health and Family Welfare of Bangladesh 2003; Tung et al. 2000). For PWIDs, the risk of acquiring HIV sexually is smaller relative to the risk of infection through the use of contaminated injecting equipment. Unprotected commercial sex does, however, increase their risk of infection even further (Pisani et al. 2003).

As of 2006, officials estimated there were 190,000-248,000 PWIDs in Indonesia (Ministry of Health of the Republic of Indonesia 2008b). The 2007 surveillance on PWIDs in six big cities: Medan, Jakarta, Bandung, Surabaya, and Malang, revealed a reduction in the proportion of PWIDs reporting having shared a needle in the past week. The percentage ranged from nine percent in Semarang to 63 percent in Jakarta. There was an increase in condom use, with around 82 to 95 percent of PWIDs reporting consistent condom use with regular partners. However, only 45 percent to 95 percent of PWIDs reported consistent condom use with female sex workers.

HIV prevalence among PWIDs for up to two years ranged from 9.8 percent in Bandung to 41.5 percent in Medan, whereas HIV prevalence among PWIDs who had injected drugs for more than two years was higher, ranging from 51.3 percent in Bandung to 67.8 percent in Jakarta (Ministry of Health of the Republic of Indonesia 2008b). Even though some improvements were noted in health programs and behavior change among PWIDs, however, the results had not achieved the coverage necessary to reduce HIV infection and transmission (Ministry of Health of the Republic of Indonesia 2008b). Figure 1.3 shows an increasing trend of HIV prevalence among PWIDs in Jakarta between 2000-2007, compared to other selected cities in South-East Asia (Sharma et al. 2009).

A more alarming condition was revealed in 2009. A survey of 317 PWIDs (90 percent were males and 10 percent were females) in Jakarta and Depok found 54 percent of respondents had started injecting drugs when they were 15-19 years old; whereas 66 percent of respondents were senior high school graduates, 23 percent were junior high school graduates, and 11 percent were university graduates (CHR-UI and Intuisi Inc. 2010). This figure raised the question whether PWIDs started injecting when they were still attending school. Further, PWIDs tended to do anything to obtain money for the drugs, such as criminal acts and selling sex. Around 20 percent of female respondents had ever had 'body exchange' (*tukar badan*), an exchange of their body for drugs (CHR-UI and Intuisi Inc. 2010).

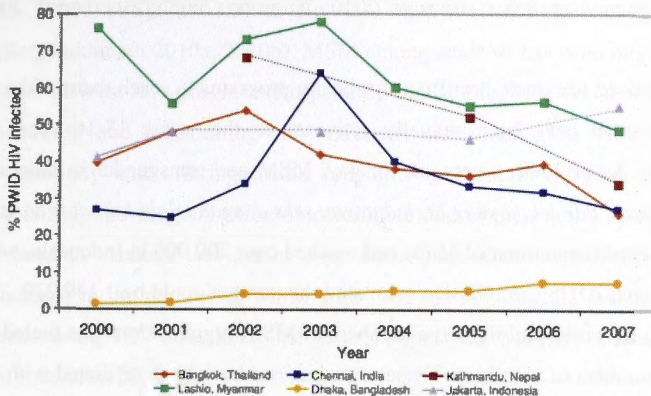


Figure 1.3 HIV prevalence among PWIDs in selected cities in South-East Asia, 2000-2007

Source: (Sharma et al. 2009, : 1407)

Moreover, a survey carried out in 2010 by the National Narcotics Institution (*Badan Narkotika Nasional, BNN*) reported that around 4.6 percent (921,695) of students and university students were involved in drug use, meaning that on average two to five teens in every school or university have used drugs (Judarwanto 2011). This condition has to be taken seriously, as a person who uses drugs tends to influence his/her peers.

All data related to PWIDs suggested that many of the HIV infections among PWIDs could be prevented if PWIDs were reached early by interventions, and that families can play an important role in participating in the health program. In addition, through high-risk sexual practices, PWIDs contribute in important way to transmitting HIV infection to the general population (Ministry of Health of the Republic of Indonesia 2008b; Pisani et al. 2003). Accordingly, comprehensive efforts in prevention and therapy for PWIDs at large and PLHIV who inject drugs still need to be strengthened (Ministry of Health of the Republic of Indonesia 2008b).

Another key population at higher risk of HIV infection is MSM. Because of the dominance of the heterosexual culture, young Indonesians with a homosexual orientation have gone underground, hiding their personal lives from their families and workmates. They have shifted their preferences to meet their sexual partners from physical to virtual places. They also preferred obtaining HIV-related information from

the internet to attending clinics (Hartoyo 2010; Nugroho 2008b; Boellstorff 2005; Krisanty 2007).

MSM's closed life made it difficult for health programs to reach them, although the majority of them have been sexually active since they were 15-16 years old (Harahap 2011a). As of 2009, a network for gay, MSM and transgender in Indonesia (*Jaringan gay, waria dan lelaki yang berhubungan seks dengan lelaki lain di Indonesia, GWL-INA*) estimated the number of MSM had reached over 700,000 in Indonesia, while in 2006 the National AIDS Commission estimated the number could be 1,149,270. The growth of online networks and the large numbers of MSM organizations has fueled the increase in the numbers of members. These organizations have been affiliated with and their activities funded by international organizations (Harahap 2011a; Awaludin 2007; Kelola 2008; GWL-INA 2010; National AIDS Commission 2009b; AFAO 2012).

There is still much to be done to reach MSM with information and services. HIV prevalence among MSM in Jakarta, Surabaya, and Bandung was between two and eight percent, but the prevalence of rectal STIs was higher, ranging from 29 percent to 34 percent. MSM tended to have multiple sexual partners, with both men and women; 47 percent reported selling sex to their male sexual partners in the past year, 10 percent reported buying sex from their female sexual partners, and 14 percent reported selling sex to their female sexual partners (National AIDS Commission 2009b). Only 30 percent of them reported using condoms consistently with their male sexual partners, and only 11 to 18 percent of them reported using condoms consistently with their female sexual partners. As of 2007, the comprehensive knowledge of HIV prevention measures of MSM in six big cities: Medan, Batam, Jakarta, Bandung, Malang, and Surabaya, was low, ranging from six percent in Bandung to 40 percent in Medan. The utilization of diagnostic and treatment services for STIs remains insufficient to prevent HIV infection and other STIs. MSM who had visited a STI clinic in the three months prior to 2007 survey ranged between 18-30 percent in five cities, but reached 68 percent in Malang (Ministry of Health of the Republic of Indonesia 2008c).

Further, there has been an increase in an urban phenomenon in many big cities in Indonesia with the growing number of 'young cats' (*'kucing berondong'*), in which young males, often students as young as 14-17 years old, provided sex for other males. Some of them work for a pimp, but some work alone. Some of them even want to marry a girl someday. Their tariff is related to their physical performance, ranging from Rp.

25-30,000 (USD 2.8-3.3) to Rp. 200-300,000 (USD 22.1-33.1) for a short play (Setyorakhmadi 2010a, 2010b). MSM among students has been more common in some cities in West Java province (Ruspiyandy 2012). The MSM community is at high risk of acquiring and transmitting HIV infection and other STIs. However, reaching this community and offering health programs to them is difficult, since they are not localized, and they are often unidentifiable due to their activities, some of which are related to massage services or other entertainment services (Sulistiyawati 2012). The increase in the number of MSM with their high-risk sexual practices, plays a role in transmitting HIV infection to the general population (Ministry of Health of the Republic of Indonesia 2008c).

As of 2006, it was estimated that the total number of direct female sex workers (women who work in brothels and street-based sex workers) ranged between 95,000-157,000, while the number of indirect female sex workers (women who work in entertainment venues, such as karaoke bars and clubs, massage parlors, and discotheques, who occasionally, and generally off the premises, engage in sex work to add to their income) was estimated to be between 85,000-107,000; they were serving an estimated four million clients per year (National AIDS Commission 2009b).

A more disturbing statistic is that both direct and indirect female sex workers often are secondary school and university students. In 2008, there were around 10,000 sex workers in Jakarta and 2,000 sex workers in Medan, North Sumatra province, who were under 18 years, and 70 percent of them aged 14-16 years. Their tariff was higher compared to adult sex workers or university students, ranging from Rp 400,000 to Rp 1,500,000 (USD 44.8-168), since they were young and regarded as 'clean' (Kompas 2008). In 2009, it was reported that 25 percent of 239 direct female sex workers in Sukabumi, West Java province, were students (ANTARA News 2009). In 2010, around 100 out of 600 female sex workers in Tasikmalaya, West Java province, were students (ANTARA News 2010b).

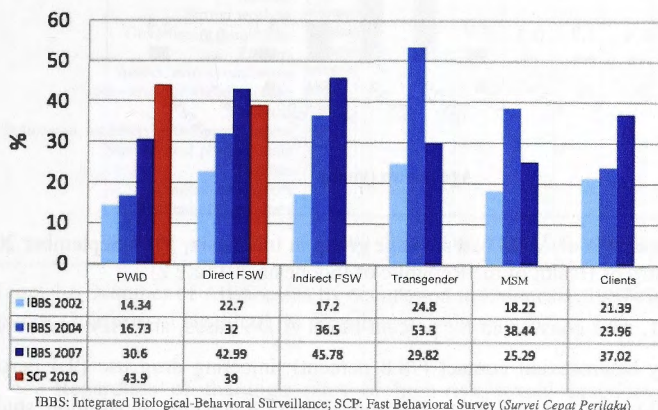
In 2011, Surabaya police arrested a syndicate of student sex workers, comprising six senior high school students who served hotel guests. The students use cell phones to receive a call from their pimps or their clients. Their network for hotel calls was called 'grey chicken' (*ayam abu-abu*), a name for senior high school students as they wore a grey skirt as part of their school uniform (Faridl 2011). Besides the economic factor, materialism and the glamour life-style displayed by their peers who enjoyed having sex

and receiving gifts in return were the major drivers of the students' involvement in sex industry (Indowarta 2009; Sastramidjaja 2001; Faridl 2011; Wahyudiyanta 2010; ANTARA News 2009, 2010b; Kompas 2008). Further, some of the sex workers' clients were also secondary school and university students (Utomo 2003; Situmorang 2003; Simon and Paxton 2004). Without knowledge of safer sex practices and lack of a bargaining position, the students involved in the sex industry put themselves at high-risk of acquiring and transmitting HIV infection and other STIs.

The 2007 surveillance conducted in eight provinces in Indonesia (North Sumatra, East Java, Central Java, Jakarta, West Java, Batam, Bali and Papua) among 5,947 female sex workers with a median age of 27, revealed the average number of their clients per week was 6.6 (8.7 among direct female sex workers and 4.7 among indirect female sex workers). However, half of the direct female sex workers in Bali reported having at least 14 clients in the past week. Each additional client in the past week was associated with one percent increase in the likelihood of HIV infection (OR=1.01, $p = 0.011$) (Magnani et al. 2010). The 2007 surveillance also found a high prevalence of STIs among all female sex workers, especially Chlamydia (20.2-49.4 percent), gonorrhea (7.8-44.2 percent), and active syphilis (0.8-16.8 percent). On the other hand, these sex workers showed lack of treatment-seeking behavior, despite available government or NGO health services. Twenty-six percent of all female sex workers had experienced STI symptoms in the past year. Of these, 49.5 percent had had treatment from a medical professional, 42.7 percent had used self treatment by buying over-the-counter medicine, and 1.2 percent had traditional treatment (Magnani et al. 2010; Majid et al. 2010).

HIV prevalence among direct female sex workers ranged from 6.1 percent in Medan to the highest, 15.9 percent in Papua. HIV prevalence was lower among indirect female sex workers, ranging from 1.6 in Central Java to 9.0 percent in Batam. Unfortunately, the high number of clients and HIV prevalence was not accompanied by consistent condom use and knowledge. Consistent use of condoms with clients in the past week ranged from 24 percent among female sex workers in West Java to 45 percent among female sex workers in North Sumatra. Around 17 to 54 percent of female sex workers did not know that condoms could protect them from HIV infection or other STIs. Further, the 2007 surveillance suggested that the perceived risk of HIV infection among sex workers was low, since the decision to use a condom was not made by the

sex workers, but depended on external factors, as 60 percent of them used a condom because either their clients or a manager requested it (Ministry of Health of the Republic of Indonesia 2008a).



IBBS: Integrated Biological-Behavioral Surveillance; SCP: Fast Behavioral Survey (*Survei Cepat Perilaku*)

Figure 1.4 Consistent condom use among key populations at higher risk of HIV infection, 2002-2010

Source: (National AIDS Commission 2010a, : 56)

Overall, there was an increase in consistent condom use among key populations at higher risk of HIV infection from 2002-2007, except among transgender people (*waria*) and MSM (Figure 1.4) (National AIDS Commission 2010a). Inconsistent condom use is one of several high-risk sexual practices among key populations at higher risk of HIV infection that enable them to transmit HIV infection to the general population.

From January to September 2011, 15,589 new HIV cases were reported; more than double the number of cases in 2006 (7,195). Young people aged 15-29 years accounted for 49.5 percent (13,109) of all cumulative AIDS cases in Indonesia from 1987-June 2011 (26,483) (Figure 1.5) (Ministry of Health of the Republic of Indonesia 2011c), meaning that they were infected by HIV around eight to fifteen years ago, when they were children.

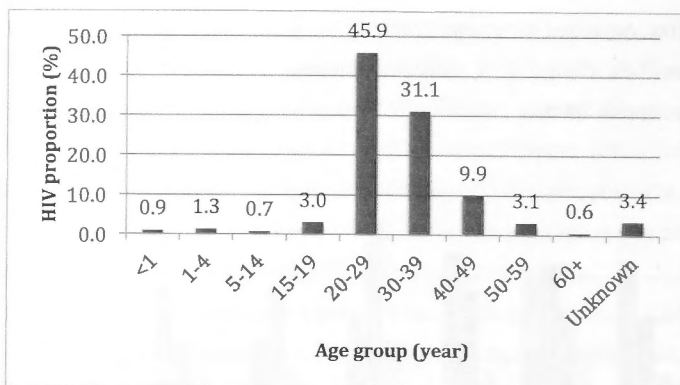


Figure 1.5 Proportion of AIDS cases by age group in Indonesia, 1987-September 2011
 Source: (Ministry of Health of the Republic of Indonesia 2011c, : 2)

In 2011, men constituted 62 percent of all AIDS cases, and HIV transmission was mainly by heterosexual contact (78.8 percent), injecting drug use (9.4 percent), mother to child transmission (3.3 percent) and MSM (2.8 percent). In addition, students or university students were ranked sixth (5.6 percent) of all PLHIV reported from 1987-2011, after entrepreneur or self employed (21.6 percent), non-professional employees (17.2 percent), housewives (16.6 percent), farmers/fishermen (6.9 percent), and unskilled laborers (5.7 percent) (Figure 1.6) (Ministry of Health of the Republic of Indonesia 2011c, 2011b). However, due to under-reporting, mis-diagnosis and delays in reporting, the recorded cases represented only the ‘tip of the iceberg’ (Mboi and Smith 2006; Gordis 2009; Summers, Kates, and Murphy 2002). These figures are likely to be associated with young people’s involvement in high-risk sexual practices (Pisani et al. 2003; Judarwanto 2011; Nugroho 2008b; Setyorakhmadi 2010b; Faridl 2011; Simon and Paxton 2004; Purdy 2006; Situmorang 2003; Utomo 2003). Moreover, only 18.5 percent of Indonesian young people had comprehensive knowledge on HIV and AIDS (National Institute of Health Research and Development 2010b), and there is insufficient number of youth-friendly health services (Lubis 2006).

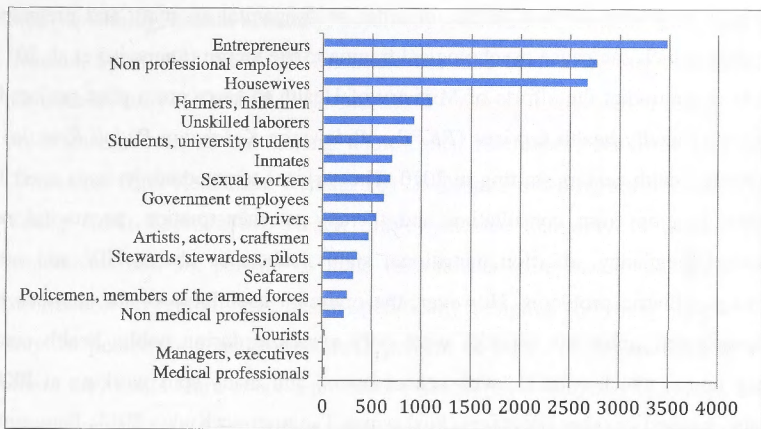


Figure 1.6 Number of AIDS cases by occupation in Indonesia, 1987-September 2011
 Source: (Ministry of Health of the Republic of Indonesia 2011c, : 4)

Regardless of the high rates of high-risk sexual practices, STIs and HIV infection among young people in Indonesia, unmarried Indonesians do not have access to sexual and reproductive health services. This condition is against several international resolutions and declarations supporting reproductive and sexual rights that Indonesia has ratified (Wardhani 2009), including the 1948 Universal Declaration of Human Rights (United Nations General Assembly 1948), the 1979 Convention on the Elimination of All Forms of Discrimination against Women (CEDAW Convention) (United Nations General Assembly 1979), the 1994 International Conference on Population and Development (ICPD) in 1994, the 1995 Beijing Declaration and Platform for Action, the Fourth World Conference on Women, 1995 (United Nations General Assembly 1995), the 2000 Millennium Declaration (United Nations General Assembly 2000), and the 2001 United Nations Special Session on HIV/AIDS (United Nations General Assembly 2001).

Despite the covenants that Indonesia has formally ratified, Indonesia passed the 1996 *Family Health Law and Population and Development Law* subsequently (Lubis 2006) that further replaced by the *Indonesia Law No. 52/2009 on Population and Family Development*. Articles 23 and 29, paragraph two of this latter law explicitly deny any possibility for unmarried sexually active people to obtain family planning services such as condoms and other contraceptive methods. Further, the *Health Law* (Law No. 36/2009), section six, article 75 defines abortion as illegal except for life-

threatening pregnancy, severe genetic disorder or congenital anomaly and pregnancy due to rape, which can cause psychological trauma to the victim (Diarsvitri et al. 2011). These laws contradict the efforts of Ministry of Health to carry out a pilot project for adolescent- friendly health services (*PKPR – Pelayanan Kesehatan Peduli Remaja*) in some public health centers starting in 2010. The services targeted adolescents aged 10-19 years, ranging from consultation and therapy on menstruation, premarital sex, unintended pregnancy, abortion, nutritional status, substance abuse, HIV and other STIs, to psychiatric problems. However, the optimum usefulness of the services has been questioned, since the services were only available during public health center working hours, which coincide with school hours; and many staff working at PKPR have also worked in other programs (Puskesmas Tanjungrejo Kudus 2011; Pemerintah Kota Surakarta 2009; BPPD Kota Blitar 2011; Radar Bogor 2012).

In response to the increase in high-risk sexual practices among young people, in 2001 the National Population and Family Planning Board (*Badan Kependudukan dan Keluarga Berencana Nasional – BKKBN*) pioneered a peer education program through the Center of Information and Counseling on Adolescent Reproductive Health (*Pusat Informasi dan Konseling Kesehatan Reproduksi Remaja – PIK-KRR*), which is currently called the Center for Information and Counseling on Adolescents/University Students (*Pusat Informasi dan Konseling Remaja/Mahasiswa – PIK-R/M*) under the Directorate of Youth and Protection of Reproductive Rights. The program was established in schools, universities, faith-based organizations and youth organizations in all 33 provinces in Indonesia, up to districts and subdistricts. The programs are voluntarily organized by and for adolescents, and are aimed at developing resilient adolescents (*tegar remaja*), young Indonesian who are healthy, having positive behaviors and delaying their age at first marriage until adulthood (BKKBN 2012). The programs deliver four messages: life skills on preparing for family life (*Penyiapan Kehidupan Berkeluarga bagi Remaja – PKBR*), helping adolescents understand themselves, delaying age of first marriage, and preparing for family life. The centers also hold several competitions for adolescents that called Planned Adolescence (*Generasi Berencana – GenRe*). The life skills focus on six topics: physical skills, mental skills, emotional skills, spiritual skills, vocational skills, and adversity skills (Muadz, Fathonah, et al. 2010). The preparing-for-family-life model focuses on the adolescent's problems and preparing for family life based on seven elements – delaying age and

family planning, health, economy, psychology, education, religion, and social elements (Muadz, Syaefuddin, et al. 2010). There has also been a website called 'Indonesian adolescents story' (*Cerita Remaja Indonesia – Ceria*) that provided online information on researches carried out among adolescents, references, activities, and discussion (Direktorat Bina Ketahanan Remaja 2012). Despite the program, the 2007 Indonesia Young Adult Reproductive Health Survey showed that only 11 percent of female respondents and six percent of male respondents were aware of such a source of information on reproductive health specifically designed for young people. Of those, only 10 percent of females and three percent of males cited PIK-KRR as the place where they could learn about reproductive health (BPS-Statistics Indonesia and Macro International 2008). This finding suggested that the coverage and effectiveness of the program should be increased, and the evaluation should not be based only on the number of PIK-KRR in every sub-district, district or province.

The Indonesian education sector response to HIV epidemic was formulated in 1994 in the National Strategic Plan, in which the education sector was identified as the strategic element in prevention of HIV infection. Facilitated by two Ministry of National Education decrees: (i) No. 9/U/1997 on HIV prevention through education that instructed all levels of education to improve knowledge on HIV, to improve awareness of healthy and responsible behavior, and to engage in activities to prevent the disease; (ii) No. 303/U/1997 on guidelines to prevent HIV through education, indicating that HIV prevention should be integrated into relevant subject matter in the curriculum of elementary to secondary education and through extracurricular activities (Irwanto et al. 2010).

The relevant school subjects that include topics on reproductive health education and HIV are Religion, Science and Biology, Social Science, and Sports and Health Education (*PENJASKES*) school textbooks (Lam 2010; Utomo et al. 2010; Utomo, McDonald, and Hull 2011). However, Utomo, McDonald et al. (2010) found that in general the materials did not discuss safe sex practices. In a radio interview conducted by Lam (2010), Hull found the materials presented did not emphasize high-risk behaviors that the students need to avoid and how to protect themselves in various situations. Moreover, from a medical perspective, Utomo and Diarsvitri (: Forthcoming) found much incomplete and inaccurate information in the textbooks that was not based on the scientific literature or was presented in a complex language, and contained

unnecessary detailed information on the therapy and technology. The textbooks strongly encourage abstinence, do not provide information on protective sexual practices such as how to use condom, and do not provide life skill information on negotiating with a sexual partner about safer sexual practices.

Besides being integrated in several relevant school subjects, reproductive health education has been developed as an independent school subject through a pilot project in locally developed curricula (*Muatan Lokal – Mulok*) funded by UNFPA in several districts (*kabupaten*) in West Java, South Sumatra, West Nusa Tenggara, East Nusa Tenggara, and West Kalimantan (Utomo 2010). In Papua, a pilot project on peer education that covers life skills and topics on HIV has been funded by UNICEF and has been introduced since 2006 in 256 public junior high schools. However, the capacity-building activities for the program were not conducted evenly across cities and districts, and not all local government agencies were supportive of the program (Irwanto et al. 2010). As of 2011, mainstreaming HIV and AIDS in elementary to senior high school curricula has been regulated in Papua. A school may choose several strategies for implementation: through locally developed curricula, integrated to related subjects or extracurricular activities. Four regencies that have applied the curriculum are Biak, Timika, Jayawijaya, and Jayapura (ANTARA News 2010a).

Even though much work has been done to provide young people with comprehensive reproductive health education, the Minister of Education expressed his aversion towards sexuality education in schools, arguing that ‘people will learn about sex naturally’ (Balansa 2010).

In sum, despite conflicting values between globalization, cultural conservatism, Islamic fundamentalism, and policy change, today’s young Indonesians are more tolerant toward sexual permissiveness. They tended to exhibit their sexual practices more publicly and more freely, compared to the older generation. Many studies have also found a rising incidence of young people engaged in injecting drug use, in same sex relationships, being involved in the sex industry, having their first sexual intercourse at an early age, having had multiple sexual partners, and having had sex with sexual workers. In contrast, young people’s knowledge of reproductive health as well as HIV and AIDS is limited, means that young Indonesians are naively putting themselves at risk of HIV. Further, the evidence indicates that young people aged 15-29 years accounted for almost 50 percent of all cumulative AIDS cases in Indonesia from

1987-June 2011. The evidence shows an urgent need to provide young people with comprehensive reproductive health education that prepares them to make well-informed decisions related to their health behavior and sexual practices.

1.2 Reproductive health education and risk reduction of HIV infection

In many countries, reproductive health education is a sensitive issue that may generate opposition. This is often fuelled by common concerns about the provision of reproductive health education, including the belief that reproductive health education leads to earlier sexual activity; deprives children of their 'innocence'; is against culture and religion; it is the role of parents and the extended family to educate young people about sexuality; parents will object to reproductive health education being taught in schools; and teachers may be willing to teach reproductive health education but are uncomfortable (UNESCO 2009). Therefore, some appear to believe that it may be more favorable not talking to young people about sexual matters (Smith, Kippax, and Aggleton 2000).

In general, there are two types of reproductive health education: abstinence-only and a comprehensive education program. Indeed, abstinence is an important strategy not only in preventing HIV infection or other STIs, but also in preventing adolescent pregnancies. However, abstinence is often not obviously defined (Goodson et al. 2003; Berer 2006; Dailard 2003), and it is difficult for many young people to abstain from having an intimate relationship (Berer 2006; Råssjö and Darj 2002). Different views also exist about which sexual practices that should be abstained from. A study conducted in the United States found 50 percent of 508 respondents aged 15-17 years considered oral sex was not a sexual activity (The Henry J. Kaiser Family Foundation 2003), while a study conducted by Schuster, Bell et al. (1996) on 2,026 urban students in Year 9-12 in Los Angeles who declared themselves as virgins, found 30 percent of respondents reported having masturbated with a partner, nine percent engaged in heterosexual fellatio with ejaculation, ten percent took part in heterosexual cunnilingus and one percent experienced heterosexual anal intercourse.

Santelli, Ott et al. (2006) found that controversy arose when abstinence was provided to adolescents as a sole choice and where health information on other choices was restricted or misrepresented. Evidence from meta-analysis indicated there was no

scientific evidence that abstinence-only programs demonstrated efficacy in delaying the initiation of sexual intercourse among adolescents in the United States and Canada (Kirby 2002a; Manlove, Romano-Papillo, and Ikramullah 2004; Santelli, Ott, and Lyon 2006; Dailard 2003).

In contrast, a review of 87 studies from around the world: 29 studies from developing countries, 47 from the United States and 11 from other developed countries indicated that comprehensive reproductive health education programs are valuable and have a positive impact on young people's reproductive health by improving preventive behavior and safe sexual practices, thereby reducing the risks of HIV infection, other STIs and unintended pregnancy (UNESCO 2009). Further, the International Conference on Population and Development (ICPD) Program of Action drew attention of countries to the need for promoting the rights of adolescents to reproductive health education, information and care (United Nations Population Information Network 1994).

The Bali commitment to action for HIV prevention education that was declared in the 9th International Congress on AIDS in Asia and the Pacific (ICAAP) in 2009 agreed to intensify efforts to ensure that effective health and reproductive health education was accessible to all young people at school. The reproductive health education should be country-specific, culturally appropriate, respectful of gender equality and informed by evidence regarding effective HIV education programs (9th International Congress on AIDS in Asia and the Pacific 2009).

Cost and cost-effectiveness analyses of school-based reproductive health education programs have been conducted in Nigeria, Kenya, Indonesia, India, Estonia and the Netherlands. The resulting report concluded that intra-curricular reproductive health education programs were cost effective, and schools worldwide should consider providing programs. Conversely, extracurricular or voluntary programs were not found to be cost-effective, though they may be an important stepping-stone toward increasing knowledge (UNESCO 2011; UNAIDS 2011a). The reproductive health education program that was evaluated in Indonesia was DAKU! (*Dunia Remajaku Seru – My Youth Period is Fascinating*). This is a computer-based, extracurricular pilot program that was adapted from Uganda. In 2006, the curriculum was introduced in three senior high schools in Jakarta, as well as in selected schools in Jambi, Lampung and Bali provinces (UNESCO 2011).

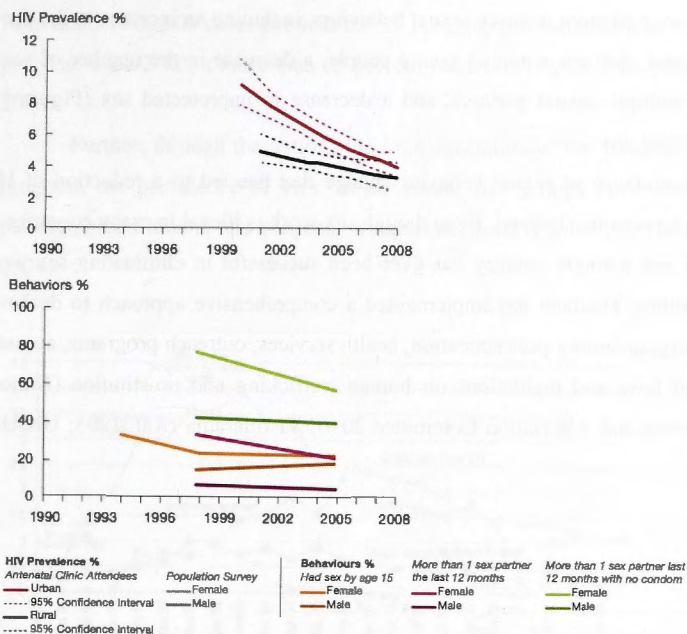


Figure 1.7 HIV prevalence and sexual practices change among young people in Côte d'Ivoire, 1999-2005

Source: (UNAIDS 2010b, : 5)

Evidence of sexual practice changes that have led to a reduction in HIV infection can be seen in some countries in Sub-Saharan Africa. There has been a downward trend of HIV infection among young people in some HIV-high burden countries in Sub-Saharan Africa, and sexual practices change was the most important factor accounting for the decline. The three indicators of behavior change used by UNAIDS are: increased condom use, delayed sexual debut, and reduction in multiple sexual partners (UNAIDS 2010a). Some countries, including Kenya, Nigeria, Uganda, Tanzania, Namibia, Zambia, Côte d'Ivoire, and Zimbabwe have applied school-based reproductive health education programs (Ross, Dick, and Ferguson 2006; Alford et al. 2005; Speizer, Magnani, and Colvin 2003; Zellner 2003; Kim et al. 2001; YouthNet Assessment Team 2004).

In Côte d'Ivoire, for example, there was a statistically significant decline by more than 25 percent of HIV incidence between 2001 and 2009. This progress partly

reflected a change to more positive sexual behaviors, including an increase in the age of sexual debut and abstinence among young people, a decrease in the number of young people with multiple sexual partners, and a decrease in unprotected sex (Figure 1.7) (UNAIDS 2010b).

Other evidence of sexual behavior change that has led to a reduction of HIV infection can be seen in Thailand. Even though sex work is illegal in many countries, so far, however, not a single country has ever been successful in eliminating sex work. Given this failure, Thailand has implemented a comprehensive approach to deal with the sex industry, including peer education, health services, outreach programs, access to condoms, and laws and regulations on human trafficking and prostitution (National AIDS Prevention and Alleviation Committee 2010; Visrutaratna et al. 1995; UNAIDS 1999a).

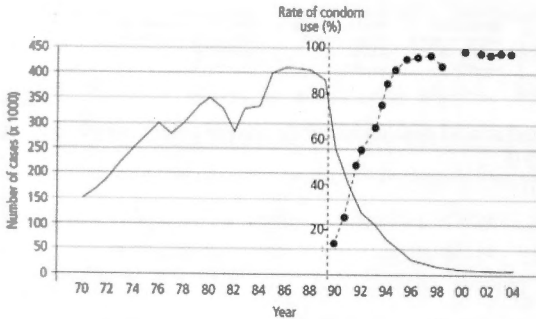


Figure 1.8 Number of STI cases, 1970-2004 and condom use rate in sex establishments in Thailand, 1989-2004

Source: (Rojanapithayakorn 2006, : 43)

A 100-percent condom use is one important option to reduce HIV infection and other STIs. In Thailand the program was started in 1989 based on the main principle of promoting the practice of ‘no condom – no sex’ in all types of sex work. Sanctions for non-cooperative commercial sex establishments ranged from regular warnings to permanent closure or withdrawal of their business permit. Since its inception in 1989, the program has increased condom use in sex work from 14 percent in early 1989 to over 90 percent since 1992 through a nationwide implementation. Increased condom use was followed by a rapid decrease in the annual incidence of STIs at national level,

from almost 400,000 cases per year before the program started to less than 15,000 cases per year since 2000, a more than 95 percent reduction (Figure 1.8) (Rojanapithayakorn 2006).

Further, through the nationwide implementation of the 100-percent condom use program, the prevalence of HIV in all sexual risk groups (sex workers, male STI patients, blood donors and pregnant women) declined (Figure 1.9) (Rojanapithayakorn 2006).

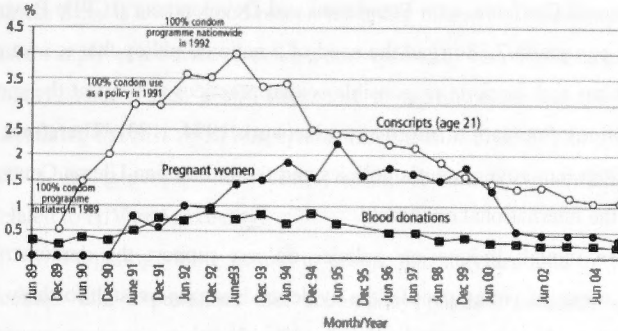


Figure 1.9 HIV prevalence among pregnant women, blood donors and male army conscripts in Thailand, 1989-2003

Source: (Rojanapithayakorn 2006, : 44)

In 2003, the National AIDS Commission of Indonesia called for 100 percent condom use in every commercial sex establishment (Mboi and Smith 2006), however, not all of the provincial government followed the call with subsequent local regulation. While 87.2 percent of the Indonesian population in 2010 was Moslem (BPS-Statistics Indonesia 2011b), the view and formal statement of the Indonesian Ulema Council (*Majelis Ulama Indonesia – MUI*) influence central government and local government policies with Islamic majorities. Central MUI, Pangkalpinang MUI of Bangka-Belitung province and Balikpapan MUI of East Kalimantan province rejected the governments' plan to provide condom booths to commercial sex establishments and an ATM for condoms, as they felt providing condoms would 'facilitate adultery and legalize free sex' (Pemerintah Kota Balikpapan 2006; Yudy 2010). In 2011, Situbondo MUI of East Java province requested drugstores and pharmacies not to sell condoms to students, as they believed providing condoms would increase free sex among students.

Situbondo is regarded as a Moslem city since it has many Islamic boarding schools (Yulianto 2011). However, Tangerang Selatan MUI of Banten province did not reject the local NGOs' plan to provide condom booths in commercial sex establishments, as long as this was followed up with providing education and skills to female sex workers (Permesti 2011). The view and statement of MUI could be interpreted as being either supportive or unsupportive toward health programs. A supportive view and statement from MUI would have a strong effect on a health program to be implemented, whereas an unsupportive view and statement could stop a health program from being carried out.

The International Conference on Population and Development (ICPD) Program of Action (1994) in paragraph 7.38 urged the need of a national policy that is aware of current sexual practices and supports responsible sexual practices to prevent the spread of HIV (United Nations Population Information Network 1994, : 83). Therefore, the hypocrisy of the Indonesian government's policies and the Indonesian Ulema Council's views were against the international covenants.

In sum, even though Indonesian policies do not support the demonstrated reproductive health needs of young people, the evidence is strong enough to show that curriculum-based comprehensive reproductive health education programs are cost-effective and have a positive impact on young people's reproductive health by improving preventive behavior and thereby reducing the risks of unintended pregnancy and STIs including HIV. Results from UNESCO's study, and from Sub-Saharan African countries and Thailand have shown that safer sexual practices are possible to be achieved among students, young people in general and even among a key population at higher risk of HIV infection such as sex workers. In order to implement comprehensive reproductive health education and achieve safer sexual practices, it needs commitment and a supportive environment from the governments, stakeholders, parents, faith-based organization and community combined with health, law and society programs is needed.

1.3 Research questions, objectives of the study, and justification of the study

1.3.1 General research questions

Assumptions

Young people who lack knowledge of reproductive health and who have high-risk sexual practices, such as early age of sexual debut, having multiple sexual partners

and having unprotected sexual intercourse will have an increased risk of acquiring HIV infection (Lloyd 2005; UNAIDS 2010a). However, a comprehensive reproductive health education can change young people's knowledge, attitude and sexual practices towards more positive results, which eventually will reduce the risk of contracting HIV infection (UNAIDS 2010b; Global HIV Prevention Working Group 2008).

Hypothesis

Bland et al. (1994) suggested that two-sided tests should be used in a research unless there is a very good reason for doing otherwise. One-sided tests should never be used simply as a device to make a conventionally non-significant difference significant. In my study I used a two-sided test of significance, and the related hypothesis is: '*Reducing the Risk of HIV Infection: Intervention Trial of Young Papuans*' module will affect young people's knowledge, attitudes, behavior intention and sexual practices related to HIV and sexuality.

Preparing young people to ensure that they are able to deal with the thoughts, feelings and experiences that accompany physical maturity is a great challenge. Although we are sexual human beings from birth, during adolescence, sexual feelings change and intensify (SIECUS 2008; Starts at Home 2011; Singson 2008; Kirby et al. 1994). Children and young people learn from all that they see, hear and experience. As children grow, they may receive conflicting and confusing messages about reproductive health and may be negatively influenced by pornographic movies, peers, and other sources of information (Africa Regional Sexuality Resource Centre 2006; Strasburger, Wilson, and Jordan 2008; Hopper 2011).

There has been a discernible trend of declining mean age at menarche in countries with longer female life expectancies, compared to a decade ago (Thomas et al. 2001), the mean age at menarche ranged from 9.9 years among girls of a 2006 cohort in Denmark (Aksglaede et al. 2009; Sørensen et al. 2010), 12.3 years of 1999-2002 cohort in the United States (Anderson and Must 2005) to 12.8 in Bangladesh (Rah et al. 2009). The gender gap in expressing sexuality is narrowing, with girls reaching sexual being earlier more common than before (Teitler 2002; Wellings 2006); and young women have also been marrying later with increased median age at their first marriage, including in Sub-Saharan Africa (Bongaarts 2006), the United States (National Healthy Marriage Resource Center 2007), Indonesia, Malaysia and Singapore (Jones 2010), and

Australia (Australian Institute of Family Studies 2012), thereby extending the period of time from sexual maturity until the first marriage that leads to premarital sexual activities and sexual permissiveness (Bongaarts 2006; Adair 2007).

Currently, many young people receive inadequate preparation to deal with the thoughts, feelings and experiences that accompany physical maturity, leaving them vulnerable to coercion, abuse, exploitation, unintended pregnancy, unsafe abortion and acquiring HIV and other STI (WHO, UNFPA, and UNICEF 2006; UNFPA 2010). This condition is often exacerbated by the reluctance of parents to talk about important sexual topics before an adolescent's sexual debut. They feel embarrassed, inadequately informed, fear that their children know too much about sex, and are unsure of what to say or how to begin (Schuster et al. 2008; Eastman, Corona, and Schuster 2006; Beckett et al. 2010; Eastman et al. 2005; Jaccard, Dittus, and Gordon 2000; Raffaelli and Green 2003; Chen, Dunne, and Han 2007).

There is an urgent need for equipping Indonesian young people with knowledge and skills to make responsible choices in their lives. This need is driven by speed of the HIV epidemic (Ministry of Health of the Republic of Indonesia 2011c; WHO Regional Office for South-East Asia 2009), an expansion of young people's sexual permissiveness (Bennett 2001; Bennett 2005; Singarimbun 1991; Situmorang 2001; Utomo 1997, 2003; Diarsvitri et al. 2011; Butt, Numbery, and Morin 2002; Hull, Sarwono, and Widiantoro 1993), and the lack of knowledge of reproductive health by young people (BPS-Statistics Indonesia and Macro International 2008; BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007; National Institute of Health Research and Development 2010b, 2007).

A comprehensive reproductive health education program has to provide age-appropriate, culturally relevant and scientifically accurate information on reproductive health. It should provide young people with essential and accurate information on reproductive health, help them form positive attitudes and beliefs about sex, HIV and other STIs, and develop young people's skills so that they feel confident and competent to make responsible choices about their behavior related to reproductive health, HIV and other STIs (UNESCO 2009; Senderowitz and Kirby 2006b; Barth 2004; Kirby et al. 1994). A comprehensive reproductive health education program also helps to meet young people's right to information about reproductive health, their right to have their needs met and to help them enjoy the relationships that they form (WHO 2011d-b;

United Nations General Assembly 1948, 1989, 2001; IPPF 2010). Kofi A. Annan, the secretary-general of the United Nations asked every country to meet young people's rights for information on AIDS, because providing it early could prevent them from acquiring HIV infection (UNICEF, UNAIDS, and WHO 2002, : 9).

In sum, a comprehensive reproductive health education plays a very important role in equipping young people with essential and correct knowledge, positive values and attitudes and positive skills to make responsible choices about healthy sexual practices as prevention from infection of HIV and other STIs, teenage pregnancies, as well as increasing their awareness of their reproductive health rights. This study addresses several research questions relating to young people's sexual practices, a comprehensive reproductive health education program, and the effectiveness of the program.

In regard to young people's sexual practices, the research questions are: What is the general picture of the social norms and sexuality among senior high school students in Papua and West Papua Provinces? What are the determinants of young people's sexual practices? What are their reasons for engaging in their sexual debut? How are their interests in reproductive health topics met at school? The research questions related to a comprehensive reproductive health education program are: What are the theories behind the program? What is the significance of the program that makes it different from other reproductive health education programs? What is the feasibility of the program being applied in a senior high school setting? What is the efficacy of the program and how can this be measured?

1.3.2 Objectives of the study

The overall aim of this study is to evaluate the efficacy of the reproductive health education module that I developed, called '*Reducing the Risk of HIV: Intervention Trial for Young Papuans*', for senior high school students in Papua and West Papua Provinces, Indonesia. This will provide constructive information about how to help plan and mainstream HIV and reproductive health for the senior high school curriculum, to implement a health policy, and to improve sexual and reproductive health counseling, programs and services for young people in Papua and West Papua Provinces. The specific objectives are as follows:

1. To develop a comprehensive reproductive health education module, called '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*'.
2. To explore perspectives held by educators related to social norms on sexuality and reproductive health education
3. To evaluate the efficacy of the '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' module based on the results of pre-test and post-test on senior high school students in different intervention groups.
4. To evaluate the efficacy of the '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' module based on the self-reported sexual practices at pre-test and post-test among senior high school students in different intervention groups.
5. To analyze the determinants of the students' sexual practices.

1.3.3 Young Papuan's high-risk sexual practices and the risk of HIV infection: justification of the research

Papua and West Papua Provinces, the two most eastern provinces in Indonesia, face challenges from the current intersection of culture and social change that contest values held about healthy sexual practices. The population of both provinces consists of indigenous Papuans of Melanesian descent and Indonesian settlers of Malay-Indonesian descent (Butt, Numbery, and Morin 2002b; Summer Institute of Linguistics Inc. 1999). High-risk sexual practices among Papuans were suggested to be derived from the Papuan culture that recognized the practice of polygyny, extra-marital sex, wife-swapping, ritualized homosexuality, having sex and receiving gifts in return, penile modification, having multiple sexual partners and having sex at a young age, despite the normative ideals and cultural sanctions against 'deviant sexuality' (Butt, Numbery, and Morin 2002, 2002b; Djoht et al. 2005; Herdt 1984; Van Baal 1984; Knauff 2003; Oktavian, Diarsvitri, and Utomo 2011).

The high-risk sexual practices are aggravated by factors that increase the vulnerability to HIV infection (Lloyd 2005), including high illiteracy rates among indigenous Papuans, many of whom live in small hamlets in isolated areas (Butt, Numbery, and Morin 2002a). Further, as of 2011, the percentages of poor people in both urban and rural areas of Papua and West Papua Provinces (32 and 31.9 percent, respectively) were the highest among all 33 provinces in Indonesia in 2011, much

higher than the national average at 12.5 percent (BPS-Statistics Indonesia 2011a). As of 2010, Human Development Index (HDI) in Papua Province (64.9) and in West Papua Province (69.2) ranked 33rd and 29th, respectively, of all 33 provinces in Indonesia, which are both lower than the national average of 72.3 (BPS-Statistics Indonesia 2010d).

Sexual permissiveness is becoming more common among the younger generations in both provinces (CHR-UI 2003; Djoht et al. 2005; BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007; Butt and Munro 2007), although some youth prefer to conceal their courting as much as possible as it conflicts with social mores (Butt, Numbery, and Morin 2002; Bennett 2005; Hewat 2008). In a survey among 192 indigenous Papuan males and females aged 16 years old and over in Merauke, Jayawijaya, Jayapura and Sorong, Butt, Numbery, et al. (2002) found that all respondents under 20 years old had had sexual intercourse, with 29 percent of them having had sex by the age of 15. A survey in 2006 found around eight percent of females and four percent of males aged 15-24 years in both provinces had already had sexual intercourse before they reached their fifteenth birthday (BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007).

High-risk sexual practices become a crucial and critical concern in relation to the rapid spread of the HIV epidemic in both provinces. Papua is the first province in Indonesia to show signs that the HIV epidemic has reached general population (Mboi and Smith 2006), and together with West Papua Province, added up to an HIV prevalence of 2.4 percent that can be categorized as a generalized epidemic (more than one percent of the adult population aged 15-49 years are HIV positive). The HIV epidemic in both provinces was disproportionately affecting the indigenous Papuans with prevalence of 2.8 percent among indigenous Papuans compared to 1.5 percent among non-Papuans (BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007).

As of June 2005, Papua's AIDS case rate among individuals aged 15-49 years was 26.7/100,000 populations. This rate was much higher than the national rate at 1.7/100,000 populations (Mboi and Smith 2006). By June 2011, Papua's AIDS case rate was the highest among all 33 provinces in Indonesia, at 180.7/100,000 population, which was 16.3 times higher than the national rate at 11.1/100,000 population. The second highest rate was in West Papua at 51.5/100,000 population, followed by Bali at

48.3/100,000 population, and DKI Jakarta at 42.3/100,000 population (Ministry of Health of the Republic of Indonesia 2011b).

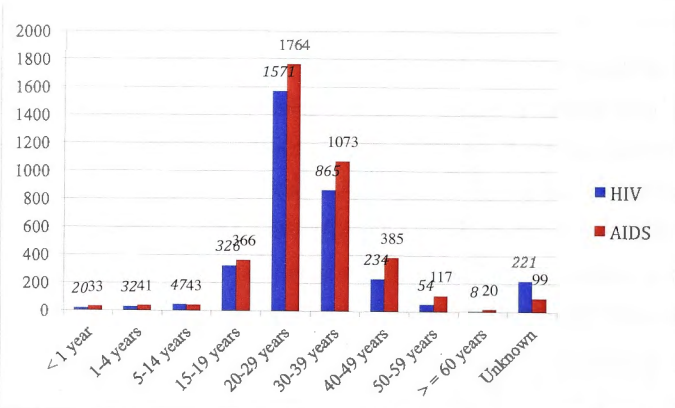


Figure 1.10 Number of HIV and AIDS cases in Papua, until June 2011
Source: (Harahap 2011a)

Up to March 2011, there were 7,319 cumulative AIDS cases in Papua. The difference between the percentages of men and women affected was not as high as the national level. Around 51.4 percent of AIDS cases in Papua were among men and 47.7 percent were among women. As of 2010, people aged 15-29 years made up 29.8 percent of the Papua population (BPS-Statistics Indonesia 2010b), yet they accounted for 55 percent of all AIDS cases in 2011. This figure was higher than the national level of 50.3 percent (Figure 1.10). This figure means that young Papuan had acquired HIV infection eight to 15 years ago when they were children.

Table 1.2. Comparison of AIDS cases between Papua and national data

Cases	Papua	National
Gender breakdown for cases reported up to March 2011	Men: 51.4% Women: 47.7%	Men: 72.9% Women: 26.8%
Age breakdown for AIDS cases reported up to June 2011	15 – 29 years : 54.0% ≥30 years: 43.0%	15 – 29 years: 49.5% ≥30 years: 47.5%
Main mode of transmission up to March 2011	Heterosexual contact = 95.5%	Heterosexual contact = 53.1%
AIDS case rate among people aged 15-49 years as of June 2005	26.7/100,000 population	1.7/100,000 population
AIDS case rate among people aged 15-49 years as of June 2011	180.7/100,000 population	11.1/100,000 population

Source: (Ministry of Health of the Republic of Indonesia 2011b, :6; Mboi and Smith 2006, :98; Ministry of Health of the Republic of Indonesia 2011a, :7-8)

Furthermore, 95.5 percent of the cumulative cases in Papua (compared to 53.1 percent of cumulative AIDS cases in Indonesia up to March 2011) were transmitted through heterosexual contacts (Table 1.2) (Harahap 2011a; Ministry of Health of the Republic of Indonesia 2011a).

Having sex among unmarried young Papuans was becoming more usual and acceptable. Boyfriends and girlfriends were considered to be the most usual sex partners, but some young people reported having sex with sexual workers. The illustration of having unprotected sex, the lack of knowledge of reproductive health, misconceptions about sexuality, and the lack of awareness on treatment-seeking behavior is drawn from the in-depth interviews I conducted among several senior high school students in both Papua and West Papua Provinces. Yan, a student at a private senior high school in Jayapura city, Papua Province, stated:

I have some male friends with genital ulcers. They are about twenty years old now, but they began to have sexual activity before they were 16 years old. They have sex with sexual workers many times, but they regretted after they suffered from the disease. They tried to seek treatment, but they were ashamed to go to the doctor (Interview with Yan, 17 years old, male, Makassar ethnicity, a student at a private senior high school in Jayapura city, Papua Province, 23 February 2009).

Yan has spent almost five years, Year 7 to Year 11, in the same school. He admitted that some of his classmates and seniors have had sex with sexual workers beside their girlfriends or boyfriends. Yan have reminded them about the negative consequences of having sex with sexual workers, especially because they did not use a condom, but their expectation of sexual enjoyment seemed to outweigh the risk. They also asked Yan to visit sexual workers, but Yan did not want to cheat his girlfriend. They viewed having sex with sexual workers as a pure physical relationship to fulfill their biological need, without emotional bonding. When they developed the symptoms of STIs, including pain when urinating and genital ulcers, they were ashamed to go to the doctor. They chose to buy over-the-counter medicine, which took them several weeks to relieve the symptoms.

Eva, a student in a vocational school in Sorong, West Papua Province, stated:

I want to ask you whether there is a pill to induce abortion? Can females get pregnant if a male ejaculates his sperm outside (the vagina)? My boyfriend always ejaculates his sperm outside when we have sexual intercourse

(Interview with Eva, 18 years old, female, Moi tribe, a student at a vocational school in Sorong, West Papua Province, 2 March 2009).

Eva has been dating for almost two years. She admitted that it is common to have sex, which is called *baku naik* in Papuan Malay language, after three months of dating. Eva was aware of the use of condom as a preventive measure of pregnancy.

Yan and Eva's cases illustrate the sexual permissiveness, STI, reluctance to visit a medical professional, attempt to have a self-abortion, fear of getting pregnant, and enthusiasm to know how pregnancy occurs among senior high school students in Papua and West Papua Provinces.

Some views about cultural beliefs and taboo surrounding HIV and AIDS, and the influence of the media on young people's practices are explored in the in-depth interviews I conducted with a medical doctor and a teacher, below. Merry, a medical doctor in Sorong, West Papua Province, stated:

Every day I work in the internal medicine department at Sele be Solu hospital. We don't have many elderly patients. Around 70 percent of our AIDS patients are young Papuans who usually come in the third stage of AIDS with oral candidiasis, wasting, and lung tuberculosis. Many people here think that AIDS is a taboo disease. They are sick but they don't want to go to the hospital. They have believed that AIDS is caused by an act of witchery. Therefore, they seek treatment at the hospital in the terminal stage after they have tried to get help from various traditional healers (Interview with Merry, 33 years old, female, Ayamaru tribe, a medical doctor at Sele be Solu hospital in Sorong, West Papua Province, 18 May 2009).

Merry has worked for seven years at Sele be Solu Hospital. The interview with Merry revealed that AIDS is as much about social phenomena as it is about biological and medical concerns. Ignorance, lack of knowledge, fear, AIDS-related myths, and denial often result in tragic consequences of late diagnosis and treatment, and making it hard for HIV prevention to take place.

Merry also stated that the number of patient visits to VCT clinic at Sele be Solu Hospital was very low compared to patient visits in other clinics, even though the hospital provides antiretroviral therapy. Most patients at the VCT clinic were inpatients who stayed at the hospital and referred to the clinic due to severe tuberculosis, malaria, pneumonia or chronic diarrhea.

The interview with Merry also disclosed that young Papuans in Sorong believe in an AIDS-related myth, and that a traditional healer was the first choice for obtaining

treatment. Therefore, many HIV-infected people visited hospital in an advanced stage of AIDS.

Frans, a teacher at a government senior high school in Manokwari, West Papua Province, said:

I have taught sport and health education for Year 11 students in this school for five years. The teachers here had never had HIV and AIDS education training, but around ten students from our school had a chance to participate in AIDS awareness training. Teenagers now are more permissive. Some of them had already had sexual activity and some female students had experienced pregnancy. Usually we call their parents to let them know about their children's behaviors. Sometimes parents think their children go to school to study, but they went to other place to meet their boyfriend/girlfriend and waited until the school hour is over, and then went home. I think many factors influence students' behaviors, but the dominant factor is the media and peer pressure. Many students confessed that they have watched pornographic movies. They also want to follow their friends who have already had more experiences in sexuality (Interview with Frans, 37 years old, male, Biak tribe, a teacher at a government senior high school in Manokwari, West Papua Province, 8 April 2009).

Frans' statement suggested that sexual permissiveness and pregnancy were not rare among senior high school students in Manokwari, West Papua Province.

Regardless of the high-risk sexual practices among young people in Papua and West Papua Provinces, their comprehensive knowledge of HIV and AIDS and condom use was low. A 2006 study among respondents aged 15-49 years (N=6,223) was carried out in Papua and West Papua Provinces. The surveillance revealed that 48.2 percent of respondents were unaware of HIV and AIDS, 58.6 percent did not know the cause of AIDS, and 64.6 percent did not know that using a condom could prevent HIV transmission. Further, around 26 percent of respondents reported that television and radio were their main sources of information about HIV and AIDS. The 2006 surveillance indicated that 81.9 percent of male respondents and 82.6 percent of female respondents had ever had sexual intercourse. However, only 2.8 percent of those who had ever had sexual intercourse had used a condom at last sexual intercourse (BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007).

Current provision for equipping young Indonesians with a comprehensive knowledge of reproductive health is inadequate. The existing reproductive health materials in the primary to senior high school textbooks do not provide materials on safer sex practices (Utomo et al. 2010; Utomo, McDonald, Hull, et al. 2011). The

textbooks do not emphasize high-risk behaviors that the students need to avoid and how to protect themselves in various situations (Lam 2010). Moreover, the science and sport and health education (*Penjaskes*) textbooks contain inaccurate information on STIs. The materials do not foster sexual and reproductive rights that young people, especially females, have to understand. Further, information on safer sexual practices such as how to use condoms is not available. Skills for negotiating with a sexual partner on abstaining and safer sexual practices are also not available (Utomo and Diarsvitri: Forthcoming).

UNESCO (2011) intra-curricular reproductive health education programs show potential cost effectiveness and cost saving and have a positive impact on young people's reproductive health by improving preventive behavior. Results from UNESCO's study (UNESCO 2009) in Sub-Saharan African countries (UNAIDS 2010b) and Thailand (Rojanapithayakorn 2006) have shown that safer sexual practices are possible to be achieved among students, young people in general and even among key populations at higher risk of HIV infection such as sex workers.

Further, UNESCO (2009) concluded that high-risk sexual practices are the major contributor to the HIV burden among young people. Therefore, the provision of school-based comprehensive reproductive health education is a key strategy to achieve the Millennium Development Goal. School-based reproductive health education can promote gender equality and empowerment of women, reducing maternal mortality and achieving universal access to reproductive health, and combating HIV infection and AIDS (UNESCO 2009).

There have been numerous studies on AIDS education, using surveys, quasi experimental and intervention trial design, targeting primary and secondary school students in developed countries. However, few studies using an intervention trial design have been carried out in developing countries (UNESCO 2009). There have also been various studies of young Indonesians focusing on premarital sexual activity, STIs, education, and fertility (Bennett 2001; Bennett 2005; Singarimbun 1991; Situmorang 2001; Utomo 1997, 2003; Diarsvitri et al. 2011; Butt, Numbery, and Morin 2002; ILO 1998; Pisani 2008; Hull, Sarwono, and Widyantoro 1993; Purdy 2006; CHR-UI 2003; BPS-Statistics Indonesia and Macro International 2008; Pisani et al. 2003). However, studies of young Papuans are limited, and this research is the first cluster-randomized trial of senior high school students carried out in Indonesia.

As of 2010, the net enrollment ratios for primary, junior high and senior high schools in Indonesia reached 94.8 percent, 67.7 percent and 45.6 percent, respectively. The net enrollment ratios for primary, junior high and senior high schools in Papua and West Papua Provinces were still below the national ratio, but were quite high, reaching 92.3 percent, 50.1 percent and 44.8 percent, respectively, in West Papua Province; and 76.2 percent, 49.6 percent, and 36.1 percent, respectively, in Papua Province (BPS-Statistics Indonesia 2010a). Therefore, a school-based comprehensive reproductive health education program can reach large numbers of children and young people in both Provinces, thus it can make a very important contribution by equipping children and young people with essential knowledge and skills to make responsible choices about healthy behavior related to sexuality, HIV and other STIs.

This thesis is based on the '2009 *Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' study. The main focus of the thesis is to evaluate the efficacy of the comprehensive reproductive health education module that I have adapted from Barth (2004). The adapted module is scientifically accurate and grounded in evidence, rights-based, culturally appropriate, gender responsive, age-specific, participatory and inclusive for senior high school students, and is called the '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' program. The program is intended to fill the gap on the need to address issues surrounding young people's sexuality in Indonesia.

This thesis aims to answer several questions in the hope of reducing the risk of HIV in both Papua and West Papua Provinces: what are the views of students and teachers about sexuality? What have been the students' experiences of sexuality? What factors have an effect on the students' sexual practices? What are their treatment-seeking behaviors? If there is a comprehensive reproductive health education program for students, will it be effective in changing towards more positive knowledge, attitude and sexual practices of the students?

To answer those questions, this thesis explores perspectives related to social norms on sexuality and reproductive health education for young Papuans. The thesis also evaluates the efficacy of the '*Reducing the Risk of HIV: Intervention Trial for Young Papuans*' program based on the results of pre-test and post-test, as well as self-reported sexual practices. Determinants of students' sexual practices were also addressed in this thesis. The answers will be useful for policy makers in designing

programs and dealing with young Papuans' sexual practices, especially in providing youth-friendly consultation and health services. The results will benefit educators to plan and design effective reproductive health curricula which focus on reducing the risk of HIV infection. The mass media can use the results to support safer sexual practices and halt harmful social and cultural norms.

1.4 Conclusion

Many Indonesian people disagreed with introducing a school-based comprehensive reproductive health education for religious, moral, and cultural reasons. However, there is evidence of increasing high-risk sexual practices and HIV infection among young Indonesians, including young Papuans (Ministry of Health of the Republic of Indonesia 2011b). Currently, there is no cure and vaccine for HIV, and young Indonesians, especially young Papuans, lack comprehensive knowledge of reproductive health (BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007). Therefore young people should be equipped with comprehensive knowledge and skills to help them make responsible choices related to their sexual practices. Even when an HIV vaccine and other biomedical prevention become available, safe sexual practices are always critical to halt HIV transmission.

Compared to an abstinence-only program and an extracurricular program, school-based comprehensive reproductive health education programs are cost-effective and have a positive impact on young people's reproductive health by improving preventive behavior and thereby reducing the risks of unintended pregnancy and STIs, including HIV (UNESCO 2009). UNESCO's study of Sub-Saharan African countries and Thailand shows that safer sexual practices are possible to be achieved among students, young people in general and even among key populations at higher risk of HIV infection such as sex workers.

In the context of the HIV epidemic, educators should view sexuality not only within the normative structure related to marriage or family, but also within more permissive circumstances, without relation to love or courtship (Libby and Carlson 1973). Further, the sexuality phenomenon and its numerous emerging problems are influenced by socio-cultural norms and beliefs, illiteracy, the economy, and politics.

Accordingly, risk-behavior change strategies should include a school-based comprehensive reproductive health education program that cover abstinence, safer sex,

effective communication, sexual and reproductive rights, high-risk sexual practices, HIV and other STI. These strategies need commitment and a supportive environment from governments, stakeholders, parents, faith-based organizations and the community that combined with health services, laws on the importance of reproductive health education, and supportive social programs.

Chapter 2

Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans

It is important that policy makers, program managers, and teachers are aware that the evidence indicates that young people's sexual behavior can be modified through education. Failing to provide appropriate and timely information and services for fear of condoning and encouraging sexual activity cannot be supported (Grunseit et al. 1997, : 448).

2.1 Introduction

This chapter discusses the concept of sexuality as the basis for developing a comprehensive reproductive health education. Historical evidence of sexuality in Indonesia with a focus on Papua and West Papua Provinces is also presented in this chapter. The comprehensive reproductive health education program that I have developed and the theoretical framework in which this module is situated is also presented in this chapter.

2.1.1 Sexuality: the concept

Human sexuality is a very complex issue and involves interaction between internal and external factors related to human lives (Bancroft 2009). WHO (2006a, :5) defined sexuality as 'a central aspect of being human throughout life and encompassing sex, gender identities and roles, sexual orientation, eroticism, pleasure, intimacy and reproduction'.

There have been numerous theories of human sexuality, but four major interconnected perspectives have been proposed to explain sexual practices: biological, cognitive, learning perspectives (Molina 1999), and the cultural perspective (Caplan 1987). From the biological perspective, sex hormones (androgens, testosterone, estrogens and progesterin) play an important role in the sexual differentiation of the human reproductive system before birth and in sexual maturation at puberty (Hyde and DeLamater 2006; Anuka 2002). The sex hormones create neural circuits during adolescence, and minimum critical levels of androgens appear necessary for the experience of sexual desire (Regan 1999).

Testosterone is associated with male sexual drive and possibly with aggressive behavior (Strong, Devault, and Sayad 1995; Reinisch, Ziemba-Davis, and Sanders 1991). Estrogens and progesterin, found in higher concentrations within females, regulate the menstrual cycle and are essential for reproduction. However, there have been contradictory findings about the relationship of estrogens and progesterin to female sexual drive and behavior. Heiman, Rupp, et al. (2011) suggested a possible alternative association of estrogen and progesterin to sexual responsiveness in women, whereas some studies found there is no clear association between the two (Molina 1999; Bancroft 1981, 2005). Contrasting studies found a testosterone-dependent component of women's sexuality that is more important for some women than others (Bancroft 2005; Bancroft and Graham 2011).

The cognitive perspective emphasizes how individuals respond to a stimulus depends on how the stimulus or situation is interpreted and evaluated. When an individual evaluates a sexual stimulus as good or positive, sexual arousal may be enhanced. On the other hand, when a stimulus is evaluated negatively, sexual arousal may be diminished (Walen and Roth 1987). Ågmo (2011) showed that general arousal is an important determinant of sexual motivation, and that the implementation of sexual intercourse leads to increased general arousal.

The learning perspective focuses on environmental factors that shape behavior, and emphasizes the importance of rewards and punishment in the learning process, but it also emphasizes the importance of cognitive activity (i.e., anticipation, thoughts, and plans) and learning by observation (McConaghy 1987). Rotter (1954, 1982) and Hovell (1994) suggested that sexual pleasure and expectations about sexual pleasure are the most potent of rewards. Mischel, Ebbsen, et al. (1973) remarked that people can acquire knowledge and skills through observing others, including through certain films or books. Further, young people tend to duplicate behaviors of those they respect and hold as models (McConaghy 1987).

The cultural perspective argues that sexuality is actively shaped by cultural, historical and economic forces (Caplan 1987; Vance 2007). Therefore, sexual practice is different depending upon place, sex, sexual orientation, time, and condition. Sexual practice is different within a stable relationship or a casual encounter. The practice is also different when it is forced or in a mutually agreed relationship (Kippax and Stephenson 2005). Oral-genital contact, for example, might be a part of normal

heterosexual expression in one group but taboo in another. Male homosexuality might be severely punished in one group yet tolerated in another (Vance 2007).

In the context of the HIV epidemic, HIV is always transmitted in the context of an interpersonal relationship. Sexuality is likely to have different meanings for different community segments vulnerable to HIV infection (Kelly and Kalichman 1995). The expression of sexuality occurs within a vast array of relationships, and it is constructed by the development of sexuality from childhood to adolescent (Pierno 2009), and through interaction with culture (Foucault 1990; Goettsch 1989; WHO 2006a), sex, social, economy, politics and education (WHO 2006a).

In general, the manifestation of sexuality can be seen from two different perspectives. The first perspective focuses on sexuality within the conceptual frameworks of the normative structure, marriage and the family. This view creates the term "premarital sex" to indicate sexual practices before marriage, and "premarital sexual permissiveness" to imply liberal attitudes and or practices without reference to the context of interpersonal relationship (Libby and Carlson 1973; Reiss 1967; Aldous 1970; Turner 1970). However, not all premarital sexual practices are marriage-oriented, and this fact creates the second perspective, which emphasizes that sexual manifestation is not necessarily associated with love or courtship, but may involve fun as well as more serious games. This view is introduced by Foote (1954), Bernard (1969), and Sprey (1969). Both views are relevant in the context of the HIV epidemic: engaging in risky sexual relationships is the centre of HIV transmission worldwide.

In sum, sexuality is a very complex issue, but understanding the determinants of sexuality is the basis for developing comprehensive reproductive health education. Young people are sexual beings who have sexual desires. In principle, sexuality is not only determined by biological condition and cognitive activity of the brain, but is also determined by the learning process and constructed by culture, norms, and values. A sexual practice that is regarded as proper in a certain culture and time might be improper for another culture.

In the context of the HIV epidemic, the spread of HIV through sexual relationships is the major mode of HIV transmission worldwide. Related to this context, sexuality is likely to have different meanings for different community segments vulnerable to HIV infection. The manifestation of sexuality can be seen both within the normative structure related to marriage or family, and also within more permissive

circumstances, without love or courtship. The theories and frameworks proposed for sexuality suggest that young people can learn about sexuality, and therefore, imply that young people can learn about healthy behaviour and safe sexual practices from a school-based comprehensive reproductive health education program.

2.2 Sexuality in Indonesia with a focus on Papua and West Papua: the historical evidence of sexual permissiveness and harmful sexual practices

2.2.1 Manifestation of sexuality in Bali, Java, Riau, West Timor and Aceh

The expression and moral standards of sexuality evolve with changes in society (Foucault 1990). The portrayal of sexuality found in some historical literature in Bali, Java, Riau, West Timor, Aceh and Nias, and Papua, was influenced by religion, social and cultural belief. In the nineteenth-century Balinese genre, there was erotic literature including religious manuals (*tutur*) that provided practical skills for sexual fulfillment. In *tutur*, sex and religion are integrated in a particular way. For example, *Indranisastra* (the teaching of Indrani) contains materials on the restoration of virginity and strategies to enhance the virility of a husband; *Rukminittwa* (the doctrines of Rukmini) relates to on sexual prowess in men; and *Angguliprawesa* (sexual intercourse); and *Smarakridalaksana* (the art of love play) (Creese and Bellows 2002).

An ancient Hindu relic at Suku Temple from the time of the Majapahit Empire, in Central Java, that was built in 1437 has many images of sex and genitalia. In Suku temple there is a carved relief depicting a penis poised to penetrate a vagina. There are several *yoni* (divine passage, womb) designed to have *lingga* (penis) inserted into them with a groove for water to flow through. There is also a statue of a man who was grasping his erect penis as if he is masturbating, while penises in Suku temple are decorated with several balls under the tip. However, at Suku sex is portrayed as a tribute to the powers of creation and fertility (Sari 2008).

During the syncretism of Islamic teaching with Hindu and Buddha, in 1806, Ranggalasrasna and others wrote the *Centhini* scripture, a complete encyclopedia of Javanese culture, which consisted of many elements of life, including sexuality (Rahiem 2004; Wahjono 2004; Wieringa 2002; Ranggalasrasna, Paku Buwana V, and Kamajaya 1991). The writing scripture described anal intercourse, lesbianism, group sex and transvestism (Wieringa 2002; Wahjono 2004). It also described the sexuality myths

relating to the best and worst times for sexual intercourse (Rahiem 2004). At that time, polygamy was also a very common practice under Surakarta feudalism. Therefore, the *Candrarini* text, in the first of the twelve volumes, gave instruction about how to maintain a polygamous marriage, as divorce was disgraceful (Wahjono 2004). In addition, a discussion of physiognomy, heterosexual intercourse and sexual hygiene was presented in the *Serat Candraning Wanita* (Book of descriptions of women) that was written in Yogyakarta in the 1930s (Wieringa 2002).

Around the 1870s, Raja Ali Haji from Penyengat island (part of Riau province) compiled a Malay dictionary. He included some words referring to sex, such as *syair tarak* (a poem about abstinence from sex), *candu* (opium), and *adab al-jimak* (the art of sexual intercourse) (van der Putten 2002).

Besides having been documented in the *Centhini* scripture, homosexuality has also been known for a long time in Indonesia. Hurgronje (1906), in the beginning of the twenty century, reported homosexual relationships between some *uleebalang* (commander) in Aceh and teenage males from Nias. In some circumstances homosexuality has been institutionalized in the search for supernatural power, such as the sexual relationship between a *warok* (a spiritually and physically powerful man in Ponorogo, East Java) and a *gemblak* (teenage male). Homosexuality has also been associated with secrecy, for example *basir*, a homosexual intermediary with the spirit world in Dayak Ngaju, Kalimantan. The visualization of homosexuality can also be found in art performances, such as *sadhur* dance from Madura, East Java (Oetomo 1991, 2000; Davis and Whitten 1987).

Same-sex relations were also found among students in some Islamic boarding schools. Zuhri (2006) reported same-sex relations among some male students in several Islamic boarding schools in East Java. The relationships included *ngobu* (having one permanent partner), *ngecer* (having multiple partners), and *nyolo* (having a coercive relationship). Some of the same-sex relationships did not continue after the students finished school. They got married and became heterosexual. Nurish (2010) reported same-sex intimacy among female students in Islamic boarding schools in East Java. Same-sex relationships among women can be interpreted as an act of resistance against Islamic patriarchal power and the strict regulation of women's sexuality (Nurish 2010). Both in Zuhri (2006) and Nurish (2010), the same-sex relations were kept hidden, as the students could be expelled from school if they had been found to have same-sex

relations. In contrast, in 2008, a special Islamic boarding school for gay, transgender, and lesbian students was established in Notoyudan, Yogyakarta. The owner of the boarding school is a transgender person who also has a beauty salon and does bridal make-up (Topix 2010).

High-risk sexual behaviors in relation to culture have also been found in West Timor, East Nusa Tenggara province. During the harvesting season, unmarried and married men of the Atoin Pah Meto and Belu tribes between the ages of 17 and early twenties should undergo a traditional group circumcision, called *sifon* (Lake 1999). The process of circumcision is led by a tribal circumciser called *ahélet*. The ritual process was carried out in the river. The men count out stones (*nain fatu*) as many as the number of women with whom they previously had sexual intercourse, then they take a bath in the river to prevent excessive bleeding. Circumcision is carried out by clamping or cutting the foreskin, using a shared unsterile implement such as a razorblade, or bamboo. The wound is then wrapped with *kom* leaves to prevent bleeding. *Kom* leaves are usually used to preserve corpses in Sumba Island (Lake 1999; Abimanyu 2009).

The men of Atoin Pah Meto and Belu tribes believe that they have to maintain the balance in nature, between hot and cold. Therefore, they have to have unprotected sexual intercourse with some non-virgin women (considered as cold) to break the scab and to cool the wound after they have been circumcised (considered as hot). As it is becoming difficult to find women who are willing to have sexual intercourse, then prostitutes become a choice. The circumcised men must have unprotected sexual intercourse when their circumcision wound has not healed (Lake 1999; Abimanyu 2009)

These practices which are harmful to reproductive health including sharing unsterile equipment for circumcision and having unprotected sex while the wound has not healed, bring the hazard of transmission of STIs. It has been reported that many STIs, such as gonorrhea, syphilis, Chlamydia, genital herpes and leucorrhoea (that are called *hoenke nu'*, *maeke nanu'* or *hoenke napap*) have been experienced by both the men and women involved in the practice. Moreover, those experiencing STIs usually seek treatment from traditional healers, as they do not believe in modern health practices (Budiman and Suryalibrata 2002; Lake 1999; Wiyana and Suryalibrata 2002). It is not easy to end this harmful practice, as the men of Atoin Pah Meto and Belu tribes believe they will become impotent if they do not perform the tradition. Accordingly,

health professionals provide training to tribal circumciser for equipment sterilization. Religious leaders and NGOs also raise awareness of the risks of STIs and have suggested changing the sexual intercourse ritual with for other rituals, including prayer ceremonies (Lake and Hakim 2006).

2.2.2 Manifestation of sexuality in Papua and West Papua Provinces

2.2.2.1 History of Papua and West Papua Provinces

The name Papua is presumed to have come from the Malay language *pua-pua*, meaning crinkly or woolen hair (Stirling 1943). The population of Papua and West Papua, the two most eastern provinces of Indonesia, consist of two different groups. One is the indigenous Papuans of Melanesian descent, and the other is the Indonesian settlers, of Malay-Indonesian descents (Butt, Numbery, and Morin 2002b). The Melanesian peoples of both provinces share similar cultures with indigenous people of Papua New Guinea (Robinson 2010). Some anthropologists at Cenderawasih University identified 44 main indigenous Papuan tribes. Each tribe is a social unit with a different language and culture from the other tribes. Further, each main tribe consists of several sub-groups; thus, in total there are around 177 different groups (Djoht and Mansoben 2002), whereas some studies have identified around 252 to 264 different linguistic groups (Butt, Numbery, and Morin 2002b; Summer Institute of Linguistics Inc. 1999).

Papua and West Papua Provinces are rich in natural resources including timber, *gaharu* (the resinous heartwood from *Aquilaria* trees), crude oil, agricultural products, the world's largest gold reserve, and large reserves of copper (Budiarjo 2010; Mollet 2007; Wing and King 2005). The two provinces together were often called West Papua, as they share the same large island with Papua New Guinea in the eastern part. Both provinces were one territory under Dutch colonization from 1828 to 1961. When Indonesia was granted independence in 1945, the Dutch retained the territory arguing that it should have its own independence separate from Indonesia. In 1962, under the terms of the New York Agreement, the territory moved from Dutch colonial rule to a United Nations mandate. In 1963, the territory was transferred to Indonesia. The United Nations continued its supervisory role until 1969. Between 1963-1969, the Indonesian military intimidated Papuans into voting to join Indonesia (Robinson 2010; Mollet 2007). In 1969, Papua was integrated with Indonesia through a controversial 'Act of Free Choice' (*Pepera*) referendum (Wenda 2011; Yoman 2011).

Under *Indonesia Law No. 45/1999*, the central government established Papua Province and West Papua Province (BPS-Statistics of West Papua Province 2011; Papua Web 2005). The *Indonesia Law No. 21/2001* on *special autonomy* gave Papua Provincial government the mandate to manage their own resources and people (National Commission on Violence against Women 2010). However, there have been many intricate political issues related to expansion and independence in both provinces. Some Papuans urged the establishment of Central Papua Province, South Papua Province, and Southwest Papua Province (Harian Analisa 2012; Metro TV News 2012; Bintang Papua 2011; Rachman 2011; Prasetyo and Ksp 2012). In 2011, representatives of over 200 tribes elected the declared president of the Federal Republic of West Papua. The fights and rallies for Papua independence are continuing until today (BBC 2011; Radio New Zealand International 2012).

Intricate social issues underlie all facets of life within Papua and West Papua Provinces. On one hand, there are highland tribal groups that are nomadic, moving from one forest dwelling to another. They hold complex beliefs about witchcraft, sorcery, sexuality and marriage that were formed until recently without direct influence from Europeans (Butt 2004; Butt, Numbery, and Morin 2002a; Butt 2005; Butt and Munro 2007). On the other hand, the coastal tribes have traded along the northern and southern shores since the 17th century. This means that many coastal tribes have a long experience of migration and inter-marriage with residents of the nearby islands (Butt 2004; Butt, Numbery, and Morin 2002a, 2002).

2.2.2.2 Cultural norms and sanction

In Papua and West Papua Provinces, new norms intersect with pre-existing cultural patterns in relation to sexual values and sexual practices. Dutch colonialism and missionaries promoted new norms of sexual abstinence and monogamy in both provinces. Elders and the Christian churches preached normative ideals regarding courtship, marriage, and conception (Butt, Numbery, and Morin 2002, 2002b; Butt 2005). Premarital sexual activities are discouraged in some tribes. When young females and males are engaged, a party is arranged. After the traditional wedding (*kawin adat*), there is a church wedding (Butt, Numbery, and Morin 2002a).

Some tribes have long-standing values based on their cultural systems of sanction for deviant sexual practices. The sanctions applied to deviant sexual practices

are different for each tribe. The Marind tribe has a more severe sanction compared to the Mandoben, Genyem, and Serui tribes. In the Marind tribe, a husband could kill a wife who had extramarital sex. In contrast, in the Serui tribe, those had extramarital sex should pay a fine. A member of Marind tribe who had premarital sex could be killed, whereas the sanction in Serui tribe could be paying a fine up to Rp 300.000,- (around US\$32.6) (Table 2.1) (Butt, Numbery, and Morin 2002). However, there is an indication of gender discrimination in the sanction system: husbands pay less in sanction, whereas wives are beaten more (Butt, Numbery, and Morin 2002).

Table 2.1. Example of sanctions applied to sexual practices considered deviant

Tribes	Sexual practices considered deviant	Sanctions applied
Marind	Premarital sex	A big fight and may be killed, forced to marry, may be hit by tribal leader and many people, may be hit until dead by tribal police and will not be returned home.
	Extramarital sex	Be killed, tortured with bamboo stick, hit with wood, pay a fine, husband can kill wife
Mandoben	Premarital sex	Be hit, be forced to leave the house, be forced to marry, pay a fine of Rp 500,000, buy gifts to placate relatives
	Extramarital sex	Pay a fine, be killed, suffer people's anger
Genyem	Premarital sex	Pay a fine, be forced to marry
	Extramarital sex	Pay a fine
Serui	Premarital sex	Pay up to Rp 300,000, be forced to marry, be forced to leave
	Extramarital sex	Pay a fine, be forced to leave with nothing

Source: (Butt, Numbery, and Morin 2002, : 22)

2.2.2.3 Harmful sexual practices

2.2.2.3.1 Ritualized homosexuality

Ritualized homosexuality is reported to have been practiced in tribes along the south coastal rim of New Guinea, once described as the 'semen belt' of Melanesia (Knauft 1993, 1999, 1996, 2003; Herdt 1984). The practice of homosexuality has also been found in the entire southern area of Papua, from the international border with Papua New Guinea to Yos Sudarso island, and extending north along the Papua coast in some tribes up to Humboldt bay (Knauft 1993, 1999, 1996, 2003; Herdt 1984). A number of Melanesian tribes share the belief that boys do not become physically mature men as a result of natural processes. It is semen which ensures growth and development (Kelly 1977). If men did not ingest the semen of relatives in a ritual fashion, it was

understood they could not grow up to be men because they were exposed to the harmful effects of 'women's fluids'. The ritual includes oral, anal or masturbatory homosexuality (Butt, Numbery, and Morin 2002). Some indigenous Papuan tribes that have been found practicing the ritualization were Marind-anim, Kimam-Papuans, Awyu, Mapi, Asmat, and Casuarina Coast Asmat (Herdt 1984; Butt, Numbery, and Morin 2002). Homosexual anal intercourse starts when the boys are between the ages of seven and fourteen years. Afterward, the boys live in the men's clubhouse for some six years, avoiding females and regularly engaging in anal intercourse. The mentors or *binahor-evai* are from their maternal uncles (Herdt 1984; Serpenti 1984; Van Baal 1984; Knauft 1999). Eyde (1967) and Schneebaum (1988) (cited in (Knauft 1993) reported homosexual practices between male adolescents who are 'bond friends' in Asmat tribe. The two bond-friends regularly reverse roles in anal intercourse prior to marriage, and discontinue the practice after marriage. However, in some cases, an older man in the pair will choose *aj akap* (a new junior) as a bond-friend until the marriage of the younger partner (Knauft 1993). However, Herdt (1984) suggested that Melanesian homosexuality provided a contrast to Western gay lifestyles in that it was (a) ritualized and authorized rather than open to personal choice, (b) universal rather than a minority practice among young men, (c) transitory to heterosexuality instead of being a long-lasting sexual orientation, and (d) asymmetric between elder and junior males rather than between same-age partners.

2.2.2.3.2 Polygyny

Some indigenous Papuan tribes also practice polygyny. Van Baal (1984) reported that polygyny is rare among the Marind tribe, however Martin (1997) stated that the practice is common among the Sikaritai tribe, and Butt (1998) described the practice as also common among the Dani tribe. Moreover, Stasch (2009) reported on norms of sororal polygyny and fraternal widow inheritance (levirate) among the Korowai tribe. Sororal polygyny is the concurrent marriage of one man to a plurality of sisters, and widow inheritance (levirate) is the serial marriage of one woman to a plurality of brothers. Siregar and Mulyono (2002) reported that sororal polygyny is common among the Moi tribe.

2.2.2.3.3 Partner exchange

Sexual partner exchange has also been known among the Asmat tribe. Warip and Abrar (2001) reported on the *papisj* ceremony, which involved wife-swapping among married couples who are in a close relationship. Asmat's young people have adopted this sexual behavior, swapping their girlfriends or fiancées with their close friends. Djoht (2005) reported on wife-swapping behavior among the Orya tribe. The members of Orya tribe believe that sperm can give strength and happiness to the family, so they try to get the sperm, put it in a container, say a special prayer for the sperm and rub it to the family member's bodies. Butt et al. (2002) reported that several male respondents in their study having had sex and ejaculating the semen into their female partners' mouth. Ingesting semen orally is believed to make a woman strong and prevent her from getting pregnant.

2.2.2.3.4 Sexual relationships in ritual ceremonies

Young Dani people also have opportunities to have a sexual relationship during some ritual ceremonies, such as in funeral ceremonies. On the occasion called *tukar gelang* (bracelet exchange), young males and females dance and sing. The young males then place money or other gifts for young females. If the females like the gift, then they have sexual intercourse in an empty *Honai* (a traditional Papuan house) or in the bush. This practice among the Dani tribe is preceded with dance called *pesek* (Djoht 2005; Djoht et al. 2005; Warwer and Setiadi 2001). It also found among Lani and Makki tribes (Butt, Numbery, and Morin 2002).

Young males and females of the Meybrat (Ayamaru) tribe have the chance to have premarital sexual relationships in a ritual ceremony after a male proposes to a female and gives some gifts to her parents. The females do not have to return the gifts to the males if they do not get married, as the gift is regarded as an exchange for their sexual relationship (Koentjaraningrat and Bachtiar 1963).

Young people can also have sex in a ritual called *bakar batu or barapen* (stone burning) (BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007). The *bakar batu* is a ritual ceremony which is an expression of gratitude for the abundant blessings, marriage, a great guest reception, as a death ceremony, and as a peace celebration (Best Indonesia Islands 2011).

In 2006 a survey was conducted on 6,223 respondents aged 15-49 years in 29 city/regencies in both Papua and West Papua Provinces. The survey revealed that 30.8 percent of male respondents and 56.1 percent of female respondents reported they had had sex at customary festivals (BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007).

2.2.2.3.5 Penile modification practices

Penile modification practice is common among males in Papua (Hull and Budiharsana 2001). Penile modification has been practiced by many indigenous Papuan tribes and Indonesian settlers, and involves a wide range of males' ages, education, occupation, and marital status. The practice is related to the male's belief, perception, and obsession that penis size is a symbol of masculinity. There are some specific penile modifications in Papua that are not found in other cultures, such as the use of dried leech oil and 'wrapping leaves' (Ap 2008; Oktavian, Diarsvitri, and Utomo 2011; Djoht 2005). A mixture of certain leaves such as *Smilax sp*, *Ipomoea pescaprae*, *Pedilatus pringlei*, and *Piper caducibracteum* with coconut oil and applied to the penis is believed to enlarge the penis (Oktavian, Diarsvitri, and Utomo 2011; Oktavian 2011; Ap 2008). Other penile modification methods commonly found among Papuan men are the use of tree sap or silicon injection and a metal or plastic implant to enhance the erect phallus (Oktavian, Diarsvitri, and Utomo 2011; Hull and Budiharsana 2001).

There is a shared belief among Papuan men that women like having sex with men who have a large penis (Djoht 2005). Oktavian, a male medical doctor who has been practicing for 13 years (2011) reported the youngest of his patients was a 14-year-old junior high school student. Several post-penile modification complications that were reported included severe inflammation, infection, penis tissue damage and dysfunction (Oktavian, Diarsvitri, and Utomo 2011; Lim et al. 1986; Im-em and Siriratmongkhon 2002; Oktavian 2011), difficulties using condoms, vaginal painful and lesion (Im-em and Siriratmongkhon 2002; Hull and Budiharsana 2001), and transmission of STI (Wolf and Kerl 1991; Beyrer et al. 2003; Djajakusumah and Meheus 2000; Oktavian, Diarsvitri, and Utomo 2011). Some cases of complications can be treated with antibiotics, but some cases have to be referred to a hospital for surgical repair (Oktavian, Diarsvitri, and Utomo 2011). Men with penile modification are more likely to have unprotected sex (Im-em and Siriratmongkhon 2002; Hull and Budiharsana

2001), have multiple sexual partners (Djoht 2005) and be more susceptible to HIV, other STIs, with increased risk of disease transmission to their sexual partners (Oktavian, Diarsvitri, and Utomo 2011).

UNESCO (2009) recognizes the influence of culture on the sexual practices of young people. Some practices may cause lasting adverse biological and/or psychosocial effects on the individual (Toubia 1995). In its international technical guidance on sexuality education, UNESCO (2009) urged the need to change social norms and harmful practices that are against human rights and increase vulnerability to disease or infirmity

2.2.2.3.6 Secret sex and the sex industry

Butt, Numbery, et al. (2002) reported a trend among young women to be involved in 'secret sex'. They estimated that around 20-25 percent of respondents aged 16-29 years tended to be mobile, drink alcohol, have sex at a young age, have multiple sexual partners and have sex with friends or acquaintances in an opportunistic manner. Djoht (2002) found that some working women, university students, senior high school students and wives in Sorong city were involved in secret sex. Butt, Numbery, et al. (2002) revealed that secret sex among youth is widespread in all regions of Papua province. The practice often implies gifts of money or goods and it seems to signify a transition phase, moving toward more commercialized form of sex.

The sex industry in Papua has been growing since Papua was incorporated into Indonesia in 1969. The transmigration program, military zoning, forestry, and the mining, timber and oil industries, and the state regulation of sex workers have expanded the sex industry (Djoht 2008; Butt, Numbery, and Morin 2002b; UNDP 2005). Some influential indigenous Papuans have argued that HIV-infected Indonesian sexual workers have been intentionally brought in by the Indonesian military as part of a genocidal plot to ethnically cleanse the indigenous Papuans from their resource-rich province (Butt 2008; Wing and King 2005). This argument has been reiterated by Papuans in all sectors of life, from educated urban coastal inhabitants to rural farmers (Butt, Numbery, and Morin 2002b).

In the following paragraphs I argue that the accusations of genocide related to HIV infection from sexual workers are absurd. Two medical staffs who have worked in

Wamena, in Papua Province, confirmed that this opinion exists among indigenous Papuans. A female medical doctor at a hospital in Wamena stated:

The genocidal issue has been very popular among indigenous Papuan of the central mountains (Jayawijaya). I have worked in Wamena since 2010 after I had finished my specialization program in internal medicine. In one year, I had received the same questions related to the issue from four different tribal leaders. They were open to me because I am an indigenous Papuan. In their opinion, the central government intentionally wanted to eliminate the indigenous Papuan through HIV transmission from sexual workers. I myself did not believe on their opinion. The condom use is very low in the mountain and some of them have multiple sexual partners.

I once had a discussion with all tribal leaders in the Baliem valley, Jayawijaya. They told me that the problem made them disappointed in the central government. When I give a mass education program in the mountain or through the radio, I always remind them. I tell them: 'If you believe that the sexual workers are infected by HIV, then you should not buy sex from them. You should have sex with one partner and you should use a condom. Don't buy sex from sexual workers. The sexual workers cannot be blamed. They sell sex. It is the same as we shop in a market. If we don't buy something, then we don't have it. If you don't buy sex, then you don't get the HIV infection. There is not any single sexual worker who forces you to have sex with her. However, you are consciously having sex with sexual workers. Therefore, from now on, stop having sex with sexual workers.'

An anthropologist brought that issue up in one of the ASHM conferences in Canberra. Several medical doctors and nurses from Papua attended that conference, including me. That presentation made the head of health bureau of Papua Province on fire. They set up a press conference in the afternoon after the presentation (Interview with Pauline, 45 years, female, Serui tribe, an internist at a hospital in Wamena, Papua Province, 13 May, 2012).

Pauline received questions related to the genocidal plot from several tribal leaders in Jayawijaya. She did not believe their claims. She argued that indigenous Papuan would not acquire HIV infection if they did not have sex with HIV-infected sexual workers. Therefore, she recommended indigenous Papuan have sex with one sexual partner, avoid having sex with sexual workers and use a condom.

A female nurse at a hospital in Wamena stated:

Yes, it is right that some indigenous Papuans, especially the community leaders believed in the genocidal issue. They thought the central government allowed the virus to spread deliberately. They believe in witchcraft, and they were suspicious of non-Papuans. At first, they were reluctant to get examination and treatment from non-Papuans. They came to the hospital in the late stage of AIDS. However, slowly and finally they realized the importance of getting examinations and treatment (Interview with Veronica, 31 years, female, Dani tribe, a nurse at a hospital in Wamena).

Veronica explained that some community leaders of indigenous Papuans believed in the genocidal accusation. They believe in witchcraft and they were suspicious to have

examinations and treatment from a non-Papuan. However, finally they realized the importance of getting an early examination and treatment.

In my opinion, the indigenous Papuan community leaders expressed their arguments based on the military operations at the time of the integration of the province with Indonesia in 1963 up to the enactment of the special autonomy law in 2001 (Butt 2008; Wing and King 2005; Braithwaite et al. 2010; Brundige et al. 2004). There have been some human rights violations including sexual violations during the military operations (National Commission on Violence against Women 2010; Hadiz et al. 2003). One of the reasons why the central government gave special autonomy to Papua Province was the tragedy of human rights violation, as stated in the People's Consultative Assembly of the Republic of Indonesia's decision No. IV/MPR/1999/IV part G number 2 (National Commission on Violence against Women 2010).

People's mobility is related to the risk of acquiring HIV infection. The coastal tribes of Papuans have traded and have experienced inter-marriage (Butt 2004; Butt, Numbery, and Morin 2002a, 2002; Wing and King 2005). Highland tribal groups were nomadic, moving from one forest dwelling to another (Butt 2004; Butt, Numbery, and Morin 2002a; Butt 2005; Butt and Munro 2007). Many indigenous Papuan men in the highlands area collect *gaharu*, a valuable incense-like substance, and sell it to local traders. Some investigations indicate there are exchanges between *gaharu* and sex services from indirect female sex workers in *bifak* (simple tents) in the *gaharu* forests (Ama 2012b, 2012a; Wing and King 2005).

Modern Papuans are also mobile. Around 46.4 percent of male respondents and 31.7 percent of female respondents in the 2006 survey reported they had had sex when they were travelling out of town/area (BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007). BPS-Statistics Indonesia (2009a, 2009c) reported out-migration of lifetime migration (the number of persons whose area of residence at the census or survey data differs from his area of birth) in Papua increased from 6,449 people in 1971 to 46,882 people in 2005. The out-migration of recent migration (the number of persons whose area of residence at the census or survey date differs from his area of residence five years ago) increased from 16,191 people in 1980 to 33,869 people in 2005. In the globalization era, it seems many Papuans have worked and studied in other provinces (Boveington 2006), even in other countries (Widjojo 2009). Travelling and migration between regions, cities, province and countries open up possibilities for

Papuans to acquire HIV infection when they have unprotected sex with HIV-infected partners.

The high mobility of Papuan men in Jayapura city was studied by Maimunah and Nugroho (2011). Several factors cause Papuan men in the productive age (aged 15-49 years) who are highly mobile (they traveled 3-6 times to other cities and/or provinces in a month) to have sex in the destination city or province. Mobile men are sexually more experience to have fun, buy sex, or have non-permanent sexual partners. However, the mobile men do not always have safer sexual practices. They consume antibiotics, clean their penis before sex, or have a hot shower before sex to prevent HIV infection.

It is necessary to realize that some Papuan men might have sex not only with women, but also with other men. Morin (2008) estimated there were around three hundred *waria* (transvestites) in Papua, and one-third of these were indigenous Papuans from several ethnic groups. *Waria* in Jayapura city and Sorong city argued that they had sex on the basis of mutual attraction. This perspective and desire made them reluctant to use a condom. In this article, it was also revealed that *waria* were mobile.

Nugroho (2008a, 2008b) reported there was a MSM community in Jayapura city. The sexual network in their community was underground, and the level of condom use was low. Some of them were highly mobile and could be categorized in the 3M group (mobile men with money). Some of these mobile men were from outside Jayapura, and they also created a sexual network in their hometown. Many MSM reported having had multiple sexual partners including men and women, and some of them sold sex. Therefore, the unprotected sexual intercourse of MSM contributed to the HIV transmission in Papua.

Despite such high-risk sexual practices and the growing sex trade in Papua, the consistent use of condoms remains low (National AIDS Commission 2009b; Ministry of Health of the Republic of Indonesia 2008a). This was one of the causes of the increasing numbers of HIV cases among women, especially housewives. HIV cases among housewives were higher than among female sex workers in Papua (Candra 2012; Hakim 2012). HIV cases among housewives increased from 19 percent in 2004 to 28 percent in 2007. Among female sex workers, HIV cases were 21 percent in 2004 and 12 percent in 2007 (Karma 2009). The strong patriarchal norm in Papua leads to women having less power to negotiate safer sexual practices with their partners (Candra 2012).

Therefore, Papuans might acquire HIV infection from unprotected sex with their permanent or non-permanent partners that were infected with HIV in Papua or outside Papua.

2.2.2.3.7 Sexual violence, domestic violence, and forced marriage

Indigenous Papuan cultures view husbands as the breadwinners and their wives as their possessions. This view often leads to domestic violence among married Papuan females. There is also a cultural view of an 'uncle's right', in which an uncle has a right to wed a girl without agreement from the girl. This view creates forced marriage, which leads to sexual and domestic violence (Asdhiana 2009). As of 2007, domestic violence, violence in courtship, sexual violence on girls and sexual violence on women reached 27 percent, 13 percent, seven percent, and six percent, respectively, of all violence cases against women in Papua Province. The main perpetrators of sexual violence against women were uncles (49 percent), neighbors (22 percent), brothers (18 percent) and teachers/boyfriends/stepfathers (11 percent) (Koibur 2011). It is suggested that heavy drinking, which is common in Papuan culture, influences domestic and sexual violence (Republika 2011; Desastian 2012; Harthana and Aziz 2012). The violence cases have been found not only among low economic status and low attained education couples, (Republika 2011; Desastian 2012; Harthana and Aziz 2012), but also among educated couples and officials (Lea 2011). The main victims of domestic violence were women and children (Wibisono 2011; Wayap 2011).

The 2006 survey in both Papua and West Papua Provinces revealed that 9.2 percent of respondents who had had sexual intercourse last year reported having had some element of coercive sex. Of 9.2 percent of respondents reporting having had coercive sex, more females (12.4 percent) compared to males (6.2 percent) respondents reported they had been forced to have sex. Of these females, 84.4 percent had been forced to have sex by their permanent partner; 14.9 percent were forced by a non-permanent partner; and 2.1 percent were forced by a group of males. Of the males reported having been forced to have sex, 58.7 percent had been forced by their permanent partner; and 42.0 percent were forced by their non-permanent partner (BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007).

Despite the high level of sexual and domestic violence, many Papuan women are unaware of the elimination of domestic violence based on the *Indonesia Law No.*

23/2004. They are unaware that the violence should be reported and can be resolved through the legal system (Republika 2011; Desastian 2012; Harthana and Aziz 2012). They are also unaware of the help available for violence against women and children, such as hospitals, the women and children service unit (*Unit Pelayanan Perempuan dan Anak - UPPA*) within the police and the integrated service center for women and children (*Pusat Pelayanan Terpadu Perempuan dan Anak – P2TPA*) (Wayap 2011). However, there have been many cases of domestic and sexual violence that cannot be resolved through the legal system, as the couples have not registered their marriage. They only had a traditional or church wedding, but they did not have a legal wedding (Wibisono 2011; Wayap 2011).

In sum, most of the documented sexuality manifestations, as well as the numerous emerging problems related to sexuality, are influenced by socio-cultural norms and beliefs, illiteracy, economy, and politics. The manifestation of sexuality is specific to every culture and regarded as proper or improper, depending on the culture and the particular time period. However, many harmful sexual practices that were culturally appropriate, but bring potential hazard to the transmission of STI, have been reported as continuing.

The population of Papua and West Papua Provinces consist of two distinct groups: the indigenous Papuans of Melanesian descent, and the Indonesian settlers of Malay-Indonesian descent. Both provinces are politically unstable and had intricate social issues within the provinces.

The history and practices of sexuality in both provinces are unique, and may not be found in other parts of Indonesia. Harmful sexual practices in both provinces involve an array of ages, family relationships, tribes, and occupations. High-risk sexual practices among young Papuans are suggested to be derived from the Papuan culture. Even though ideologies of ideal norms often describe women as sexually compliant with tribal values, the evidence challenges this kind of generalization.

2.3 Results from published comprehensive reproductive health education programs

As described in the first chapter, high-risk behavior and sexual practices are the major contributors to the burden of the HIV epidemic among young people worldwide, in Indonesia, and in both Papua and West Papua Provinces (UNAIDS 2010a; Ministry

of Health of the Republic of Indonesia 2011c; Harahap 2011a). Policy makers, program managers and teachers should be aware that young people's high-risk behavior and sexual practices can be modified through education (Grunseit et al. 1997; UNESCO 2009; Global HIV Prevention Working Group 2008). Therefore, comprehensive reproductive health education is urgently needed, since failing to provide appropriate and timely information for young people will only elevate the spread of HIV infection (Grunseit et al. 1997). The Global HIV Prevention Working Group (2007) concluded that comprehensive HIV prevention could halt half of the HIV infections projected to occur by 2015.

In the past, many scientific investigators and government decision makers have been reluctant to implement any developed country-based reproductive health education programs in developing countries which have a different culture, arguing that it is necessary to develop a new, culture-specific intervention program. However, the cluster-randomized trial carried out by Fitzgerald, Stanton, et al. (1999) demonstrated the success of adaptation of developed country-based reproductive health education programs, to developing countries which have different cultural settings. One program that had been implemented among 515 young people aged 15-18 years attending ten secondary schools located in two districts in Namibia was called 'My Future is My Choice'. It was derived from the 'Focus on Kids' curriculum, which had been developed and evaluated among African-American young people aged nine-15 years living in public housing developments in the United States (Galbraith et al. 1996). In the six-month post-intervention follow-up, the program had significantly increased knowledge of AIDS and attitudes toward sexual intercourse, that students could be intimate with their partners without having sex (Fitzgerald et al. 1999).

Martiniuk, O'Connor, et al. (2003) also reported evidence of successful adaptation of a developed country-based comprehensive reproductive health education program to a developing country. They adapted the 'Responsible Sexuality Education Program' that has been successfully applied in Canada by Kassirer and Griffiths (1997) and implemented it in Belize, Central America. They randomized 19 classrooms for a total of 399 students aged 13-19 years. The program showed a significant increase in the knowledge of the intervention group compared to the control group. It was also found that the Cronbach's alpha was 0.70, which fell within the satisfactory range in assessing internal consistency (Bland and Altman 1997).

Senderowitz and Kirby (2006a), UNESCO (2009), and Kirby, Coyle, et al. (2011), who developed guidelines for reproductive health education, emphasized that health professionals, educators, curriculum selection committees and others should design their own or adapt curricula based on the instructional principles in the guidelines. The program should focus on risk and protective factors in order to reach the goal of reducing the risk of HIV infection, other STIs and unintended pregnancy.

In addition, there is a lack of intervention trial studies, targeting young people in developing countries. UNESCO reviewed 87 published studies of comprehensive reproductive health education program consisting of 29 programs that had been implemented in developing countries, 47 programs in the United States, and 11 programs in other developed countries. The studies indicate a positive impact on delayed initiation of sex (37 percent), decreased frequency of sex (31 percent), decreased number of sexual partners (44 percent), increased use of condom (40 percent), increased use of contraception (40 percent), and reduced risk-taking (53 percent). Some small percentages of studies indicate contrary results. Three percent of studies indicated increased frequency of sex, seven percent indicated a decreased use of contraception, and three percent indicated increased sexual risk-taking (UNESCO 2009).

Kirby, Laris, et al. (2007) reviewed 83 published studies, with 18 studies from developing countries, of programs that had been implemented in schools, clinics, and community settings for different age groups. The studies used random assignments and quasi-experimental design. The studies focused on the initiation of sex, frequency of sex, number of sexual partners, condom use, contraceptive use, sexual risk taking, pregnancy rates, and STI rates. Overall, the results indicated that the programs were more likely to have a positive impact on sexual practices than a negative impact. Two-thirds (65 percent) of the studies found a significant positive impact on one or more of these sexual practices, while only seven percent found a significant negative impact. One-third (33 percent) of the programs had positive impacts on two or more sexual practices (Kirby, Laris, and Roller 2007).

Multiple studies have demonstrated that effective comprehensive reproductive health education programs share the same characteristics: (i) The programs focus on, and are designed to achieve a health goal (e.g. HIV infection, STIs, unintended pregnancy). The health goal is achieved by changing a specific risk (e.g. transactional

sex, having multiple sexual partners), and strengthening protective factors (e.g. knowledge, positive values, positive attitudes) that affect specified behaviour and sexual practices (Blum and Mmari 2005; Blum and McGinnis 2006; Senderowitz and Kirby 2006a; Kirby et al. 2011); and (ii) the programs presented a clear message in relation to sexual practices that abstinence is the safest choice. However, if young people engage in sexual activity then they have to use a condom (Kirby, Laris, and Roller 2006; Kirby 2002b; Kirby, Laris, and Roller 2007; Senderowitz and Kirby 2006a; Kirby and Laris 2009; UNESCO 2009; Kirby et al. 2010).

In sum, the findings from numerous studies indicate that a comprehensive reproductive health education program from a developed country can successfully be adapted to a developing country. Overall, there have been positive impacts of comprehensive reproductive health education programs worldwide towards more positive health behavior and safer sexual practices of young people. Effective comprehensive reproductive health education programs share two main characteristics: the programs are designed to achieve a health goal by changing specific risks and strengthening protective factors; and the programs emphasize the clear message that abstinence is the best choice, however, using protection is a must if young people do choose to engage in sexual activity.

2.4 'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans' module

The *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* module has been adapted from the 'Reducing the Risk: Building Skills to prevent Pregnancy, STD and HIV' (Barth 2004).

In a quasi-experimental evaluation, the 'Reducing the Risk: Building Skills to Prevent Pregnancy, STD and HIV' program was implemented among Year 9-12 students in 13 Californian high schools, with 429 students assigned to the treatment group and 329 students as control group. The evaluation of change on knowledge score, sexual beliefs and behavior was carried out at pre-test, six months and 18 months after intervention. Among all students, the program significantly increased their knowledge and parent-child communication about abstinence and contraception. Among students who had not initiated intercourse prior to the intervention, the program significantly reduced the likelihood that they would have intercourse by 18 months later in the

follow-up time. However, the program did not significantly affect the frequency of sexual intercourse or use of birth control among sexually active students. Among students who were not sexually active before the intervention, the program significantly reduced unprotected intercourse, either by delaying the onset of intercourse or by increasing the use of contraceptives (Kirby et al. 1991). The impact of the program was also evaluated for 212 Year 9-12 students in Arkansas. Five classes from five schools (106 students) were in the treatment group and five classes from five other schools (106 students) were in the control group. It was found that the program delayed the initiation of sex among young people who did initiate sex (Hubbard, Giese, and Rainey 1998).

The 'Reducing the Risk: Building Skills to prevent Pregnancy, STD and HIV' module consists of five topics: transitional age, abstinence and safe sex, refusal and delaying tactics, avoiding high risk situations, and communication with parents (Barth 2004). The original program did not include materials that would be very important for Papuan students to be able to protect themselves against HIV and other STIs, as well as unintended pregnancy. Six topics that were not covered in the original program, but are covered in the *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* module include information on some changes during puberty (physical, sexual maturation, cognitive development, emotional development, and social development) and how to deal with the changes; information with pictures on how to use condoms correctly; sexual and reproductive rights; avoiding alcohol and drug use with a focus on Papuan behaviors; sexual myths related to Papuan culture; HIV and other STIs with pictures (the cause, modes of transmission, therapy, complications, and prevention); facts about HIV and AIDS in Papua; available health services and treatment-seeking behavior; and motivation to achieve a better future.

In the schools, however, the available Indonesian primary to senior high school textbooks provides incomplete and inaccurate information on STIs. Some key findings are: the textbooks do not provide information on sexual and reproductive rights. The textbooks strongly encourage abstinence, but do not provide information on protective sexual practices such as how to use condoms; do not provide life skills related to negotiating with a sexual partner on abstaining, despite growing sexual permissiveness among young Indonesians (Utomo and Diarsvitri: Forthcoming).

Some inaccurate information on STIs in Year 7 sport and health education textbooks are that STIs can be prevented by having exercise and healthy diet (Nenggala

2008, :179), STIs induce infection on several organs including digestive tract and liver, and syphilis can be transmitted by a contact with contaminated vomit (Karyadi et al. 2006, :237 and 240). Year 11 sport and health education textbooks give inaccurate information, such as avoiding stress can prevent HIV infection (Mukholid 2007, :78), and the emergence of rash and itch on the skin is symptom of HIV infection (Irwansyah 2008). Inaccurate information that fungi is the cause of gonorrhea and syphilis is found in Year 9 science textbook (Arisworo and Yusa 2008, :23).

Some inaccurate information on violence and sexual crimes in sport and health education textbooks include that the victims of sexual harassment are females and males under 18 years old (Supriyanto 2008a, :63) and students should avoid sexual harassment by choosing a seat by a window when taking a public transportation (Harianja, Riva'i, and Triwiyata 2007, :136). In a textbook, *narkoba* is defined as narcotics, alcohol and dangerous drugs. This textbook provides faulty information that dangerous drugs include contraception pill (Sumarya and Suwarso 2007, :57).

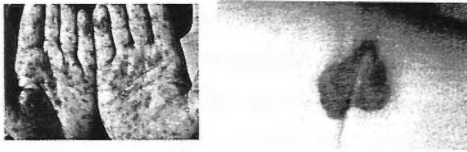


Figure 2.1 Rash on the palm as symptom of syphilis (Irwansyah 2008, :240) and rash on the skin as symptom of HIV infection (Karyadi et al. 2006, :96).

Further, few school textbooks in Indonesia provide photographs of STIs. The photographs do not show the effect of STIs on the genitals. Gonorrhea is pictured as congenital blindness, syphilis is always pictured as having rash on the palm or plantar surface (Irwansyah 2008). AIDS is often depicted as having rash on the skin (Karyadi et al. 2006) (Figure 2.1). STIs are transmitted primarily by sexual contact. The use of photographs showing the effect of STIs on the skin may create misperception that STIs are skin disease, and have very little impact on the change of sexual practices. Further, students who read the non-explicit materials may not perceive threat, susceptibility, and severity, as highlighted in the Health Belief Model (Rosenstock 1966; Rosenstock, Derryberry, and Crriger 1959).

In contrast, the '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' module contains illustrations of female and male reproductive organs,

how to use condoms correctly, and graphic photographs of the genitals of both men and women with sequelae related to STIs that are intended for educational purposes. This is in line with and not against the *Pornography Law No. 44/2008*.

The Centers for Disease Control and Prevention, U.S. (2011e) encouraged the use of graphic photographs of genitals with sequelae related to HIV and other STIs to inform individuals exposed to or at high risk of exposure to HIV and other STIs. They may also be useful to those individuals who work with higher-risk populations in settings such as correctional facilities, STI and HIV prevention and care clinics, substance abuse centers, family planning clinics, schools, and private medical care facilities (CDC 2011e).

In Thailand, the use of explicit materials about the risks of HIV and other STIs showed higher reported condom use, lower reported numbers of sex worker visits and lower infection rates (Rojanapithayakorn 2006). A randomized controlled trial on the use of explicit STI prevention video messages 'Safe in the City' in three public STI clinics in the U.S. (n=38,635 patients) reduced nine percent (95% CI 0.8, 1.0) of new STI infection in the intervention group compared to control group (Warner et al. 2008).

Some photographs with sequelae related to HIV and other STIs were used in the guide on HIV prevention for parents in Papua. The photographs were adopted from flip chart 'Serba-serbi infeksi menular seksual' (Sexually transmitted infections) developed by the National Population and Family Planning Board (BKKBN) (Moeliono 2005). However, a staff at UNICEF Papua informed me that the book was published in limited numbers and only available for several health related institutions, AIDS Commission of Papua Province and several local NGOs (personal communication on March 3, 2009).

Moreover, the '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' module includes topics on the ABCD of HIV prevention. These topics include safe sexual practices (the importance of abstinence) and safer sexual practices (having a monogamous sexual relationship with an uninfected partner, using condoms correctly and consistently, and avoiding using drugs). The ABCD of HIV prevention is included to address the high-risk sexual practices but low condom use among Papuans (Butt, Numbery, and Morin 2002a; Djoht et al. 2005; BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007). The module also provides information on the cause, transmission, test, complication, treatment and prevention of STIs, the available health services and treatment-seeking behavior. The information was provided

to counter the cultural belief that disease is a result of witchcraft (Butt 2004; Butt, Numbery, and Morin 2002), and to respond to misconceptions related to disease transmission (Butt, Numbery, and Morin 2002; Djoht 2005; Djoht et al. 2005; BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007).

Moreover, the module describes the effects of alcohol use and related sexual myths among Papuans (Butt, Numbery, and Morin 2002a; Djoht et al. 2005; BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007). It also presents information on sexual and reproductive rights, as well as stigma and discrimination. The information is provided as there have been cases of domestic and sexual abuse especially among women and children, and because of the low bargaining position of women as opposed to men in a relationship (Wayap 2011; Koibur 2011; Djoht 2004; Hewat 2008; Butt, Numbery, and Morin 2002a). Finally, the module covers how to deal with changes during puberty and motivation to reach a better future, as there have been cases of unintended pregnancies and unsafe abortions among students, as well as stigma and discrimination against HIV-infected people and AIDS patients (Butt, Numbery, and Morin 2002; Butt et al. 2010; Djoht et al. 2005).

The *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* module consists of a handbook for facilitators (medical doctors or school teachers) and a PowerPoint presentation, which is much shorter than the handbook. The PowerPoint presentation is attached in the appendices. The module was delivered through the PowerPoint presentations, dialogues, role-plays, quizzes, games, and discussions. The facilitators should master the handbook before delivering the program.

In the first session of the *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* module, students learn about changes during puberty, risk of unprotected sexual intercourse, sexual myth, pregnancy, the risk of teenage pregnancy, being a teenage parent, and the risk of unsafe abortion. Students also learn that abstinence is the best choice and safer sex is the second option. Dialogue 'Frans and Grace' that describes about asking for a sexual relationship, a game on card exchange about HIV transmission, and discussion and quiz about what have been learned are also part of the first session.

The second session covers four important things for success in a relationship, sexual and reproductive rights, and why many teens fail in their relationship. This session also includes a dialogue 'Frans and Grace' about refusal of having a sexual

relationship, refusal and delaying tactics, and a role play 'Ex Your Girlfriend' about effective communication. Effective communication with partners and parents, discussion and quiz about what have been learned are also part of the second session.

The third session covers avoiding alcohol and drug use and high-risk situation and a quiz on green, yellow, and red code situations. This session also covers about contraception and its function, and how to use condoms and lubricants correctly. The cause, mode of transmission, tests, treatment, complication, and prevention of HIV and other STIs are also discussed in this session. Moreover, stigma and discrimination, sexual myths and facts on HIV and AIDS in Papua, available health services and treatment-seeking behavior, and motivation to achieve a bright future are also covered in the third session.

After a consultation with the Education, Youth and Sport Bureau of Papua Province, I tailored the *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* module to fill the gap found in the related school textbooks for senior high school students and Papuan culture. The *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* module consists of eleven topics that covers protective and risk factors for HIV infection.

The previous study module (Barth 2004; Kirby et al. 1991) consist of five sexually topics, but it each topic has some assignments. The student assignments include:

- (i) Homework, either for each student or small group of students
- (ii) Write role plays, practice role plays, and act out play for small group of students
- (iii) Visit a clinic for small group of students

The three assignments are ideal and create valuable experiences for students. Homework is possible to be applied in Indonesia. However, related to the current condition, the two other assignments are difficult to be applied in Indonesia.

In Barth's module, some topics for the role play include dating, effective communication, refusal and delaying tactic, and condom use. The associated titles for the role play are: your friend's ex-girlfriend, at a party, trying to slow down, presents and flowers, an important discussion, a lunchtime chat, two hours to kill, a small party, time for a condom, and being careful on the couch. It is difficult for students to have

time to write and practice role plays, since they have a lot of other assignments. It is also difficult for teacher to allocate time for reviewing each group of students' play. Further, the school and parents may not support such school activities related to sexuality, which consume a lot of time.

Table 2.2 Comparison between the 'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans' module and 'Reducing the Risk: Building Skills to Prevent Pregnancy, STD and HIV' module

	Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans ^a	Reducing the Risk: Building Skills to Prevent Pregnancy, STD and HIV ^b
Objective	To reduce the risk of HIV infection by increasing knowledge, attitude, behavior intention and safer sexual practices	To avoid unprotected sex either by not having sex or by using contraceptives, and to change students' perception that "everyone is doing it"
Topics	<ol style="list-style-type: none"> 1. Transitional age. Physical, sexual maturation, cognitive, emotional and social development; and how to deal with the changes. 2. Abstinence and safer sex with clear information on how to use female and male condoms and lubricants correctly. The information is accompanied with pictures. 3. Refusal and delaying tactics. 4. Avoiding high-risk situations. 5. Communication with parents. 6. Sexual and reproductive rights. 7. Sexual myths related to Papuan culture. 8. HIV, and other STIs with pictures. 9. Facts of HIV in Papua. 10. Available health services and treatment-seeking behavior. 11. Motivation to achieve a bright future. 	<ol style="list-style-type: none"> 1. Transitional age 2. Abstinence and safe sex. There was not any picture on how to use a condom correctly. 3. Refusal and delaying tactics 4. Avoiding high risk situations 5. Communication with parents
Behavioral theory	Health belief model, social cognitive theory, theory of reasoned action, and stages of change.	Social learning theory, social inoculation theory, and cognitive-behavioral theory
Hours of teaching	Three hours	15 hours
Facilitator	The stage of study is efficacy trial. Therefore, medical doctors delivered the module to the students. In the future it should be delivered by biology or health and sport education teachers	Teacher
Module	Facilitator handbook and PowerPoint presentation	Teacher handbook and student workbook
Research for the module	Cluster randomized trial on 16 senior high schools of 1,082 Year 11 students in Papua and West Papua Provinces, Indonesia	<ol style="list-style-type: none"> 1. Quasi-experimental on 13 high schools of 458 Year 9-12 students in California. 2. Cluster randomized trial on ten classes of 212 Year 9-12 students in Arkansas

Source: ^a *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans' study*
^b (Barth 2004; Kirby et al. 1991)

In addition, it is hard to find a clinic that provides reproductive health services for young people. It is even harder to find a youth friendly clinic. Even though VCT clinic is available in many hospitals, public health centers, and NGO clinics, however, many young people were reluctant to have an HIV or other STI test in a VCT clinic, due to the stigma and discrimination that would result if they were HIV positive. (Purworejo District Government 2011; Suara Merdeka 2011). Further, Articles 23 and 29, paragraph two of the *Indonesia Law No. 52/2009 on Population and Family Development* explicitly deny any possibility for unmarried sexually active people to obtain family planning services such as condoms and other contraceptive methods.

Indeed, the current circumstances are not very supportive for unmarried young people. Nevertheless, in the future it is essential to provide reproductive rights for unmarried young people and develop a positive atmosphere to involvement of parents in reproductive health programs. Parents who are aware of the information that is presented to their children will be more likely to talk to their children about reproductive health and support important messages about HIV, other STIs, and pregnancy prevention (Dilorio et al. 2007).

2.5 Conclusion

In sum, understanding that young people are sexual beings is the basis for developing a comprehensive reproductive health education program for young people. The theories and frameworks of sexuality suggest that young people can learn about sexuality, and therefore, they can learn about healthy behaviour and safe sexual practices from a school-based comprehensive sexuality education program.

In Papua and West Papua Provinces, the history and practices of sexuality are unique, and may not be found in other parts of Indonesia. High-risk sexual practices among young Papuans are suggested to be derived from the Papuan culture. It is important for HIV infection prevention efforts to get a firm grip on actual sexual practices that may be influenced by culture.

Findings from numerous studies indicate that a comprehensive reproductive health education program from a developed country could be successfully adapted to a developing country. Overall, there have been positive impacts of comprehensive reproductive health education programs worldwide, resulting in more positive health

behavior and safer sexual practices of young people. Effective comprehensive reproductive health education should have characteristics: the program is designed to achieve a health goal by changing specific risks and strengthening protective factors; and the program emphasizes a clear message that abstinence is the best choice, however, using protection is a must if young people do choose to engage in sexual activity.

The '*Reducing the risk of HIV infection: Intervention trial for young Papuans*' module consists of a handbook and a PowerPoint presentation that has several advantages. It provides unbiased information about HIV and AIDS and other STIs, risk of unprotected sexual intercourse, revealing the truth about sexual myths related to Papuan cultures, teenage pregnancy, unsafe abortion, sexual and reproductive rights, how to use condoms and lubricants, available health services, motivation to achieve a better future. It provides a framework for decision making and communication about safer sexual practices. It is presented in every-day language that enables facilitators to implement it in schools. It is delivered through interesting methods that enable active participation of the students, such as PowerPoint presentations, dialogue, role-plays, quizzes, games, and discussions. It helps students develop positive feelings about their changes during puberty: physical changes, sexual maturation, cognitive development, emotional development, social development and how to deal with the changes. Therefore, by learning through this program, it is hoped that students will build up a capability to protect themselves from acquiring HIV infection or other STIs, as well as unintended pregnancy in the real world.

The following Chapter 3 discusses conceptual framework, mixed methods research, ethical issues, and research team in this study.

Chapter 3

Methodology

“Would you tell me, please, which way I ought to go from here?”

“That depends a good deal on where you want to get to,” said the cat.

“I don’t much care where—“ said Alice

“Then it doesn’t matter which way you go,” said the cat.

“—so long as I get somewhere,” Alice added as an explanation.

“Oh, you’re sure to do that,” said the cat, “if you only walk long enough.”

(Carroll 1920, : 89-90)

3.1 Introduction

Alice (from ‘Alice’s adventures in Wonderland’) did not know where she wanted to go or how to get there (Carroll 1920, :89-90) which implies a need for an explanation, either graphic or in narrative form, of a map for reaching a goal (Kirby 2004). This situation is analogous to the need for a conceptual framework that explains the main things to be studied, the main concepts and variables, and the presumed relationships among them (Miles and Huberman 1994; Punch 2005). A conceptual framework also includes a conception or model of what we plan to study, what going on with these things and why (Maxwell 2005).

As shown in Chapter 1 and Chapter 2, the emergence of the HIV pandemic among young people requires the effective change of young people’s sexual practices (Johnson 1998). Sexual practices are the route responsible for the vast majority of HIV infection worldwide and changing them is the most difficult challenge (Aggleton et al. 1994). Therefore, a strategy for changing sexual practices should be the highest priority for HIV prevention worldwide (Johnson 1998; Coates, Richter, and Caceres 2008). However, the achievement of the main goal, a reduction in HIV infection, would be more substantial and long lasting when it was combined with policy (Blum and Mmari 2005), social justice and human rights, biomedical strategies and treatment (Coates, Richter, and Caceres 2008).

In Chapter 2, it was argued that the ability to promote safe sexual practices and health behavioral change was dependent on an adequate understanding of human sexuality (Whitaker, Miller, and Clark 2000), as well as individual and social determinants of sexual and reproductive health (WHO 2010). Therefore, achieving

changes in sexual practices might require more than one behavioral theory, since no one theory seems suitable for all cases (National Cancer Institute 2005).

This chapter describes the conceptual framework devised and used to deliver the '*Reducing the risk of HIV infection: Intervention for young Papuans*' module, called '*Reducing the risk of HIV infection logic model*'. The logic model was developed based on four major behavioral theories: the Health Belief Model, Social Cognitive Theory, Theory of Reasoned Action, and Stages of Change Theory.

Ethical issues, methods, and the research team are also outlined in this chapter. Ethical issues deal with research ethics for conducting a study on human subjects. However, in Indonesia, any research must obtain ethical clearance from appointed institution and written approval from central government and local government. This requirement was applied to all provinces, including Papua and West Papua. In my case, I also needed written approval from education bureau and schools.

This chapter also discusses the combination of quantitative and qualitative methods used in the study. The quantitative approach is based on the cluster randomized trial, while the qualitative approach is based on in-depth interviews. The sampling of schools and recruitment, training and the role of my research team are also described in this chapter.

3.2 'Reducing the Risk of HIV Infection' Logic Model

3.2.1 'Reducing the Risk of HIV Infection Logic Model'

I propose a simple conceptual framework for analysis of the education intervention, called the '*Reducing the Risk of HIV Infection Logic Model*', which was developed from the Behavior-Determinant-Intervention (BDI) Logic Model (Figure 3.1) (Kirby 2004), and four major behavioural theories: Health Belief Model (Rosenstock, Strecher, and Becker 1994), Social Cognitive Theories (Bandura 1977), Theory of Reasoned Action (Ajzen and Fishbein 1980), and Stages of Change Theory (Prochaska, DiClemente, and Norcross 1992).

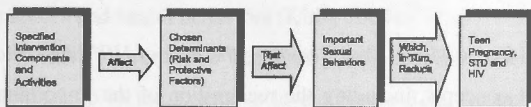


Figure 3.1 BDI Logic Model

Source: (Kirby 2004, :2)

'Reducing the Risk of HIV Infection Logic Model' (Figure 3.2) is a graphic depiction that shows clearly and concisely the causal mechanisms through which specific interventions can affect certain determinants (risk and protective factors) that affect behaviors and sexual practices, which in turn (through maintenance) lead to reducing the risk of HIV infection, and finally achieve a health goal (reducing HIV infection). The specific intervention in this thesis is 'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans', which is a comprehensive reproductive health education program that I have developed. The assumption in this thesis is that the program will change sexual practices, which will reduce the risk of contracting HIV and other STIs, as well as unintended pregnancies.

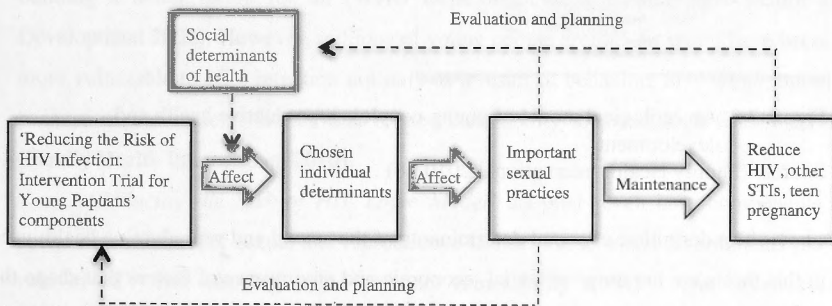


Figure 3.2 Reducing the Risk of HIV Infection Logic Model

Source: The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans

3.2.2 The recognition of social determinants of sexual and reproductive health

Compared to the BDI Logic Model, the '*Reducing the Risk of HIV Logic Model*' incorporates some important concepts, including the recognition of the importance of social determinants of the sexual and reproductive health (WHO 2010). The recognition of the importance of social determinants of health was in line with the *ecological perspective* (Figure 3.3). The perspective emphasizes the interaction between, and interdependence of, physical and sociocultural environments within and across all levels of a health problem. There are two key concepts in this ecological perspective. First, behavior affects and is affected by multiple levels of influence. Second, individual behavior shapes and is shaped by the social environment on intrapersonal, interpersonal and community levels (McLeroy et al. 1988).

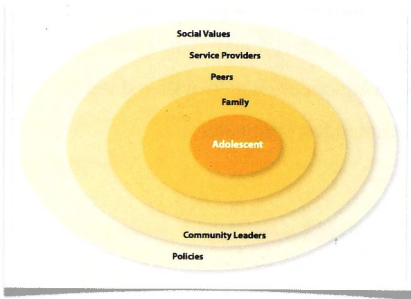


Figure 3.3 An ecological model of young people's reproductive health and development

Source: (Family Health International 2010, :8)

The definition of social determinants of the sexual and reproductive health used in this thesis are the range of social, economic and environmental factors that shape the health of individuals, populations and jurisdictions as a whole (Raphael 2009; CATIE 2010).

In the '*Reducing the Risk of HIV Logic Model*', I place social determinants of sexual and reproductive health outside the individuals' determinants. Social determinants affect the individual determinants. Social determinants of sexual and reproductive health influence sexual practices and health behaviors through individuals'

determinants (Raphael 2009). Individuals are the decision makers of all sexual practices and health behaviors (Kirby 2004).

The reproductive health of young people is affected by many factors, from the personal up to the extensive level (Figure 3.3). At an individual level, young people often lack comprehensive knowledge of HIV and reproductive health, the skills to use their knowledge, and access to the services they need (Bachanas et al. 2002; Santelli et al. 2004; UNESCO 2009; Family Health International 2010).

Broader factors include family and community dynamics, the school environment, the attitudes and behavior of friends, spiritual beliefs, social values and norms, the role of community leaders, and government policy on young people's reproductive health (Blum and Mmari 2005; Juárez et al. 2008; Family Health International 2010; WHO 2010; Santelli et al. 2004; Scholly et al. 2005; Lakshmi, Gupta, and Kumar 2007). Figure 3.3 provides a synthesis of the many factors that have an impact on the reproductive health and development of young people. The more distal factors also affect the more proximal factors of the individual (Blum and Mmari 2005; Family Health International 2010).

Young people are important because they are a demographic force, they are an economic force, they are the future of health, and they have the right to participate in building a better future for all (WHO Dept of Child and Adolescent Health and Development 2002). However, millions of young people around the world have become more vulnerable to HIV infection not only as a result of behaviors they adopt, but also because of the societal factors that reduce their ability to avoid high risk behaviors (Family Health International 2010).

'*Reducing the Risk of HIV Logic Model*' adopted seven core components of social determinants of sexual and reproductive health. These social determinants play a role in HIV risk-inducing behaviors and vulnerability to HIV. The seven social determinants of sexual and reproductive health used in this thesis are socio-economic environment, psychosocial factors, community and societal characteristics, gender and power, cultural factors, health services, and a structural strategy (Ansari et al. 2003; WHO 2010; Spigelman 2002).

The socio-economic environment covers education, employment, social capital, income inequality, and poverty (Ansari et al. 2003; WHO 2010; Spigelman 2002). Psychosocial factors encompass early childhood experiences, including nourishment,

sexual, physical or emotional abuse (Ansari et al. 2003; Spigelman 2002). Community and societal characteristics comprise social support networks, stigma and discrimination (Ansari et al. 2003).

Gender and power are based on the understanding of a woman's commitment to a relationship. A lack of power can influence her risk reduction choices (Spigelman 2002; WHO 2010; Connell 1987). Cultural factors cover ethnicity, sexual practices, and social norms (WHO 2006a; Spigelman 2002). Health services involve access to non-discriminating health services, including health promotion, prevention, treatment (WHO 2010; Spigelman 2002). The structural strategy encompasses policies and programs on sexual and reproductive health and rights (CATIE 2010; Raphael 2009; Cohen, Scribner, and Farley 2000).

Further, WHO (2006a) specifies that sexual rights include 11 aspects: access to sexual and reproductive health care service; seek, receive and impart information related to sexuality; sexuality education; respect for bodily integrity; choose their partner; decide to be sexually active or not; consensual sexual relations; consensual marriage; deciding whether or not, and when, to have children; and pursuing a satisfying, safe and pleasurable sexual life.

The seven social determinants of sexual and reproductive health were assessed in Chapters 1 and 2 and will also be discussed in Chapter 4,5, and 6 of this thesis. Chapter 1 incorporated health services, socio-economic environment, and policy and program on reproductive health. Chapter 2 addressed the cultural factors, psychosocial factor, gender and power. Chapters 4, 5, and 6 embody policy and programs on reproductive health, societal characteristics, health services, and cultural factors.

3.2.3 Four assumptions in the 'Reducing the Risk of HIV Logic Model'

'Reducing the Risk of HIV Logic Model' is based upon four assumptions:

First, sexual practices and health behaviors of individuals or groups largely determine the health goal, the reduction of HIV infection (Kirby 2004; UNAIDS 2010a, 2011c; Schoub 1994). Sexual practices that influence HIV infection are the initiation of sexual relationship, type of sexual practices, frequency of sexual practices, number of sexual partners, correct and consistent use of condoms, and treatment-seeking behaviors. In my study, students reported their sexual practices (self-reported) during the pre-test and post-test.

The individuals or groups in this model are young Papuans. The health goal is reducing the risk of HIV infection among young Papuans. This goal was selected because it is related to the highest HIV prevalence in both Papua and West Papua Provinces compared to other provinces in Indonesia (Ministry of Health of the Republic of Indonesia 2011c). HIV infection reduction will affect risk reduction of other STIs and teen pregnancies. When safe or safer sexual practices and positive health behaviors have been achieved, their sustainability should be maintained to attain the health goal. For this thesis, the model specifically focuses on the most important sexual practices included being abstinent, the number of sexual partners, frequency of use of condoms in the previous month, and the use of condoms in the last sexual intercourse. These sexual practices are likely to have the greatest impact and are most amenable to change or implementation.

Second, individuals' determinants, both risk factors and protective factors, have an impact on the sexual practices and health behaviors (Kirby 2004; UNAIDS 2010a, 2011c) described in the first point 'determinants' are the factors that generally influence behaviors. The chosen individuals' determinants in this thesis are comprehensive knowledge, attitudes and behavior intention. The questionnaire used in my study assessed all individuals' determinants. These included knowledge, attitude, and behavior intention.

Third, individuals have freedom of choice. Therefore, interventions designed to achieve a health goal cannot directly control individuals' sexual practices, but it can affect individuals' determinants (Kirby 2004; Kirby et al. 2010) described in the second point. These individuals' determinants in turn affect important sexual practices, as described in the first point.

Fourth, the influence of intervention on individuals' determinants and subsequently on sexual practices may be explained by four behavioral theories.

The first behavioral theory is the Health Belief Model (Rosenstock 1966; Rosenstock, Derryberry, and Crriger 1959). The Health Belief Model is a framework for motivating people to take positive health actions; it uses the desire to avoid a negative health consequence as the prime motivation. The model is based on the understanding that a person will take a health-related action if that person understands a negative health condition (*perceived threat*). This includes belief in the risk of contracting a negative health condition (*perceived susceptibility*), and the seriousness and

consequences of contracting an illness or of leaving it untreated (*perceived severity*) (Rosenstock 1966; Rosenstock, Derryberry, and Crriger 1959; Rosenstock, Strecher, and Becker 1994).

A person may also take positive health action when that person believes in the efficacy of the advised action to reduce the risk or seriousness of impact (*perceived benefits*), believes in the physical, psychological and financial costs of the advised behavior (*perceived barriers*), believes that he/she can successfully take a recommended action (*self-efficacy*), and has *cues to action*, factors that activate 'readiness to change' (Rosenstock 1966; Rosenstock, Derryberry, and Crriger 1959; Rosenstock, Strecher, and Becker 1994).

Second, the Social Cognitive Theory. This theory evolved from the Social Learning Theory plus the construct of self-efficacy (Bandura 1977, 1986). Social Cognitive Theory asserts that people learn not only from their own experiences, but also by observing the actions of others and recognizing the benefits of those actions. The six key concepts of Social Cognitive Theory that have been applied to reproductive health education are expectations, observational learning (modeling), behavioral capability, self-efficacy, reciprocal determinism, and reinforcements (National Cancer Institute 2005; Bandura 1986, 1989).

Expectations is an individual's beliefs about the anticipated outcomes of a behavior. *Observational learning (modeling)* is behavioral acquisition that occurs by observing the actions and outcomes of others' behavior. *Behavioral capability* includes knowledge and skills needed to influence behavior. *Self-efficacy* is confidence in an individual's ability to take action and overcome barriers. *Reciprocal determinism* is the dynamic interaction of the person, behavior, and the environment in which the behavior is performed. *Reinforcements* is a response to an individual's behavior that increase or decrease the chances of recurrence (National Cancer Institute 2005; Bandura 1986, 1989).

Third, the Theory of Reasoned Action. This theory was first developed in the late 1960s by Fishbein (Fishbein 1967) and revised by Fishbein and Ajzen (Ajzen and Fishbein 1980). The theory explores the relationship between behavior and beliefs, attitudes, and intention. The key concept in this theory is intention. *Intention* is the most important determinant of behavior. Intention is a plan or a likelihood that someone will

behave in a particular way in a specific situation – whether or not they actually do so (Lezin 2009b; UNAIDS 1999b; Ajzen and Fishbein 1980).

Behavior intention is influenced by two factors: a person's attitude and belief. Attitude is a personal evaluation (negative, positive or neutral) toward performing a behavior. Belief is whether individuals who are important to the person approve or disapprove of the behavior (*subjective norm*). Thus, attitudes and norms are the main influences on intention, which, in turn, is the main motivator of behavior (Lezin 2009b; UNAIDS 1999b; Ajzen and Fishbein 1980).

Fourth, the Stages of Change (Transtheoretical) Model. This theory had been developed by Prochaska and DiClemente (1983). The basic premise of this theory states that behavior change is a process, not an event. The five key components included in the model are: precontemplation, contemplation, preparation, action, and maintenance (National Cancer Institute 2005; Prochaska and DiClemente 1983; UNAIDS 1999b; Lezin 2009a).

Precontemplation or 'denial' stage is a phase in which an individual has no intention of taking action. Some individuals at this stage are truly unaware of the consequences of their behavior. Others may be aware of the consequences, but they do not see any relevance to themselves personally. A shorter term for this situation is 'denial' (National Cancer Institute 2005; Prochaska and DiClemente 1983; UNAIDS 1999b; Lezin 2009a).

In the *contemplation* stage, the individual is taking the first incremental steps towards behavior change. He or she has a greater and more accurate understanding of the advantages and disadvantages of changing the behavior. However, he/she is not yet ready to change because the disadvantage seems to outweigh the advantage (National Cancer Institute 2005; Prochaska and DiClemente 1983; UNAIDS 1999b; Lezin 2009a).

In the *preparation* stage, the individual is getting ready to take action relatively soon, for example within a month. This means that he or she has some kind of plan. *Action* is a stage, in which an individual tries to change a behavior. *Maintenance* is a stage in which an individual has changed a behavior firmly and the behavior is thoroughly adopted (National Cancer Institute 2005; Prochaska and DiClemente 1983; UNAIDS 1999b; Lezin 2009a).

The Stages of Change is a circular rather than a linear model. This means that people may enter the change process at any stage, relapse to an earlier stage, and begin

the process once more. They may cycle through this process repeatedly. This is not seen as a failure to change behavior, but as an opportunity to learn from unsuccessful attempts and thus increase the chances of success in the future. The process can truncate at any point (Lezin 2009a; Prochaska and DiClemente 1992).

3.2.4 The results

The results of *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* program can be used by policy makers to design effective HIV intervention programs for young Papuan. Educators can use the results to plan and design effective reproductive health curricula. Mass media programs can also use the results to influence harmful social and cultural norms that affect reproductive health. The results are also useful for evaluating the strengths and weaknesses of the *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* program and improving the program.

In sum, *'Reducing the Risk of HIV Infection Logic Model'* has been developed to promote safe and safer sexual practices. The model shows that specific interventions can affect certain determinants (risk and protective factors) of sexual practices, which in turn achieve the health goal. The model recognizes the importance of social determinants of health and are based upon four assumptions. The sexual practices of individuals largely determine health goal; individuals' determinants, both risk factors and protective factors, have an impact on the sexual practices; intervention designed to achieve the health goal cannot directly control individuals' sexual practices, but it can affect those determinants that in turn affect important sexual practices; the influence of intervention on individuals' determinants and subsequently to sexual practices may be explained by four behavioral theories. These theories are Health Belief Model, Social Cognitive Theories, Theory of Reasoned Action, and Stages of Change.

3.3 Mixed methods research

3.3.1 Mixed methods

As described in Chapter 1, this study is complex. It aims to determine the efficacy of a new intervention to prevent HIV infection. It attempts to analyze the determinants of Papuan students' sexual practices. It also explores perspectives related to the social norms on sexuality and reproductive health education. Therefore, it requires multiple approaches to accomplish the objectives.

In designing HIV intervention studies, Fisher, Foreit, et al. (2002) explain those that test new approaches or solutions. These studies are always prospective and longitudinal and usually employ either an experimental or quasi-experimental research design. When considering respondent's heterogeneity including the effects of chance and bias (Green 2000), Green (2002) and Gray (2006) recommend the use of randomized trials with adequate sample size.

A randomized trial provides the 'gold standard' for obtaining evidence in biomedical and behavioral interventions that exceed observational and quasi-experimental designs (Gray 2006; Auerbach and Smith 2008; Aral, Blanchard, and Lipshutz 2008; Gartlehner et al. 2006; Schulz and Grimes 2002b). A randomized trial can achieve a valid determination of the comparative benefit of competing intervention strategies, whether for prevention, screening, treatment, or management (Green 2002; Auerbach and Smith 2008). Further, the randomized trial has been used in many HIV prevention studies through behavioral change strategies (Global HIV Prevention Working Group 2008; UNESCO 2009; CDC 2001). Accordingly, the randomized trial is the best choice to achieve one of my study objectives. This objective is to evaluate the efficacy of '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' program in changing young peoples' knowledge, attitude, behavior intention and sexual practices. The use of a randomized trial as a quantitative method is further described in the next section of this chapter.

Ulin, Robinson, et al. (2005) suggested the use of qualitative methods to understand underlying behaviors, attitudes, perceptions, and culture. The method can also be used to understand the 'how' and 'why' questions, and to understand the social, political, and economic factors associated with health problems.

Pope, van Royen, et al. (2002) emphasized the importance of qualitative methods for understanding, from the viewpoint of the respondents, how individuals and groups interpret, experience, and make sense of social phenomena. Zea, Reisen, et al. (2003) encouraged the use of qualitative methods to understand the ways in which people perceive and interpret events in their lives, especially in research on marginal groups. Paterniti (2004) suggested the use of qualitative methods to provide an open-ended, in-depth exploration of a particular aspect of life and to gain an in-depth understanding of the nature of social settings and behaviors from the 'native' standpoint.

Pope and Mays (2006) also underpinned the use of qualitative methods for interpreting social phenomena in terms of the meanings people bring to them. This method was appropriate to study people in their natural settings rather than in artificial or experimental ones. Therefore, qualitative methods are the best answer to achieve one of my study's objectives, which is a sensitive issue. The objective is to explore perspectives related to social norms on sexuality and reproductive health education, as well as to understand young Papuans' sexual practices. The use of qualitative methods is further described in the next section of this chapter.

The notion of 'qualitative' refers to the essence and ambience of things and the notion of 'quantitative' refers to their amounts (Berg 2007, :3). Some researchers argue there is no qualitative research that precludes quantitative representations (Morrow and Brown 1994). Similarly, research that might seem primarily quantitative never totally ignores essence (Adler and Clark 2008). Quantitative and qualitative methods can be complementary, used in sequence or in tandem (Sofaer 1999).

However, other researchers, including Creswell and Clark (2007), Tashakkori and Teddlie (2003, 1998) and Johnson, Onwuegbuzie et al (2007) view the use of a combination between quantitative and qualitative methods as a distinct approach to research. Therefore it has a different definition, philosophy, methods, methodology, purpose, and research design (Creswell and Clark 2011; Bryman 2006). The approach has been called 'hybrids' (Ragin, Nagel, and White 2004), 'methodological triangulation' (Morse 1991), 'combined research' (Creswell 1994), and 'mixed methodology' (Tashakkori and Teddlie 1998).

Nowadays the most frequently used term is 'mixed methods research', as it is associated with a published book by Tashakkori and Teddlie (2003). Greene (Greene 2007) provided a definition of mixed methods that conceptualized this form of inquiry as multiple ways of seeing and hearing in the social world. Based on the method and philosophical orientation, Creswell and Clark (2007) refer to mixed methods research as a methodology to collect and analyze data through a mixture of qualitative and quantitative approaches. In mixed methods research, a researcher can collect and analyze both qualitative and quantitative data, mix the two forms of data concurrently, and give priority to one or to both forms of data (Creswell and Clark 2011).

Due to the nature of my study, the use of quantitative and qualitative approaches in combination provides a better understanding of the research problems than either

approach alone. The use of mixed methods research is also the best choice to achieve the objectives of this thesis.

3.3.2 Cluster randomized trial: a quantitative method

3.3.2.1 Reasons for adopting a cluster randomized trial

Interventions assigned using randomized trials may be individually or cluster randomized (Donner, Birkett, and Buck 1981; Wojdyla 2005; Donner and Klar 2000). Cluster randomized trials are experiments in which social units, or clusters of individuals, rather than individuals themselves, are randomized to different intervention groups (Donner and Klar 2000, :9; Donner 1998).

Trials randomizing clusters, sometimes called group randomization trials, have been increasingly used in the evaluation of non-therapeutic interventions, including lifestyle modification (Sherwin 1978; Glasgow et al. 1995), reproductive health education (Ross et al. 2006; Wight and Abraham 2000; Martiniuk, O'Connor, and King 2003; Chen et al. 2009), and innovations in the provision of health related care (Eccles et al. 2002; Howden-Chapman et al. 2007). The social unit or cluster may include classes, schools, housing, clinics, hospitals, communities, families, and villages (Wojdyla 2005; Sommer et al. 1986; Donner 1998).

Whiting-O'Keefe, Henke, et al. (1984) reviewed the statistical methodology of health research experiments published in *Lancet*, *the New England Journal of Medicine*, and *Medical Care* between 1975 and 1980. Twenty out of 28 (71 percent) published studies included in the review contain the error of inappropriately using individuals as the unit of analysis to increase inaccurately the power of an experiment to detect differences between experimental and control groups. Therefore, clusters cannot be assumed to be 'interchangeable' with regard to the experimental endpoint (Whiting-O'Keefe, Henke, and Simborg 1984).

There have been several previous cluster randomized trials on reproductive health education programs conducted in developing countries. Aplasca, Siegel, et al., (1995) conducted research on four public high schools (804 high school students) in Metro Manila, Philippines. Pauw, Ferrie, et al., (1996) conducted research in four neighborhoods (2,160 respondents aged 15-45 years) in Managua, Nicaragua. Klepp, Ndeki, et al., (1997) carried out research in 18 schools (814 Year 6 and 7 students) in Arusha and Kilimanjaro, Tanzania. Fitzgerald, Stanton, et al., (1999) carried out

research on 10 secondary schools (515 students aged 15-18 years) in Namibia. Martiniuk, O'Connor, et al., (2003) carried out a trial on 19 classrooms (513 high school students aged 13-19 years) in Belize, Central America.

'*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' is a school-based comprehensive reproductive health education module that is intended to be tailored to the needs of young people that are not covered in the Indonesian senior high school textbooks. Therefore, the cluster randomized trial was adopted because the module is intended to be delivered to senior high schools. All individuals at the cluster level (school) are affected in a similar manner as a result of sharing exposure to a common environment (Donner and Klar 2000). It is not possible to randomize individuals due to the nature of the study, feasibility consideration and ethical consideration (Wojdyla 2005; Craig et al. 2008b, 2008a; Donner and Klar 2000). Further, my study employs an intervention program that uses mass education, since it is difficult to provide general encouragement concerning behavior or sexual practice change to some people and not to others in the same community (Donner and Klar 2000).

3.3.2.2 Efficacy versus efficiency trials

In Chapter 1, I explained that my study aims to evaluate the efficacy of the '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' module in changing young peoples' knowledge, attitude, behavior intention and their actual sexual practices; and to analyze the determinants of students' sexual practices.

Clinicians often distinguish between the efficacy and the effectiveness of an intervention. Auerbach (2008) defined efficacy and effectiveness as the following:

Efficacy is the capacity to produce a desired effect under ideal research conditions, such as in a controlled trial. Effectiveness is the capacity to produce a desired effect under 'real world' conditions, such as in a given community or population (Auerbach and Smith 2008, :45)

Efficacy trials (explanatory trials) determine whether an intervention produces the expected result under optimum circumstances (Flay 1986; Godwin et al. 2003). Program implementers are usually highly trained professionals, and the conditions are closely monitored to ensure that respondents receive a maximal dose of the intervention (Hallfors et al. 2006).

Effectiveness trials (pragmatic trials), on the other hand, measure the degree of beneficial effect under 'real world' conditions (Flay 1986; Godwin et al. 2003). For example, in school-based effectiveness trials, regular school personnel are recruited as implementers (Hallfors et al. 2006). Efficacy and effectiveness exist on a continuum (Gartlehner et al. 2006).

Randomized trials are necessary for testing of efficacy; and only when an intervention has been shown to cause desirable changes under optimum conditions is it worthwhile to evaluate its effectiveness when delivered in real-world settings (Flay 1986; Hallfors et al. 2006). In 'real life' conditions, implementation variation (Kellam and Langevin 2003), maintenance of intervention over time, and uptake of the intervention by respondents (Rietmeijer and Gandelman 2007) are expected, and measuring the amount and quality of intervention delivered is an essential component in the analysis of impact (Kellam and Langevin 2003; Aral, Blanchard, and Lipshutz 2008).

Even though the *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* module has been adapted from Barth (2004), however, many new topics have been added to the original program, and the intervention has never been evaluated. The intervention has been delivered by nine medical doctors, highly trained professionals, and have not been delivered by school teachers as in the 'real world' settings. Therefore, my study is an efficacy trial.

Further, this study has limited time and funding constraint. This study took almost a year for preparation and fieldwork accomplishment. Medical doctors are easier to participate in my study, since they are my colleagues, and I do not have to go through a complicated research permit. They are also highly trained professionals in reproductive health and they are used to give health education both to the students and patients. Therefore they only need short training to deliver the module. If this study used school teachers to deliver the module, the field work would take longer time to accomplish, since I had to go through a convoluted arrangement.

After the efficacy trial, it is expected that the module can be implemented in a 'real world' setting, in which school teachers or an adult will deliver the module. The policy making decision related to the module implementation is explained in the subchapter 6.2 Policy implication.

3.3.2.3 Study setting and population

There are various definitions of the minimum age to be considered 'adult' in Indonesia, and thus who does not need parental approval to be involved in my study. The minimum age to be considered 'adult' ranges from 16-19 years. According to *Marriage Law No. 1/1974*, someone is considered 'adult' when the person has ever married, whereas article seven describes the minimum age of marriage as 16 years for women and 19 years for men. Based on the *Notary Profession Law No. 30/2004*, a client is considered 'adult' when a person is aged 18 years or older or has been married (Devita 2008). Being an 'adult' also implies that a person aged at least 17 years can apply for a driver's license (Paragraph 81 of *Traffic and Road Transport Law No. 22/2009*), an identity card (Paragraph 63 of *Population Administration Law No. 23/2006*), and an election voter's card (Paragraph 68 of *Local Government Law No. 32/2004*).

My study population was Year 11 senior high school students in Jayapura city and Jayapura district of Papua Province; and Manokwari district and Sorong city of West Papua Province. These cities and districts were chosen based on the highest cumulative cases of HIV and AIDS in the province (Media Center Sorong 2012; TV One 2011) and ease of transportation to the location. The choice of Year 11 students was based on several considerations: Year 11 students are on average aged 17 years, thus they are 'adult'; it was difficult to include Year 12 students, since they had a full schedule and additional courses in preparation for a national exam.



Figure 3.4 Study settings in Papua and West Papua Provinces
Source: (UT Watch 2000)

The distance between Jayapura city (the capital city of Papua Province) and Jayapura district is one-hour drive. Manokwari (the capital city of West Papua Province) can be reached by a one-hour flight from Jayapura. Sorong city can be reached by one-hour flight from Manokwari. The study settings are depicted in Figure 3.4.

Several reproductive health intervention trials randomized classes within the same schools into intervention and control groups (Kassirer and Griffiths 1997; Martiniuk, O'Connor, and King 2003). My study randomized schools to different intervention arms, which has several advantages over class randomization. School randomization can prevent potential weakness from treatment contamination by minimizing the likelihood that respondents in different intervention groups would share information concerning preventive intervention (Donner 1998; WHO European Collaborative Group 1986; Wojdyla 2005). The responses of individuals in an intact cluster, including a school, tend to be more similar than the responses of individuals in different clusters (Donner and Klar 2000; Campbell et al. 2000), as all individuals in a cluster share exposure to a common environment (Bland and Kerry 1997; Rice and Leyland 1996). Further, important covariates at the cluster level affect all individuals within the cluster in the same manner (Donner and Klar 2000).

Table 3.1. List of senior high schools in Jayapura city and Jayapura district of Papua Province, and Manokwari district and Sorong city of West Papua Province

District / city	Type of school	Number of schools
Papua Province		
Jayapura city	Government school	5
	Private school	20
	Vocational school	9
Jayapura district	Government school	2
	Private school	5
	Vocational school	1
Total		42
West Papua Province		
Manokwari district	Government school	4
	Private school	12
	Vocational school	7
Sorong city	Government school	4
	Private school	12
	Vocational school	8
Total		47

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

I obtained a complete list of senior high schools in January 2009 from the heads of education bureaus in Jayapura city, Jayapura district, Manokwari district, and Sorong city, before I started my initial survey. In total there were 93 high schools available in the four cities and regencies, however, four schools were excluded due to their lack of a hall. We need a hall to deliver the module to the students. A list of the schools is presented in Table 3.1.

3.3.2.4 Sample size estimation

Fisher's theory of experimental design assumes, without exception, that the experimental unit which is randomized is the unit of analysis (Fisher 1935 cited in McKinlay, Stone, and Zucker 1989). Problems arise as inferences are frequently intended to apply at the individual level, while randomization is applied at the cluster level (Hopkins 1982).

There is a dependency among individuals in a cluster, which is measured by the 'intracluster (intraclass) correlation coefficient' (ICC), denoted by ρ . Intraclass correlation coefficient quantifies homogeneity or the degree of similarity among responses within a cluster, and may be interpreted as the standard Pearson correlation coefficient between any two responses in the same cluster (Kelder et al. 1993; Campbell et al. 2000; Wojdyla 2005).

The lack of independence among individuals within a cluster in turn leads to a loss of statistical power in comparison with an individual randomization (Campbell et al. 2000), and application of standard statistical methods will tend to bias p-values downward, risking a spurious claim of statistical significance (Wojdyla 2005).

To achieve the equivalent power of an individual randomization, it is necessary to apply a more sophisticated statistical method and therefore, the standard sample size calculation for a complete randomized design needs to be inflated by a factor (design effect) of $1 + (m - 1)\rho$, where m is the average cluster size and ρ is an estimate of the intraclass correlation coefficient (Donner 1998).

Since my study was carried out in two provinces, four regencies and three school types, therefore it was planned to use a stratified design sampling. Donner et al. (2000, :70) stated that for comparison of means, the stratified design can be regarded as a replication of the completely randomized design as implemented separately in each of

S strata. Sample size estimation used in my study is provided by Donner (1998, :102) and Donner and Klar (2000, :57):

$$N = \left[4\sigma^2 \left(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta} \right)^2 (1 + (m-1)\rho) \right] / (\mu_1 - \mu_2)^2$$

- N = total number of clusters (schools) needed
 σ = within cluster variance
 α = the probability of making the wrong decision when the null hypothesis is true = 0.05
 β = the probability of making the wrong decision when the alternate hypothesis is true = 0.20
 $Z_{1-\alpha/2}$ = the standard normal distribution value corresponding to probability of 1- $\alpha/2$ (two-sided test of significance) = 1.96
 $Z_{1-\beta}$ = the standard normal distribution value corresponding to probability of 1- β = 0.84
m = estimated number of individuals in each cluster
 ρ = intra-cluster (intra-class) correlation coefficient
 $\mu_1 - \mu_2$ = minimal important difference (MID) = minimum value of the intervention effect regarded as substantively important to detect.

There has not been any previous study on reproductive health education intervention that used cluster randomized trial in Indonesia. Therefore, I used several values provided by published articles on intervention studies (Murray and Hannan 1990; Murray and Short 1997; Siddiqui et al. 1996; Murray, Rooney, and Hannan 1994; Martiniuk, O'Connor, and King 2003; Martiniuk et al. 2007). Based on their studies, I obtained the value of $\sigma = 4.9$, $\mu_1 - \mu_2 = 1.8$; $\rho = 0.04$. I estimated the number of individuals in each cluster (m) = 60 students. I have considered loss to follow up to be around 10 percent, based on the assumption that the length of the period between pre-test and post-test was two months, so I could minimize loss to follow up since the students were still in the school term, they were still active at school until the end of my study. Considering all the above values and assumption, finally I obtained N = 16 schools, or around 960 Year 11 students.

3.3.2.5 Eligibility and inclusion criteria

The eligibility and inclusion criteria for enrollment in my research at the cluster and individual level were as followings. At the cluster level, a school was eligible if it was registered in the education bureau of Papua or West Papua Provinces. The inclusion

criterion at cluster level was that the school principal voluntarily agreed that his/her school participated in my study by signing a written consent. At the individual level, the eligibility criterion was being in Year 11 and aged 17 years or over during the study period. The inclusion criteria at individual level were voluntarily agreeing to participate in my study and to attending both the pre- and post-test sessions by signing written consent.

To maintain fairness between intervention and control groups in my research, the intervention group received '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' program after the pre-test, while control groups received the program after the post-test.

3.3.2.6 Randomization

As noted by Schulz and Grimes (2002b), anything short of proper randomization risks selection biases and confounding biases. Therefore, the researcher should spurn all systematic, non-random methods of intervention allocation, since the objective of the trial is to compare the outcomes of intervention given to groups of respondents which do not differ in any systematic ways (Altman and Bland 1999b; LaValley 2003). Trial individuals or clusters should be assigned to comparison groups based on a random process. By random allocation, each individual or cluster has an equal chance of getting either intervention (Altman and Bland 1999b).

Three designs have commonly been used in assigning intact clusters to intervention arms: completely randomized, matched pair, and stratified (Donner 1998). Some stratification is usually desirable to prevent imbalance on important prognostic factors (Donner 1998) except on trials which randomize a very large number of clusters (Sommer et al. 1986).

In my study, the stratified randomization based on the province (Papua and West Papua Provinces) and school type (government school, private school, and vocational school) was employed. The 16 schools were randomly chosen using random number generated from the computer (Altman and Bland 1999a).

The stratification was based on the assumption that the type of school and province may act as a surrogate for within-cluster dynamics that might influence knowledge, attitude, and behavior intention of students that were predictive of outcome, or otherwise might be associated with important cluster-level factors (Martiniuk et al.

2007). The stratification might also increase efficiency in that it assured approximately the same number of subjects in each arm of the trials (Donner and Klar 2000, :32; Martiniuk et al. 2007).

All 16 schools were located in an urban area. Of the 16 schools, allocation to intervention or control groups was performed using random number generated from the computer (Altman and Bland 1999a). The list of intervention and control groups is presented in Table 3.2.

Table 3.2 List of schools in the intervention and control groups

No	Type of schools	Address of schools
Intervention group		
Papua Province		
1	Government school	District Jayapura Selatan
2	Vocational school	District Abepura
3	Private school	District Sentani
4	Private school	District Sentani
West Papua Province		
1	Government school	District Manokwari
2	Vocational school	District Manokwari Barat
3	Private school	District Klademak
4	Private school	District Remu
Control group		
Papua Province		
1	Government school	District Jayapura Utara
2	Private school	District Muara Tami
3	Vocational school	District Sentani Timur
West Papua Province		
1	Government school	District Malawey
2	Private school	District Klademak
3	Vocational school	District Maleingkei
4	Private school	District Manokwari
5	Private school	District Panidi

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

I was very fortunate that the majority of schools were located in different districts, a good condition to reduce the possibility of contamination between intervention and control group. The risk of contamination due to interaction of students from different intervention arms who lived close to each other or study together was likely very small, since most schools from different intervention arms were located in different districts. There were two schools located in the same district, Sentani. However, the two schools were in the same intervention group, thus they did not pose any threat of contamination. The possibility of contamination was between two schools located in the same District Klademak, but they were from an intervention and a control group. Contamination between the two schools is a potential weakness, however, the

effect, if any, is likely to be minimal because interaction between these two schools was limited.

The heads of education bureaus of Jayapura city and Jayapura district of Papua Province, and Manokwari district and Sorong city of West Papua Province, had sent official letters related to my research to the 16 schools. The heads of the education bureaus were unaware of the intervention allocation. I had also sent an invitation and information related to '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' program, pre-test, post-test and self-administered questionnaire for Year 11 students to the senior high school principals and teachers. Participation in the program was voluntary. All the school principals and teachers agreed to participate, and they allowed the research team to randomly choose two to three classes of Year 11 from each school to participate in my study.

As mentioned earlier, the number of individuals in each cluster was a minimum of 60 students; therefore I needed around two to three classes of Year 11 from each school to participate in my study. Each general senior high school might have three to four concentrations: physics, biology, social science studies and language. Each vocational senior high school might have two to four concentrations: automotive, electricity, building, and computer; secretary, accountancy, computer, and trading.

Each concentration might consist of several classes, and each class may consist of 20-50 students. The research team wrote each class' name on a sheet of paper, rolled them, and randomly chose two to three classes, depending upon the number of students in a class. All the students in the chosen classes were included in the study, unless the student refused to participate. On the pre-test and post-test, each student involved in my study had given a voluntary written consent.

3.3.2.7 Concealment of treatment (intervention) allocation

Human behavior is influenced by what we know or believe (Day and Altman 2000), thus, concealment of intervention allocation, which is also called blinding, in randomized controlled trials is obviously vital (Morris, Fraser, and Wormald 2007). Day et al. (2000) issued a reminder about the risk of bias if adequate blinding is not used, as bias associated with knowing about the intervention is often subconscious.

In randomized controlled trials the term 'concealment of treatment (intervention) allocation' refers to keeping those administering, those receiving intervention (study

respondents), and those collecting and analyzing the data unaware of the assigned intervention, so that they should not be influenced by that knowledge (Day and Altman 2000; Morris, Fraser, and Wormald 2007). 'Masking' is a condition under which neither the respondents nor the investigator knows who is getting which intervention. Concealment of allocation aims to prevent selection bias, while masking aims to prevent performance and detection bias (Morris, Fraser, and Wormald 2007).

On average, randomized trials that have not used appropriate levels of concealment of intervention allocation show larger treatment effects than studies that adhere to concealment of intervention allocation (Schulz et al. 1995). Concealment of intervention allocation makes it difficult to bias results intentionally or unintentionally and so helps ensure the credibility of study conclusions (Day and Altman 2000).

When I briefed the research team I did not indicate a particular school was in the intervention or control group, so the research team was unaware about the intervention allocation of the schools. When the research team and I introduced ourselves to the school principals, teachers and students, we never mentioned whether a particular school was in the intervention or control group. Therefore, none of the students knew whether they were in the intervention or control group. However, concealment of intervention allocation and masking could not be met fully in my study, since I was aware of the intervention allocation and I carried out all the analysis myself, even though the data entry was managed by the research team.

3.3.2.8 The intervention

Related to the stage of my study, an efficacy trial, therefore medical doctors as the highly trained professionals and the most knowledgeable people in the reproductive health were chosen to deliver the program (Hallfors et al. 2006). Nine medical doctors in Jayapura city, Jayapura district, Sorong city and Manokwari district were recruited to deliver *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* program.

The doctors had been given the handbook and the PowerPoint presentation and had undergone training two days before delivering the program. A pair of female and male doctors delivered the program at each school. The program was delivered over three hours through PowerPoint presentations, dialogues, role-plays, quizzes, games,

and discussions. The complete module and the PowerPoint presentation are attached as Appendix 3 and 4 of this thesis.

The program was delivered in the school hall after the pre-test (in March 2009) for the intervention group, and after the post-test (in May 2009) for the control group. The school biology teachers, sport and health education teachers, youth Red Cross conveners, and/or vice principal of student affairs attended the delivery of the program.

In the future, in the efficiency trial, the intervention program should be delivered by school teachers (Hallfors et al. 2006). Related to the content of the module that I developed, biology and sport and health education teachers are the best choice to deliver the module to the students.

3.3.2.9 Validity and reliability

I use knowledge, attitude and behavior intention questions as set out in the research carried out by Martiniuk, O'Connor, et al. (2003) and Kassirer and Griffiths (1997), and I added some more questions for the written test. The original 48 item questions was developed by Kassirer and Griffiths (1997), and 34 questions of the total was adapted from a questionnaire developed by King and Beazley (1988). The first part of the original test contains 20 questions rated on the Likert scale, and is intended to measure attitude (11 questions) and behavior intentions (nine questions). The second part consists of eight questions about gender, birthdate, and previous sexual practices. Part three comprises 20 questions on knowledge with true, false or do not know answers.

The full original questionnaire was assessed for face and content validity by experts in psychology, public health nursing, medicine, and education from Queen's University and pilot tested on Year 10 students in Kingston, Ontario, Canada (Martiniuk 2000). Validity is the ability of a test to indicate what is being measured and the relationship of that variable to its purported cause. There are several measurements of validity. Face validity indicates whether an instrument appears to be assessing the desired qualities (Streiner and Norman 2008). Content validity consists of a judgment whether an instrument covers appropriately all the relevant or important subject matter (Streiner and Norman 2008; Bland and Altman 2002). These two forms of validity consist of a judgment by experts about whether an instrument appears appropriate for the intended purpose (Streiner and Norman 2008).

Reliability reflects evidence that an instrument is measuring something in a reproducible fashion. It provides evidence of the value of an instrument to demonstrate that measurements of individuals on different occasions, or by different observers, or by similar or parallel tests, produce the same or similar results (Streiner and Norman 2008). Cronbach's α assesses the degree to which the items in the domain are all measuring the same underlying concept (Streiner and Norman 2008). Martiniuk, O'Connor, et al. (2003) reported the Cronbach's alphas for knowledge, attitude and behavior intention domains are 0.70, 0.65, and 0.49, respectively.

In my study, the pre- and post-tests consisted of 25 true or false knowledge questions, 30 attitude questions with response on five Likert scales, and 18 behavior intention questions with response on five Likert scales. All questions had been translated into both Indonesian and the appropriate Papuan languages. The complete test is attached in Appendix 2.

Before my study began, the test was piloted on 25 Year 11 students at a government senior high school in Jayapura, who was not part of my study respondents. The pilot test was carried out twice, on March 5 and March 8, 2009. The pilot test aimed to evaluate the ease and the difficulty of the test; to estimate the time needed to complete it; and to evaluate validity, internal reliability and external reliability of the test using SPSS GradPack version 18.0 for Mac.

I measured the validity based on the Pearson product-moment correlation, by comparing the correlation between score of each item in the questionnaire with total score of all items in the questionnaire. If the corrected item-total correlation was higher than the one-tailed Pearson critical correlation coefficient (r), then the item was valid (Kuntoro et al. 2008). The results of the validity test show that 80 percent (20) questions in the knowledge domain, 80 percent (24) questions in the attitude domain, and 83 percent (15) questions in the behavior intention domain were valid.

Reliability places an upper limit on validity, so that the higher the reliability, the higher the maximum possible validity (Streiner and Norman 2008). On the internal reliability (internal consistency) test, I compared Cronbach's α of knowledge, attitude, and behavior intention item questions with the associated one-tailed Pearson critical correlation coefficient (r) (Kuntoro et al. 2008). The internal reliability test shows Cronbach's α for knowledge domain was 0.77, which was higher than the corresponding r of 0.34; the Cronbach's α for attitude domain was 0.84, which was

higher than the corresponding r of 0.31; and the Cronbach's alpha for behavior intention domain was 0.86, which was higher than the corresponding r of 0.4. Bland (1997) suggested Cronbach's alpha values of 0.7 to 0.8 as satisfactory for comparing groups, whereas for clinical application much higher values of Cronbach's alpha, with a minimum value of 0.90, are needed. My study was not a clinical research project and the results of Cronbach's alpha of knowledge, attitude, and behavior intention domains are internally reliable and are in the satisfactory range.

On the external reliability test, I used test-retest analysis based on the two-tailed McNemar test for knowledge domain, which was used nominal scale (true/false). I used a Wilcoxon signed-rank test for attitude and behavior intention domains, which were used five-point Likert scales (Kuntoro et al. 2008). The results of test-retest analysis showed that the significance values of two-tailed McNemar test for all items in the knowledge domain were between 0.5 and 1.0. The significance values of two-tailed Wilcoxon signed-rank test for all items in attitude domain were between 0.2 and 1.0, and the significance values of two-tailed Wilcoxon signed-rank test for all items in behavior intention domains were between 0.2 and 1.0. Results of test-retest reliability were all higher than the probability of making the wrong decision when the null hypothesis is true ($\alpha = 0.05$). The results implied there were not any significance differences between tests and retests of all items in the three domains, and therefore, all items in the three domains were externally reliable.

3.3.2.10 Test and scoring

In my study, the pre- and post-tests consist of 25 true or false knowledge questions, 30 attitude questions with response on five Likert scales, and 18 behavior intention questions with response on five Likert scales. All the questions were translated into Indonesian and the appropriate Papuan languages.

On the knowledge domain, the score for wrong answer was zero and the score for right answer was one. Since there were 25 questions in the knowledge domain, therefore, the maximum score was 25. The response on the attitude and behavior intention domains used five-point Likert scales that have several characteristics: the scale contained several items; response levels were arranged horizontally; response levels were anchored with consecutive integers; response levels were also anchored with verbal labels which connoted more- or less-evenly-spaced gradations; verbal labels

were symmetrical about a neutral middle; and the scale measured agreement or disagreement with a target statement (Uebersax 2006).

In my study, the five points on the Likert scale for the attitude and behavior intention domains were labeled strongly agree, agree, neutral, disagree, and strongly disagree. The score on attitude and behavior intention domains was one for the least safe attitude or behavior intention, and five for the safest attitude or behavior intention. Since there were 30 questions in the attitude domain and 18 questions in the behavior intention domain, therefore, the maximum score on the attitude domain was 150, and the maximum score on behavior intention domain was 90.

The test was given to all classes that participated in the study simultaneously. In my study, respondents did not write their name on the test sheet to comply with the ethical guidelines (National Health and Medical Research Council, Australian Research Council, and Australian Vice-Chancellors' Committee 2007). The research team had prepared the test sheets, written respondents' school code number (e.g. 0 for a government school in Jayapura, 2 for vocational school in Jayapura, and so on) and respondents' class' name (e.g. Year 11 Bio-1 = Year 11, concentration in Biology, class 1) on the test sheets, before the test sheets were given to the respondents. Respondents wrote their presence number in their class' list that was based on the alphabetical order of their full name (e.g. 1 is Ana Suebu's presence number, and 2 is Aprilia Daimboa's presence number) on the test sheets. This strategy was found to be beneficial in matching the pre-test and post-test sheets from the same respondent.

When the respondents had finished doing the test, they folded the test sheets and put them in sealed envelopes. All envelopes from one school were put in a box, sealed, and sent to Surabaya. The entry data team opened the envelopes, sorted them in ascending order of the students' presence numbers from each class, then gave a consecutive 'test number' for each student from the same school, based on the student's presence number and class. For example, there were three Year 11 classes from a vocational school in Sentani: Automotive-1 with 23 students, Electro-3 with 21 students, and Building-1 with 25 students.

Each student had put his/her presence number on the test sheet. The entry data team sorted their presence numbers from each class, then gave 'test numbers' in consecutive order: 1 to 23 for respondents with presence number 1-23 from

Automotive-1 class; 24 to 44 for respondents with presence number 1-21 from Electro-3 class; and 45 to 69 for respondents with presence number 1-25 from Building-1 class.

The data entry team had made notes on the test numbers that they had given, and created a unique identity number for each respondent. The identity number was based on the test number, intervention group code (0 for control group and 1 for intervention group), and school code. Zero was added to the last identity number for each respondent from the control group. For example, a respondent with ID 540100 meaning that he/she had test number 54, 0 for control group, 10 for school code of a vocational school in Sentani, and the last 0 for control group to distinguish from intervention group. The respondents' identity numbers were used for merging pre-test and post-test data.

3.3.2.11 Flow diagram

Compared with individually randomized trials, cluster randomized trials are more complex to design, require more respondents to obtain equivalent statistical power, and require more complex analysis (Campbell, Elbourne, and Altman 2004; Donner 1998; Wojdyla 2005; Donner and Klar 2000).

The Consolidated Standards of Reporting Trials (CONSORT) asked the researcher to accommodate the reporting of special features of cluster randomized trials, so it will be easy to be reviewed and will be useful for other researchers (Campbell, Elbourne, and Altman 2004).

The CONSORT statement has been extended to include the rationale for adopting a cluster design; how the effects of clustering were incorporated into the sample size calculations; how the effects of clustering were incorporated into the analysis; and the flow of both clusters and individuals through the trial, from assignment to analysis (Campbell, Elbourne, and Altman 2004). The flow diagram of my study is depicted in Figure 3.5.

Sixteen of 89 schools that had met the eligibility and inclusion criteria were randomly chosen dependent upon the geographical area (province) and type of school (government general schools, private general schools, and vocational schools) using random numbers generated by a computer (Altman and Bland 1999a). The 16 schools were then randomly allocated to an intervention or a control group with a 1:1 ratio using a random number generated by a computer (Altman and Bland 1999a). Of the 16 schools, seven schools (four schools in the intervention group and three schools in the

control group) were in Papua Province, and nine schools (four schools in the intervention group and five schools in the control group) were in West Papua Province. All the schools completed pre-test and questionnaires on the approved dates in March 2009.

There were 1,082 students at the pre-test, consisted of 536 students in the intervention group and 546 students in the control group. When the pre-test was done, the medical doctors in the research team delivered the *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* program to the intervention group. Follow-up of reproductive health education intervention studies on knowledge, attitude and sexual practices using quasi experimental and randomized trials varied from two weeks (Martiniuk, O'Connor, and King 2003; Jenkins et al. 2000), one month (Kalichman et al. 2004), two months (Jenkins et al. 2000), three months (Kalichman et al. 2004; O'Leary et al. 2000), and more than three months (Baker et al. 2003; Kirby et al. 2004; Metzler et al. 2000; Kalichman et al. 2004; NIMH Multisite HIV Prevention Trial Group 1998; Shehadeh et al. 2012).

In my study, the post-test was carried out two months after the pre-test, in May 2009, on all 16 schools participating in the pre-test. Two months of follow-up period was chosen as the period was enough to measure changes in knowledge, attitude and behavior intention; respondents might have been exposed to other reproductive health education studies, as both Papua and West Papua Provinces were often chosen for HIV-related pilot project; respondents might not be able to participate in a follow-up after more than two months, as they were going to have Year 11 school exams in early June 2009. After the school exams, respondents were going to have a school holiday, and then they would be in Year 12. When they were in Year 12, it was less likely that the schools would give approval for my study, as the Year 12 school program is very full.

On the post-test, there was not any loss to follow-up at the cluster level. However, there was 8.7 percent (94 students) loss to follow-up at individual level from the total 1,082 students in the pre-test. As anticipated in the sample size estimation (section 3.3.2.4), loss to follow-up would not exceed 10 percent at individual level. This high participation rate was likely due to the support I received from education bureaus, schools and teachers. As mentioned by all school principals, essentially, they abided by the decision of the education bureaus; teachers complied with the decisions of the school principals; and students adhered to their teacher instructions.

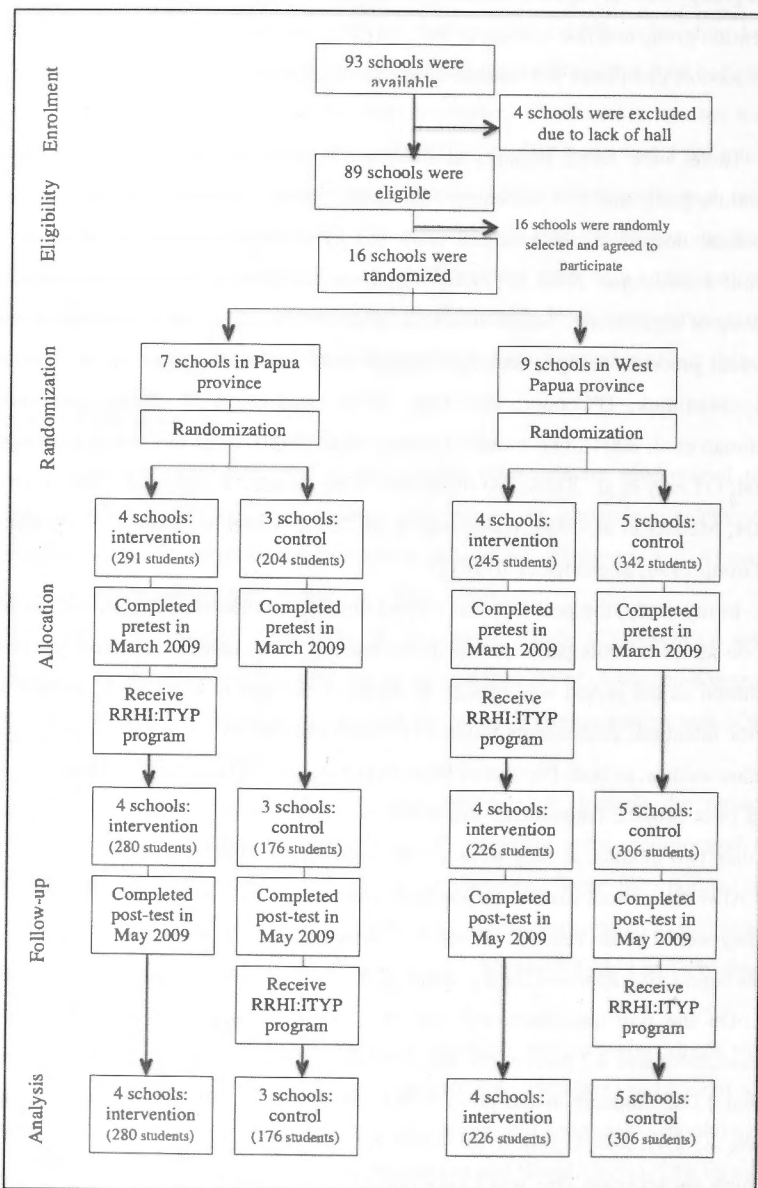


Figure 3.5 Flow diagram of the progress of clusters and individuals through the phases of the '2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans' study

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

In my study, loss to follow-up was higher in the control group (11.7 percent) compared to the intervention group (5.6 percent). Loss to follow-up on the approved dates of post-test was related to absence from school due to illness, sport or science competitions that were held outside the schools, and absent from schools. To maintain fairness, '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' program was delivered to the control group after the post-test. The analysis was based on the 988 students who participated in both pre-test and post-test.

3.3.2.12 Intention to treat analysis

The standard method of analysis for randomized trials follows the principle 'intention to treat', that is, it includes all randomized patients in the groups to which they were randomly assigned, regardless of their adherence to the entry criteria, regardless of the treatment they actually received, and regardless of subsequent withdrawal from treatment or deviation from the protocol (Fisher et al. 1990). The intention to treat approach maintains treatment groups that are similar apart from random variation, as the purpose of randomization is to ensure that potential prognostic factors are balanced between the treatment groups (Sainani 2010). The feature of randomization may be lost if analysis is not performed on the groups produced by the randomization process, and thus, may introduce bias (Peduzzi et al. 2002). However, most types of deviations from protocol would continue to occur in routine practice and so should be included in the estimated benefit of a change in treatment policy (Hollis and Campbell 1999). Therefore, Roland and Torgerson (1998), Hollis and Campbell (1999), and LaValley (2003) argued that intention to treat analysis is more suitable for pragmatic trials of effectiveness rather than for explanatory investigations of efficacy.

In analyzing data from cluster randomized trials, intention to treat analysis may be used with an adjustment for the design effect, or multilevel analysis techniques can be employed with regard to similarity among individuals with the same cluster membership (Jo, Asparouhov, and Muthe n 2008). In my study, there was 8.7 percent (94 students) loss to follow-up from the total 1,082 students at the pre-test. However, my study is an efficacy trial; sample size estimation had been adjusted for the design effect to take into account intention to treat analysis; the number of clusters

participating in the post-test (16 schools) was the same as in the random allocation and pre-test; the number of students participated in the post-test (988) was higher than the number of students needed based on the sample size estimation; missing value is handled according to the guideline; multilevel analysis technique is employed; and respondents who dropped out at post-test is analyzed to explain any differences from the respondents who participated in the post-test. Therefore, the analysis was based on the 988 students participating in the pre-test and post-test.

3.3.2.13 Missing values

Missing or incomplete data is a common problem in randomized controlled trials (Peduzzi et al. 2002; Lachin 2000), longitudinal studies (Schafer 2005; Raghunathan et al. 2001), and social sciences (Juster and Smith 1998; King et al. 2001). Rubin (1976) defined three classes of missing data: missing completely at random, missing at random, and missing not at random. The data are defined as missing completely at random when an indicator variable (the non response mechanism), which determines whether each observation is observed or missing, is independent of both the observed data for a person and the unobserved or missing data for a person; when missing data are independent of the outcome of interest. Missing at random occurs when the nonresponse mechanism depends on only the observed data, and is independent of the missing data. Therefore, it is usually not valid to drop subjects from the analysis for whom data are missing. Missing not at random occurs when the nonresponse mechanism depends on both the observed and the missing data. This problem can occur when respondents drop out of a study (Rubin 1976).

Missing values may affect the interpretation of the trial results. The power of a trial will increase if the sample size is increased or if the variability of the outcomes is reduced. If missing values are handled by simply excluding any respondents with missing values from the analysis, this will result in a reduction in the number of cases available for analysis, leading to a reduction of the statistical power. If a missing observation is related to both the intervention and the unobserved outcome variable (e.g. missing values are more likely in one intervention arm because it is not as effective), then excluding respondents with missing values from the analysis may affect the comparability of the treatment groups that lead to bias in the estimation of the treatment effect. Further, the loss of non-completer respondents may lead to an underestimation of

variability and hence artificially narrow the confidence interval for the intervention effect (European Medicines Agency 2011).

There are some strategies for dealing with missing data on the primary outcome by using optimal study design and execution, statistical models that handle incomplete follow-up data, imputation, and sensitivity analysis (Sainani 2010; Acock 2005; European Medicines Agency 2011). The first three strategies were used to deal with missing values in this thesis. There were 52 (5.3 percent) of the total 988 respondents answered between 70-79 percent of knowledge, attitude, and/or behavior intention questions, whereas 94.7 percent (936) of respondents answered 80 percent or more questions in the three domains. Therefore, the missing values in the study were left as missing values, without any imputation.

3.3.2.14 Statistical analysis

3.3.2.14.1 Covariates

The self-administered questionnaire consisted of 55 questions on demographic characteristics, social norms, alcohol and drug use, source of HIV information, enthusiasm for having reproductive health education at school, previous sexual experience, sexual partners, contraceptive use, pregnancy, unsafe abortion, STI symptoms and treatment-seeking behavior. All questions were translated into both Indonesian and the appropriate Papuan languages. The complete questionnaire is attached as Appendix 2.

3.3.2.14.2 Unit of analysis

The unit of inference in cluster randomized trials may be directed either at the cluster level or at the level of the individual subject. Related to the objective of this study, the unit of analysis in this thesis was the individual subject. The individual-level analysis has several advantages: (i) It reduces standard statistical procedures in the absence of clustering; (ii) It allows more direct examination of the joint effects of cluster-level and individual-level predictors; (iii) It can be extended to permit analyses of multilevel data; (iv) It yields estimates of intraclass correlation coefficient more naturally; (v) It provides more efficient estimates of the effect of intervention than unweighted analyses when there are many clusters per group, particularly when cluster sizes are highly variable (Donner and Klar 2000).

3.3.2.14.3 Confounder and interaction

Martiniuk, O'Connor, et al. (2003) found that previous sexual experience modified the effect of 'The Responsible Sexuality Education Program', their reproductive health intervention program. Kirby, Baumler, et al. (2004) reported that 'Safer Choices', their reproductive health intervention program, had a greater impact on males than on females. Danielson, Marcy, et al. (1990), Eisen, Zellman, et al. (1992), Fitzgerald, Stanton, et al. (1999), and Klepp, Ndeki, et al. (1997) also indicated that reproductive health education programs had different effects by sex. Therefore, in my analysis I investigated possible interactions between previous sexual experience, sex, and intervention in the knowledge, attitude, and behavior intention domains. I also examined possible confounders based on the covariates included in the analyses.

3.3.2.14.4 Data analyses

In my study, a change in score refers to the average change in mean score from pre-test to post-test for either the intervention or control group. A different score refers to the difference in change score between intervention and control groups. A change of self-reported sexual practices refers to a change in the proportion of sexual practices from pre-test to post-test for either the intervention or control group. A difference of self-reported sexual practices refers to the difference in change of sexual practices between intervention and control group.

The analyses examined the difference scores for knowledge, attitude and behavior intention domains that were carried out for the whole samples as well as separately for males and females. The analyses also examined the difference of self-reported sexual practices for initiation of sex, number of sexual partners and condom use; which are commonly analyzed in HIV prevention studies (Kirby et al. 2004; UNAIDS 2010a). These analyses were to achieve objectives three and four of my thesis.

Individual-level analyses should be properly adjusted for the effect of clustering. Similarity among subjects within clusters reduces the variability of responses in a clustered sample, which erodes the power to detect true differences between study arms (Killip, Mahfoud, and Pearce 2004). Therefore, analysis without taking the clustering into account may lead to confidence intervals which are too narrow, p values which are too small, and inflated type I error, leading to a false conclusion (Bland 2004; Zyzanski 2008; Reed III 2004).

In my study, crude (unadjusted) bivariate analyses at individual-level were carried out using Pearson Chi-square test (Donner and Donald 1988; Donner and Klar 2000) for comparison of proportions, and two-sample t-test adjusted for clustering (Donner and Klar 2000; Hedges 2007) for comparison of means. Adjusting test statistics for design effect of clustering can be done by the Pearson Chi-square test or F-test statistics divided by the design effect (Kaczorowski 2011; Donner and Donald 1988). The simulation study showed that the adjusted Chi-square statistics generally produces empirical type I errors close to nominal under the assumption of a common intraclass correlation coefficient. Even if the intraclass correlations are different, the adjusted chi-square statistic performs well when the groups have equal numbers of clusters (Jung, Ahn, and Donner 2001).

Adjusting test statistics for design effect of clustering can also be done by t-test or Z-test statistics divided by the square root of the design effect (Donner and Klar 2000; Kaczorowski 2011). This strategy could prove useful for analyzing data from small trials with *a priori* intraclass correlation from published literature (Murray and Short 1997). Further, calculation of the adjusted t-statistic does not require that the pairwise correlation between any two observations in the same cluster is constant (Barcikowski 1981).

The unit of analysis (students) in my study was grouped into, or nested within, clusters of units (school); and the dependent variables were measured at pre-test and post-test on the same subjects, therefore the observations were clustered and not independent. Accordingly, adjusted multivariate analyses were carried out using linear mixed models (LMM) for comparing difference score of knowledge, attitude, and behavior intention (Donner and Klar 2000, 1994; Garson 2012; Beaumont 2012). Generalized linear mixed model (GLMM) was used to analyze the differences between self-reported sexual practices and determinants of students' sexual practices (Kachman 2007; Garrido and Zhou 2006).

Linear mixed models handle data where observations are not independent and correctly compute estimates and standard errors even when observations cluster under higher entities. Linear mixed models also support analysis of a continuous dependent for random effects, where the set of values of a categorical predictor variable is seen not as the complete set but rather as a random sample of all values; hierarchical effects, where predictor variables are measured at more than one level; and repeated measures,

where observations are correlated rather than independent. Further, linear mixed models can handle missing data; allow for wide variations of covariance matrix, so the data do not have to meet the sphericity test; and the estimates are based on restricted maximum likelihood methods, leading to unbiased estimates of variance and covariance (Garson 2012; Beaumont 2012; West, Welch, and Gatecki 2007; Mickey, Dunn, and Clark 2004).

Related to the fourth and fifth objective of this thesis, self-reported sexual practices and determinants of students' sexual practices were analyzed using generalized linear mixed model (GLMM). GLMM extends generalized linear model by the inclusion of random effects in its predictor and allows analysis for correlated data and nonlinear mixed model. It focuses more on the inverse link function to model the relationship between the linear predictors and the conditional response (Kachman 2007; Garrido and Zhou 2006).

All analyses were performed using IBM SPSS Statistics Premium Grad Pack Version 20.0 for Mac OS (IBM Corporation 2011) and IBM SPSS Statistics 19.0 for Microsoft Windows.

3.3.3 In-depth interview: a qualitative method

3.3.3.1 The role of qualitative methods in health research

Increasingly complex health problems that involve social or behavioral processes require new approaches to health research. The use of qualitative methods in health research (e.g. observational methods, in-depth interviews, case study evaluations, and focus groups) are becoming increasingly recognized (Meyer 2000; Green and Britten 1998), and are becoming part of randomized trials (Lewin, Glenton, and Oxman 2009; Murphy et al. 1998; Wainberg et al. 2007; Gibson et al. 2004; Chapple et al. 2002; Ulin, Robinson, and Tolley 2005).

In sexuality research, which is a sensitive topic (Utomo 1997), qualitative methods are coming to be seen to be a valuable and necessary component that quantitative methods cannot reach (Clark 2000; Pope 1995; Lewin, Glenton, and Oxman 2009). Qualitative methods give respondents the opportunity to respond to their own words, rather than forcing them to choose from fixed responses, as quantitative methods do. The results of mixed methods on reproductive health and sexuality research can generate findings with more depth of knowledge than separate analysis (O'Cathain,

Murphy, and Nicholl 2010), and are more meaningful, lively, and useful to social change, in contrast to randomized controlled trials alone that often do not seem to fit the uniqueness of the situation (Meyer 2000).

3.3.3.2 In-depth interviews

The three most common qualitative methods are participant observation, in-depth interviews, and focus groups (Family Health International 2005). This research used in-depth interviews to achieve the second objective, exploring social norms on sexuality and reproductive health education. In-depth interviews are optimal for collecting data on individuals' personal histories, perspectives, and experiences, particularly when sensitive topics are being explored.

During in-depth interviews the interviewee is considered the expert and the interviewer is considered the student. The interviewing techniques are motivated by the desire to learn everything the respondents can share about the research topic (Family Health International 2005). Interviewers engage with respondents by posing questions in an informal, nonjudgmental, open, and neutral manner (Ulin, Robinson, and Tolley 2005). Interviewers are listening attentively to respondents' responses, and asking follow-up questions based on those responses. Interviewers do not lead respondents according to any preconceived notions, nor do they encourage respondents to provide particular answers by expressing approval or disapproval of what they say (Family Health International 2005). Further, respondents should be given adequate time to respond, to allow them to put things in their own terms (Healey-Etten and Sharp 2010).

Most interviews follow a pattern that comprises three kinds of questions: main questions, follow-up questions, and probes. The pattern is flexible, but it helps the interviewer cover the topics in sufficient depth to make the most of the rich information that respondents can offer (Patton 2002; Rubin and Rubin 1995). The main questions should reflect a logical flow, moving from easy and least threatening questions to more complex and interesting issues. Follow-up questions move the interview to a deeper level by asking for more detail (Ulin, Robinson, and Tolley 2005). A 'probe', a question asked to follow-up and explore issues in deeper territory, is regarded as an important question in an in-depth interview (Healey-Etten and Sharp 2010). However, while insufficient probing could suggest boredom, aggressive probing might be intrusive (Rubin and Rubin 1995).

3.3.3.3 Respondents in the in-depth interviews

In total there were 40 respondents in the in-depth interviews, consisted of the heads of and staff member at the education bureaus in Papua and West Papua Provinces, the head of the infectious disease department of health bureaus in Papua Province, the head of the AIDS Commissions in Papua and West Papua Provinces, senior high school principals and teachers, high school students, tribal leaders, doctors and paramedics, staff of NGO that work with HIV prevention and youth street sex workers. Each interview lasted around 45 minutes. The questions asked were related to the state of education and reproductive health education in both provinces, social norms related to young people's sexuality, views and experiences related to today's young people's sexuality.

The textual data from the in-depth interview was analyzed thematically and used accordingly in my analysis. The narratives from my respondents add meaning, inside and understanding to numbers produced by my statistical analysis. They also provided stronger evidence for the conclusions (Pope 1995).

3.3.3.4 Qualitative methods complement quantitative methods

It would seem more fruitful for the relationship between qualitative and quantitative methods to be characterized as complementary rather than exclusive. A common way to enhance or emphasize each other's quality is to use qualitative methods as an essential preliminary to quantitative research. Qualitative techniques can be used to provide a description and understanding of a situation or behavior, to supplement quantitative methods, and to explore complex phenomena or areas not amenable to quantitative methods (Pope 1995). In my study, in-depth interviews with the heads of education bureaus were carried out before my research team and I approached the schools and conducted our study. However, in-depth interviews with other respondents were carried out on the approved date chosen by the respondents.

In sum, my study was an efficacy trial and it used a mixed methods approach, as the combined results of qualitative and quantitative studies could provide more knowledge than separate analyses. *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* is a school-based comprehensive reproductive health education module. It is tailored to the needs of young people that is not covered in the school textbooks.

Therefore, I used a cluster randomized trial as the quantitative method. Sixteen schools (988 Year 11 students) were randomized to an intervention or control group. The cluster unit in the study was the school, but analyses were carried out at an individual level. The effect of clustering was taken into account on unadjusted bivariate and adjusted multivariate analyses to achieve the third, fourth and fifth objectives of my thesis. Qualitative methods are seen to be a valuable and necessary component that other methods cannot reach, the in-depth interview was seen to be more appropriate to achieve the second objective of my thesis.

3.4 Ethical considerations and research approval

3.4.1 Ethical considerations

The Australian National University Human Research Ethics Committee approved my research protocol No. 2008/567 under a full ethical review on 30 January 2009 (see Appendix 1). I also had an ethical clearance from the Health Research Ethics Committee of Airlangga University, Surabaya, Indonesia No. 17/EC/KEPK/FKUA/2009 on 26 February 2009.

3.4.1.1 Minimizing the risk to respondents

A potential risk that might rise in an interview, as well as in the pre-test, post-test and self-administered questionnaire, was the disclosure of sensitive or embarrassing information. To minimize this risk and in order to fulfill the requirement laid down in the National Statement on Ethical Conduct in Human Research (National Health and Medical Research Council, Australian Research Council, and Australian Vice-Chancellors' Committee 2007), in the consent form and invitation form respondents were reminded that they were entitled to withdraw from the research at any stage without consequence. They could also refuse to answer any question or not take part in a portion of the interview if they felt the question(s) were personal or if talking about them made them uncomfortable. However, if they felt that they wanted to answer the question, then any personal, sensitive or potentially incriminating information would be kept confidential so far as the law allowed. In addition, in the information sheet for Year 11 students, there was an undertaking that anyone who did not want to participate in the research could leave the classroom.

I provided local, readily accessible contacts that were available to respondents to receive responses, questions and complaints about the research. I also provided the ANU human research ethics officer's contact details.

3.4.1.2 Cultural considerations

Respondents in my research had different religious and cultural backgrounds. Some of them might have felt the program was not in accordance with their views about HIV, AIDS and sexuality. To address this issue, the *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* program was designed to present facts and allow individuals to create their own structure of beliefs.

In order to comply with the National Statements on Ethical Conduct in Human Research (National Health and Medical Research Council, Australian Research Council, and Australian Vice-Chancellors' Committee 2007), the questions in the interview, pre-test, post-test and self administered questionnaire, as well as *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* program had been adapted to the Papuan culture.

I was confident that I could carry out this research in Papua and West Papua Provinces, because I had contacted many people in both provinces before I carried out my study and they were all very helpful in the preparation and during my fieldwork. These contacts comprised staff from the Education, Youth and Sport Bureau of Papua Province, the Education Bureau of West Papua Province, some NGOs working on HIV prevention, the National Institute of Health Research and Development of Papua Province, the AIDS commission of Papua and West Papua Provinces, the Health Bureau of Papua and West Papua Provinces, and colleagues who had expressed interests in being involved in my research team.

Moreover, previous research into both indigenous Papuan and Indonesian settlers had been conducted in Papua and West Papua Provinces; the results reflected that Papuans were quite open to biomedical and social research. The previous research included a qualitative research project on the social and political life of infants among the Dani tribe in Baliem Valley (Butt 1998); qualitative research on the influence of cultural and social norms in preventing HIV infection (Butt, Numbery, and Morin 2002); a baseline survey on teenagers (CHR-UI 2003); a risk behavior and HIV prevalence survey (BPS-Statistics Indonesia and Ministry of Health of the Republic of

Indonesia 2007); an Integrated Biological-Behavioral Surveillance among most-at-risk groups (Ministry of Health of the Republic of Indonesia 2008a); qualitative research on the romantic underground and beliefs about HIV (Hewat 2008); and Basic Health Research (*Risikesdas*) (National Institute of Health Research and Development 2007, 2010b). The results of all this research were available to me and my research team.

3.4.1.3 Sources of funding

My research could not have been done without funding from the Australian Demographic and Social Research Institute, Australian National University. I also received a PhD scholarship from the Directorate General of Higher Education, Ministry of National Education, Republic of Indonesia.

3.4.1.4 Incentives

I provided a T-shirt which cost \$1.00-\$1.50 each to every respondent, a white T-shirt with a message reminder 'Be Responsible for Your Future' written in blue and black paint on the front part. However, in order to meet the requirements of the National Statement on Ethical Conduct in Human Research (National Health and Medical Research Council, Australian Research Council, and Australian Vice-Chancellors' Committee 2007), the T-shirts could not result in pressure on individuals to consent to participate in the research. The respondents received the gift when they had finished the post-test.

I gave payment to the research team according to the funding unit rules for Papua and West Papua Provinces that were based on the Ministry of Finance Republic of Indonesia regulation PMK No. 1/PM.2/ 2009 on the standard of general expenditure and PMK No. 108/PMK.02/ 2009 on the standard of special expenditure (Ministry of Finance Republic of Indonesia 2009a, 2009b).

3.4.1.5 Confidentiality

I maintained the confidentiality and anonymity of the respondents (National Health and Medical Research Council, Australian Research Council, and Australian Vice-Chancellors' Committee 2007). Therefore, there were no names on the pre-test or post-test. I wrote a test number, in a given sequence, on each set of pre-tests, as a replacement for the names. I asked respondents to write the test number, their initial

and their signature on the presence form. I also took a note about the respondents' class, to prevent mixing them up with non-respondents.

In the post-test session, I used the same test number and the same presence list for each respondent. When the respondents had finished the test, they put the test sheet in an envelope and sealed it. The filled envelopes were given to the research team. The information that they provided would only be used for research and policy purposes and would not be disclosed to anyone except the research team. Further, only non-identifiable data are to be reported or published, unless the respondents explicitly indicated that they agreed to be identified.

For the interview respondents, anonymity and confidentiality were further ensured in the consent form, which enabled respondents to specify the level of anonymity reported, be it by name, position, organization, or complete anonymity. In the information sheets and consent forms, I informed respondents that the results of this research would be reported in a doctoral thesis and might be published in academic journals. The published article would be summarized in Indonesian as evidence for decision makers to plan health and education strategies.

3.4.1.6 Data storage procedures

I informed respondents that any data collected during the research would be stored in a locked office at the Australian National University for five years. The data would be kept in a computer accessible only by a password that I have created (National Health and Medical Research Council, Australian Research Council, and Australian Vice-Chancellors' Committee 2007).

In the information sheet I informed respondents that the data collected during the research might be used in future research projects without their name and position title, unless they explicitly indicated that they wanted to be identified. In the consent form, I included statements that the data collected during the research might be used in future research project as long as respondents' name and position title would not be used in relation to any of the information they provided, unless they explicitly indicated that they wanted to be identified.

3.4.2 Written research approval from Indonesia

In order to carry out research in Papua and West Papua Provinces, Indonesia, I had to obtain written approval from the Directorate General of Nation Unity and Politics (*Dirjen Kesatuan Bangsa dan Politik*) Ministry of Internal Affairs Republic of Indonesia; the Nation Unity and Politics Bureau of Papua and West Papua Provinces; as well as from the same bureau in Jayapura city and Jayapura district of Papua Province and from Manokwari district and Sorong city of West Papua Province.

Since my study is intended to benefit senior high school students, I also had to obtain written approval from the Education, Youth and Sport Bureau of Papua Province; the Education Bureau of West Papua Province; and all senior high schools involved in my study. I also had to have written recommendation and approval from the AIDS Commission of Papua Province and West Papua Province, as well as from the Health Bureau of Papua Province and West Papua Province, as I needed to carry out in-depth interviews with staff from the bureaus and obtain data related to HIV and AIDS.

I wrote all the application letters for research approval and visited all the bureaus myself, except for picking up the letters of approval, which was done by the research team. I had to explain in detail about my research objectives, methods, and the role of students every time I apply for research approval. I was very fortunate to be able to use colleagues and some NGOs working on HIV prevention as my research team, to help me with any difficulties in the field. In both Papua and West Papua Provinces, I met people from different ethnic backgrounds with different characters. I gathered valuable experience from both provinces in understanding different cultures and how to communicate effectively about my research to other people, including the heads and staff of many bureaus, school principals and teachers, students, tribal leaders, and the research team.

It took time to obtain letters of approval in both provinces due to complex bureaucratic process: the heads of the bureaus, staffs, school principals, and tribal leaders wanted me to meet them directly; staff had duties outside the workplace; staff were sick or on leave; and in one bureau, the administrative room key was accidentally taken by a staff member who was on leave for training in another city for several days. Some people in my research team advised me that 'the research time allocation should

be doubled or tripled and we have to be patient in Papua, as any reason that delays the process can happen in Papua’.

In sum, understanding the ethical guidelines on human research, culture and regulations applied in the study settings is a very important part of my research project. Having some contacts in unfamiliar study settings also played a very important role in the success of my research project. The ANU Human Research Ethics Committee approved my study and I obtained approval letters from all related Indonesian government bureaus from national, provincial, cities and regencies, until schools level.

3.5 Research team

I obtained help from many friends in West Papua and Papua Provinces. I trained each team of doctors in Jayapura, Manokwari and Sorong before starting the research. In the first meeting I explained the *‘Reducing the Risk of HIV: Intervention Trial for Young Papuans’* module, gave the module and the presentation that would be used. I then asked them to master the program at home. In the second meeting we chose the pair of doctors (one female and one male) who were going to deliver the program in certain schools, asked them to present the program, discussed possible difficulties in the field, possible questions from the students, and discussed the logistics needed including the condoms to be used for demonstration. In the third meeting the pair of doctors presented the program again.

It was easy for my colleagues to become familiar with the contents of the program, since HIV, STIs, condoms, treatment, alcohol, drugs, pregnancy, and abortion were part of their everyday practice, counseling and teaching. The research team liked the game and the discussion. A slightly difficult part for them was to perform dialogue and demonstrate refusal and delaying tactics, as that felt like a ‘drama’. I always brought my LCD projector to deliver the program to the students, as some schools did not have any LCD projector. The National Institute of Health Research and Development of Papua Province also lent me an LCD projector to be used in the Papua area.

I also trained another research team three times about the procedures for the pre-test and post-test, familiarity with the in-depth interview guidelines and how to carry out an in-depth interview. Fortunately, friends from the National Institute of Health Research and Development of Papua Province had been involved in several health

surveys including the 2007 basic health research survey (*Risikedas*); and friends from Mother Hope Foundation had been involved in several anthropological research projects with Cenderawasih University.

I delivered most letters of invitation and approval letters to carry out the research to the chosen schools myself. I realized that ethnicity issues were still strong in Papua and West Papua Provinces, so I used the opportunity to introduce myself and to explain briefly about the research and its advantages to the school principals and teachers. Some research team members helped me deliver some letters, but I still had to meet with the school principals and teachers myself before starting my research.

I developed a program in SPSS 17.0 for Microsoft Windows for data entry with the help of six friends with an undergraduate background.



Figure 3.6 Some research team members

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

In sum, my study could not have been accomplished without help from my research team and data entry team. The research team played important roles in delivering the '*Reducing the Risk of HIV: Intervention Trial for Young Papuans*' program to the students, pre-test and post-test, and in carrying out some in-depth interviews.

3.6 Conclusion

The '*Reducing the Risk of HIV Infection Logic Model*' module was developed to promote safe sexual practices and positive health behavior through causal mechanisms, which show that specific intervention can affect certain determinants (risk and protective factors) that affect sexual practices, which in turn (through maintenance) can achieve a health goal (reducing HIV infection). The model recognizes the importance of social determinants of health and is based on four behavioral theories; Health Belief Model, Social Cognitive Theories, Theory of Reasoned Action, and Stages of Change Theory.

My study was an efficacy trial and used a mixed methods approach, as the combined results of qualitative and quantitative studies could provide more knowledge than separate analyses. *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* is a school-based comprehensive reproductive health education module tailored to the needs of young people that are not covered in Indonesian school textbooks. Therefore, I used a cluster randomized trial as the quantitative method. Sixteen schools (988 Year 11 students) were randomized to intervention or control group. The cluster unit in the study was the school, but analyses were carried out at individual level. The effect of clustering was taken into account in unadjusted bivariate and adjusted multivariate analyses to achieve the third, fourth and fifth objectives of my study. Qualitative methods are seen to provide a valuable and necessary component of this research that other methods cannot reach, and the in-depth interview was appropriate to achieve the second objective of my thesis.

Understanding the ethical guidelines on human research, culture and the regulations applied in the study settings was a very important part of my research project. Having some contacts in the unfamiliar study setting was also a very important aspect, playing a role in the success of my research. The ANU Human Research Ethics Committee approved my study and I obtained approval letters from all related Indonesian government bureaus from national, provincial, cities and regencies, up to the school level.

The following Chapter 4 presents the state of education and reproductive health education in Papua and West Papua Provinces; comparison between students who participated in the pre-test and those who participated in both pre-test and post-test; baseline characteristics; knowledge, attitudes, and behavior intention tests; analysis methods; study findings; and discussion related to the study's findings.

Chapter 4

Making sense of HIV intervention: knowledge, attitude, and behavior intention change among students

....in order to truly affect HIV prevalence, schools in the developing world must move beyond making an impact on knowledge alone to demonstrating significant and sustained improvements in sexual risk behaviors and addressing the more complex affective factors influencing them, such as the values, attitudes, and perceived norms about sex and condom use (Kirby, Obasi, and Laris 2006, :104).

4.1 Introduction

I was concerned that I would not be able to carry out the research in Papua and West Papua Provinces, since Manokwari suffered deeply from a tectonic earthquake in January 2009. Fortunately, I headed for Manokwari and Sorong after I had finished the pre-test in Papua Province. I experienced some small magnitude earthquakes when I did the post-test for the research in both cities in May 2009.

Manokwari district is a beautiful small district in the northeast part of the Bird's Head Peninsula in West Papua Province. The available public transportation was mini bus and *ojek* (motor taxi). Sorong city is the densest city in West Papua Province. It can be reached by a one-hour flight from Manokwari.

The Jayapura situation was not safe from the end of 2008 until early 2009 due to tribal wars, floods and landslides. However, the situation improved during my stay in Jayapura. Jayapura district was a place where Sentani airport located, and has a beautiful view of Lake Sentani, Ifar Mountain and Syklop Mountain. Jayapura is reached by a one-hour drive from the Sentani airport.

As in Sorong city, I also had difficulty in obtaining the research approval letter from the education bureau in Jayapura city. Again, the problem was in the administration process. I also had to change some schedules for post-test in Jayapura city and Jayapura district. There was a change of school principal at a government senior high school in Jayapura, in April 2009, that had an impact on the school program.

Several times there were demonstrations and tribal wars in Abepura, Nafri and Muara Tami districts. The local tribes blocked the main roads and guarded the road. Consequently, we had to change our schedule.

Going by plane was not as easy as it should be, even though I had bought tickets. If the Papua or West Papua Provincial officials had a trip, then regular passengers had to give up their seats. Despite the difficulties, overall, the education bureaus, school principals, teachers and students were very supportive of my research.

Several teachers attended the pre-test, program delivery, and post-test. They were biology or science teachers, sport and health education teachers, and vice principals. All pre-test were carried out from 14 to 30 March 2009. All post-test were carried out from 11 to 27 May 2009. This chapter discusses the state of education in Papua and West Papua Provinces, the state of reproductive health education in both provinces, and the characteristics of respondents. This chapter also presents the efficacy of the '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' program in changing knowledge, attitude, and behavior intention based on the results of the pre-test and post-test. In this chapter I did not discuss sexuality related issues: these issues are explained in Chapter 5.

4.1.1 The state of education in Papua and West Papua Provinces

During the previous President Suharto regime, educational investment in Papua and West Papua Provinces was lower than in other provinces. This condition led to a poor educational infrastructure and a shortage of teachers (Mollet 2007; Solossa 2006).

In 2001, a *Special Autonomy Law* was adopted in both provinces. The law increased the budget to local government, and gave them the authority to manage their resources. However, the local government did not prioritize the development of education sector (Mollet 2007).

As of 2008, the illiterate population aged 15 years and over in Papua Province was above 24 percent, the highest among all provinces in Indonesia. In West Papua Province the illiterate population was around eight percent, similar to the national rate (BPS-Statistics Indonesia 2010c). Illiteracy rates are higher among indigenous Papuans, many of whom live in small hamlets in isolated areas (Butt, Numbery, and Morin 2002a).

Further, as of 2011, percentages of poor people in both urban and rural areas of Papua and West Papua Provinces (32 and 31.9 percent, respectively) were the highest among all 33 provinces in Indonesia, and more than double the national average at 12.5 percent (BPS-Statistics Indonesia 2011a).

As of 2010, the Human Development Index for Papua Province (64.9) and West Papua Province (69.2) ranked the lowest, 33rd and 29th, respectively, of all 33 provinces in Indonesia. Their Human Development Index was also lower than the national average of 72.3 (BPS-Statistics Indonesia 2010d).

The net enrollment ratios for primary, junior high and senior high schools in Indonesia reached 94.8 percent, 67.7 percent and 45.6 percent, respectively, in 2010. However, in Papua and West Papua Provinces, the ratios were still below the national level. The ratios were 92.3 percent, 50.1 percent and 44.8 percent, respectively, in West Papua Province. In Papua Province, the ratios were even lower at 76.2 percent, 49.6 percent, and 36.1 percent, respectively (BPS-Statistics Indonesia 2010a). It was observable that there is a gradation to a lower enrollment ratio at the secondary than at the junior secondary and primary level in both provinces (Figure 4.1) (BPS-Statistics Indonesia 2009b). Although males have better opportunities to attend schools, the ratio of female to male net enrollment ratio is increasing in Indonesia at every educational level (National Development Planning Agency of the Republic of Indonesia 2007; Sardjuani 2008).

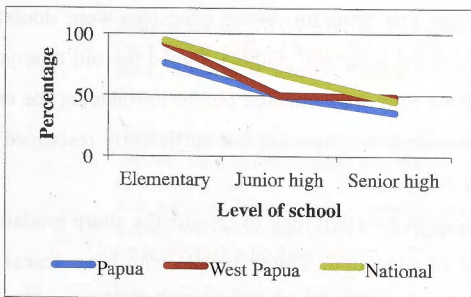


Figure 4.1 Net enrollment female: male ratio, 2010
Source: (BPS-Statistics Indonesia 2010a).

The spectrum to a lower enrollment ratio by level of education in both provinces may be due to the majority of schools being located in urban areas and in the old districts rather than in rural, remote areas and in newly established districts (BPS-Statistics of Papua province 2009). It was also found that some schools in remote areas had shortages of teachers (Andawat 2012; Democracy Alliance for Papua (ALDP) 2012).

The World Bank reported an association between economic condition and schooling. There was a tendency that some lower education level students had limited access to higher levels of education, as children of the poor dropped out earlier (The World Bank 2005, 2006, 2007). The 2007 Indonesian Young Adult Reproductive Health Survey (IYARHS) supported these findings. Around 52 percent of 8,481 female respondents and 54 percent of 10,830 male respondents stopped going to school because they could not pay the school fees (BPS-Statistics Indonesia and Macro International 2008).

4.1.2 The state of reproductive health education in Papua and West Papua Provinces

The central government targeted 100 percent nine-year compulsory education to be achieved in 2012 (Wedhaswary 2012) since the inception of the program in 1994 (Franken 2010). The nine-year compulsory education was an extension from six-years of mandatory universal education introduced in 1984 (Franken 2010).

In 2010, the central government gradually introduced a 12-year compulsory education. There was skepticism about this program. Some educators were doubtful whether the national budget could fund the program. Others argued the old nine-year compulsory education should have been fully implemented before introducing the new program. Others contended that educational facilities are not sufficiently resourced to support the new program (Franken 2010).

The 12-year compulsory education program may overcome the sharp gradation to a lower enrollment ratio by level of education. Young people who have access to education will be more likely to have a comprehensive knowledge of reproductive health. Accordingly, they will quite likely have sufficient motivation for adopting safer sexual practices to prevent HIV infection (Hargreaves and Glynn 2002; Gregson, Waddell, and Chandiwana 2001).

Considering the seriousness of HIV infection in Papua Province, in 2004 UNICEF and the Embassy of the Royal Kingdom of the Netherlands initiated a life skill project by providing training for peer educators for junior high school student representatives. The training on reproductive health and HIV was also provided for teacher representatives (Irwanto et al. 2010; UNICEF 2006).

Understanding educators' perspectives on reproductive health education is increasingly important to plan an effective comprehensive reproductive health education program. In 2009, I conducted in-depth interviews with educators about their views related to reproductive health education. The interviews discussed about reproductive health curriculum and textbooks, and HIV awareness for students. The interviews were carried out among staff of the education bureaus, as well as senior high school principals and teachers in Papua and West Papua Provinces.

Samuel, a staff member in the Education, Youth and Sport Bureau of Papua Province stated:

We don't have specific reproductive health education textbooks. Reproductive health education is important. However, currently reproductive health is integrated in the religion, biology or science, sport and health education, and social science subjects. All textbooks are based on KTSP (*Kurikulum Tingkat Satuan Pendidikan-Curriculum at the Educational Institution Level*). We are developing local content curriculum on health education and environment, and HIV is included in it.

The Education, Youth and Sport Bureau of Papua Province collaborate with health bureau, AIDS Commission, UNICEF, ILO, and World Bank on education development.

There is not any HIV intervention program for senior high school students. Once a year staffs of health bureau, AIDS Commission, or local NGO give mass education to schools. Usually it is only for one day, during student orientation week.

UNICEF gives extracurricular peer education training to junior high school students. Peer educators gives information to their friends on HIV prevention by avoiding free sex. Peer educators have been established in one city and four regions: Jayapura city, Jayapura district, Keerom district, Merauke district, and Jayawijaya district. The peer educator program is not available for senior high school students.

ILO gives funding for non-formal education, such as Community Learning Center (*Pusat Kegiatan Belajar Masyarakat-PKBM*) program. The program consists of Package A study group (*Kejar Paket A*) for elementary school level, Package B study group (*Kejar Paket B*) for junior high school level, Package C study group (*Kejar Paket C*) for senior high school level, and general level.

World Bank gives funding for information technology. We hope there will be internet connection for every school, from elementary to senior high school level (Interview with Samuel, 50 years, male, Javanese, a staff at the Education, Youth and Sport Bureau of Papua Province, February 28, 2009).

Samuel explained that senior high schools in Papua Province used KTSP (*Kurikulum Tingkat Satuan Pendidikan-Curriculum at the Educational Institution Level*) textbooks. There is no specific HIV intervention program for senior high school students. The students receive an HIV awareness program once a year during orientation week. The Education, Youth and Sport Bureau of Papua Province collaborates with the health bureau, the AIDS Commission, UNICEF, ILO, and the World Bank on education development. International donor agencies fund education programs in schools and in the community. The peer educator program was currently available for junior high school students, but was not available for senior high school students. The Education, Youth and Sport Bureau of Papua Province was developing a local content curriculum on health education and environment including HIV topics.

Joseph, a staff member in the Education, Youth and Sport Bureau of Papua Province stated:

We are developing a local content curriculum on HIV prevention. Some topics that are covered for senior high school students are pregnancy, unsafe abortion, STI, the cause and transmission of HIV, gender and human rights, VCT, the latest treatment on AIDS, STI, and free sex. ABC of HIV prevention is covered, but we don't cover how to use condoms correctly (Interview with Joseph, 57 years, male, Javanese, a staff at the Education, Youth and Sport Bureau of Papua Province, February 28, 2009).

Joseph's statement supports Samuel's explanation that the Education, Youth and Sport Bureau of Papua Province has been developing a local content curriculum on HIV prevention, but the curriculum did not include how to use a condom correctly.

Chris, a staff member in the Education, Youth and Sport Bureau of Jayapura city stated:

There are HIV peer educators and Saturday-Sunday camps in some schools. These are extracurricular program related to HIV prevention, and we started at junior high school level. UNICEF Papua and local government fund these programs. We did not have a specific program for senior high school students.

There isn't any specific reproductive health education at school. We use KTSP textbooks. We are now developing local content curriculum that

includes HIV prevention (Interview with Chris, 47 years, male, Javanese, a staff at the Education, Youth and Sport Bureau of Jayapura city, Papua Province, March 1, 2009).

Similar to Samuel, Chris explained the use of KTSP textbooks. He also explained that HIV peer educators and Saturday-Sunday camp extracurricular activities were only available for junior high school students. There was no HIV program for senior high school students.

Johan, a staff member in the education bureau in Manokwari district stated:

There isn't any specific program for senior high school students. Once a year some staffs of local public health center give HIV awareness to senior high school students.

I agree that we need comprehensive reproductive health education to prevent HIV, STI, and high-risk sexual practices. We have tried to develop a specific curriculum on HIV. A senior high school principal gave some ideas about the curriculum, and he agreed to develop the draft of the curriculum. However, after two years the curriculum did not finish, and it turned out that he died from AIDS. We cannot contradict the fact. Some teachers are HIV positive. There was a preacher who died from AIDS, too.

Health bureau believe in the ABC of HIV prevention, but we are in education sector always contradict the fact. I think students should know how to use a condom correctly. It doesn't mean that I agree to premarital or extramarital sex. Using a condom can prevent the transmission of HIV and other STI.

Sorong city has developed a local content curriculum on HIV prevention. Manokwari district is in the process of developing a local content curriculum on HIV prevention (Interview with Johan, 52 years, male, Mandacan tribe, a staff at the education bureau in Manokwari district, West Papua Province, 16 May 2009).

Johan explained there has not been any specific program for senior high school students. The local education bureau tried to develop a specific curriculum on HIV, but the teacher who agreed to write the draft had died from AIDS. Johan emphasized the importance of comprehensive HIV prevention, and that students should know how to use condom correctly. Sorong city has developed a local content curriculum on HIV prevention, and Manokwari district is in the process of developing the curriculum.

Yan, a private senior high school principal who is also a sport and health education teacher in Sorong city stated:

This school receives funding from the government and from the ABT (*Anu Beta Tubat*) foundation. We have a complete computer laboratory and language laboratory. This school was established to help the needy, those who dropped out from other schools. So, actually this school is a mechanics garage for students. So, most of the students who cannot go to public school will come here. They are accepted here. Most of our students are indigenous Papuans. It is good if they attend the school a week in a month.

I use several textbooks, cause sometimes one textbook does not explain in detail about some materials. I teach them about the ABC of HIV prevention. If male students want to know about condom use, then on an individual counseling I show them how to use a condom correctly. It is not covered in the textbook or in the curriculum. Who do you think can teach them about it? They are not close to their parents. They cannot expect their friends to teach them the right thing. They need our help (Interview with Yan, 48 years, male, Torajanese, a private senior high school principal who is also a sport and health education teacher in Sorong city, West Papua Province, 20 May 2009).

Yan explained that his school accepted students who had dropped out from other schools. Yan emphasized the importance of the ABC of HIV prevention (abstinence, being faithful, and condom use) as a preventive measures for pregnancy and STI. Condom use is not covered in the school textbook and curriculum, but in individual counseling sessions he explains how to use a condom correctly to his students.

A teacher in Jayapura city highlighted the importance of religion besides reproductive health education. Eva, a vice principal and counseling teacher at a private school in Jayapura city stated:

There hasn't been any training about HIV or reproductive health for our teachers. Yes, once a year local NGOs come to our school to give HIV awareness day during orientation week for our new students. I don't know much about reproductive health, so I can only give superficial counseling related to reproductive health. No more than that.

I think reproductive health education is important for our students to prevent pregnancy and HIV. Yes, we need to have a curriculum that covers reproductive health topics. I know there are many HIV cases in Papua. The government should pay more attention to young people; otherwise young people will be vanished (Interview with Eva, 48 years, female, Sentani tribe, a vice principal and counseling teacher at a private school in Jayapura city, Papua Province, 14 March, 2009).

Eva was critical that there has not been any training on HIV or reproductive health for teachers in her school. Every year there is an HIV awareness day during the orientation program for new students. She thought reproductive health education was important for students to prevent pregnancy and HIV. Further, she opined that a curriculum that

covers reproductive health topics is needed. However, the most influential factors are religion and family. Parents should teach their children about good behavior and sex.

A lack of textbooks was a common problem in some private schools. Liz, a teacher at a private senior high school in Jayapura city stated:

There has not been any HIV and AIDS awareness before. You are the first person to give HIV awareness program in this school. However, three students in year 10 have ever attended such activity about drug, HIV and AIDS held by National Drug Agency (*Badan Narkotika Nasional*) at RRI (Indonesian radio broadcasting).

We use KTSP book, published by Erlangga. We have limited books here. Only teacher has the book. Usually I ask one student to write the material from the textbook on the blackboard.

I think reproductive health education and STI knowledge are important, so the students will know about the consequences of premarital sex (An interview with Liz, 27 years, female, Batak ethnicity, a biology teacher at a private senior high school in Jayapura city, Papua Province, 6 May, 2009)

Liz criticized the lack of HIV or AIDS awareness for teachers from her school. I was the first person who gave HIV awareness to the students on her school. She used a KTSP biology textbook published by Erlangga as the source of information on HIV and AIDS. In her school, only teacher had the textbook. Therefore, she asked one student to write the material from the textbook on the blackboard. She thought reproductive health education especially HIV and STI was important.

Another teacher also expressed a lack of textbooks in her school. Maria, a biology teacher at a private senior high school in Jayapura district stated:

I have taught biology for seven years. We use KTSP (*Kurikulum Tingkat Satuan Pendidikan*-Curriculum at the Educational Institution Level) book now. I forgot the title of the book and the name of the publisher. Our students don't have the textbooks. I usually read the book to the students or I ask one of the students to write some material from the book on the black board. Human reproductive health is in the same chapter with plant and animal reproduction.

Students are very interested when I explain about human reproductive organs and pregnancy. Well, sometimes if I have time I explain about STI, but I cannot explain it to them very well since I am not a doctor.

We have ever had HIV awareness from a social foundation last year. They explained about the transmission of HIV from injection and sexual intercourse. I hope the students listened to it (An interview with Maria, 29 years, female, Dani tribe, a biology teacher at a private senior high school in Jayapura district, March 16, 2009).

Maria claimed that her students were very interested when she explained about reproductive organs and pregnancy. However, she did not feel confident to teach about STIs, and she would explain about STIs when she had time. She used a KTSP biology textbook, but the students did not have the textbook. She read the book to the students, or she asked one student to write the material on the blackboard. There had been HIV awareness from a local foundation last year.

Nick, a biology teacher at a private senior high school in Jayapura district stated:

I had worked at SMA Perbatasan, close to Papua New Guinea, for two years. Before that, I had worked for seven years in other private school. I teach biology.

We are waiting for a chance like this. The workshop. Only some teachers have ever had a chance to attend an HIV workshop. It is good if there is a workshop every year, but we have waited for a long time and we have not had the chance. All teachers should be in the room learning how to prevent and how to deal with HIV and AIDS.

We use KTSP textbooks. Our students don't have the textbooks. When the first time I taught biology in this school, I noticed that the students were very enthusiastic about reproductive matters than any other topics, because we talked about puberty, and human reproduction. They were really attracted to the topics like that. So, every time I teach, there isn't any student absent.

I live in Waena. You know, Waena is well known as a 'red' area. It has many bars and massages parlors, that also served as providing sexual workers. It has many HIV cases. I have told my children. I have told them earlier that it is a sin if you do like this. Yeah, I hope they will not do the things that we do not hope to happen (An interview with Nick, 42 years, male, Makassar ethnicity, a biology teacher at a private senior high school in Jayapura district, Papua Province, March 16, 2009).

Thomas, a school principal at a government public school in Jayapura city stated:

Reproductive health is integrated in the biology, social science, sport and health education, and religion. Some of our students in junior high schools had been trained for HIV study club as an extracurricular activity. UNICEF funded the program, in collaboration with Jayapura city government through BP3D (*Badan Perencanaan dan Pengendalian Pembangunan Daerah*), Regional Planning Agency, and Jayapura city education bureau. Around six students from some schools had been trained for study club and peer education. They are in year nine and they had already had their national exam, so they are not at the school anymore.

There hasn't been any training for senior high school students. Once a year, on the orientation day for new students, there is AIDS awareness from a local NGO. They talk about the cause of HIV, HIV prevention and treatment. I think they never talk about how to use a condom, since it was taboo to talk about it (An interview with Thomas, 55 years, male, Torajanese, a school principal at a government public school in Jayapura city, Papua Province, March 14, 2009).

In sum, all educators agreed about the importance of a comprehensive reproductive health education for students. Majority of educators claimed that students were very interested when they explained about reproductive health to the students. However, there was an indication that some topics on reproductive health, including STIs and condom use might not be taught to the students for several reasons. One reason was lacking of time. Other reasons included lacking of knowledge on related matters and the material was not covered in the school curriculum and textbooks.

Despite such arguments, the current HIV prevention program delivery especially in private senior high schools in Papua and West Papua Provinces were constrained by shortcomings in teacher training, available textbooks, school commitment, the lack of assessed learning outcomes, and weak community involvement. Most private senior high schools relied on the contribution of NGO activities on AIDS awareness program.

All teachers confirmed there has not been any HIV intervention program for senior high school students. Further, senior high school teachers explained the current HIV peer educators were for junior high school students. Moreover, HIV and AIDS awareness for senior high school students was only available once a year during orientation week for new students.

4.2 Key findings of the randomized trial

The reproductive health education in both Papua and West Papua Provinces to date falls short of being comprehensive and factual, whereas young people need complete and accurate information to make informed decisions about their sexual health. Young people also need a supporting environment where they can talk openly about sexuality.

No other setting can compete with schools in terms of access to young people and to teach to young people. Accordingly, school-based comprehensive reproductive health education are particularly important to help students acquire knowledge, develop attitudes and skills necessary for adopting lifelong and risk-reducing sexual practices (UNESCO 2009; Global HIV Prevention Working Group 2008).

Randomized controlled trials are generally accepted as the best approach to determine whether an intervention is effective, including in education. The advantage is related to their ability to demonstrate causation (Siegfried, Clarke, and Volmink 2005;

Schulz and Grimes 2002a, 2002b). Therefore, wherever possible, decisions to use particular education intervention should be based on evidence from well-conducted randomized trials. Numerous randomized trials have demonstrated that comprehensive school-based HIV prevention interventions can increase knowledge and contribute to more responsible sexual practices (UNESCO 2009; Global HIV Prevention Working Group 2008).

As mentioned earlier in the Chapter 1 and 3, this study is the first cluster randomized trial on HIV prevention through a school-based comprehensive reproductive health module. The following subchapters present key findings of the study, including lost to follow up, baseline characteristics of intervention and control groups, as well as the analyses of knowledge, attitude, and behavior intention tests. The results of self-reported sexual practices are presented in Chapter 5.

4.3 Loss to follow up

There are no universal agreement on what criteria should be used related to follow-up rates in randomized trials. Some researchers suggested a simple ‘five-and-20’ rule of thumb, with less than five percent loss is usually of little concern, whereas more than 20 percent poses serious threats to validity. A cut-off of 80 percent is used to separate ‘high’- and ‘low’ quality randomized trials (Straus et al. 2005; Cardarelli and Oberdorfer 2007), eventhough some researchers opined that the cut-off is an arbitrary threshold (Guyatt et al. 2011).

As described in Chapter 3, there was not any loss to follow-up at the cluster level. However, there was overall 8.7 percent (94 students) loss to follow-up at individual level from the total 1,082 students at pre-test to 988 students at post-test.

Table 4.1. Number of respondents from randomization up to the final analysis

	Intervention	Control	Total
Randomized	536	546	1,082
Lost to follow-up (%)	30 (5.6)	64 (11.7)	94 (8.7)
Removed from analysis	0	0	0
Final sample for analyses	506	482	988

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

Overall, the loss to follow-up in both intervention and control group was higher in West Papua Province compared to Papua Province. Of the total 30 students lost to follow-up in the intervention group, 19 students were from West Papua Province and 11

students were from Papua Province. Of the total 64 students lost to follow-up in the control group, 36 students were from West Papua Province and 28 students were from Papua Province. This explanation was also presented on the flow diagram in Chapter 3.

The final analyses were carried out on 988 students, consisting of 506 students in the intervention group and 482 students in the control group (Table 4.1). Loss to follow up of around 10 percent had been anticipated in this study as described in Chapter 3. Support from senior high school principals and teachers made this study possible and helped to achieve high participation rate.

Table 4.2 Lost to follow-up in the intervention group

Characteristics	Lost to follow up (N= 30) (%)	Completed both tests (N=506) (%)	P
Mean age (SD) [§]	19.0 (1.3)	18.9 (1.1)	>0.05
Sex*			
Male	20 (66.7%)	238 (47.0%)	>0.2
Female	10 (33.3%)	268 (53.0%)	
School type*			
Government school	10 (33.3%)	125 (24.7%)	>0.2
Private school	13 (43.3%)	245 (48.4%)	
Vocational school	7 (23.3%)	136 (26.9%)	
Ethnicity*			
Papuan	20 (66.7%)	298 (58.9%)	>0.2
Non-Papuan	10 (33.3%)	172 (34.0%)	
Mixed	0 (0.0%)	36 (7.1%)	
Sexual orientation*			
Homosexual	0 (0.0%)	4 (0.8%)	>0.2
Heterosexual	28 (93.3%)	488 (96.4%)	
Bisexual	2 (6.7%)	14 (2.8%)	
Transgender	0 (0.0%)	0 (0.0%)	
Religion*			
Catholic	0 (0.0%)	47 (9.3%)	>0.2
Protestant	26 (86.7%)	366 (72.3%)	
Islam	2 (6.7%)	45 (8.9%)	
Other	2 (6.7%)	48 (9.5%)	
Previous sexual experience*			
None	11 (36.7%)	170 (33.6%)	>0.2
Some	4 (13.3%)	150 (29.6%)	
Sexual intercourse	14 (46.7%)	172 (34.0%)	
Missing information	1 (3.3%)	14 (2.8%)	
Total	30 (100.0%)	506 (100.0%)	
Mean knowledge score (SD) at pre-test [§]	13.5 (3.1)	14.7 (2.9)	>0.05
Mean attitude score (SD) at pre-test [§]	98.5 (19.8)	112.5 (14.6)	<0.05
Mean behavioral intention score (SD) at pre-test [§]	60.0 (16.3)	69.6 (11.6)	<0.05

Note: Column percentage. *Pearson Chi-square test adjusted for clustering. [§]Independent sample t-test adjusted for clustering.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

The detailed issue of the loss to follow-up is presented in Tables 4.2 and Table 4.3. Both tables compare students who were lost to follow-up (they completed only the pre-test) with students who remained in the study (they completed both pre-test and post-test). The analyses were carried out using Pearson Chi-square test adjusted for clustering and independent t-test adjusted for clustering.

In the intervention group (Table 4.2), students in the lost to follow-up group and students who remained in the study group (the completers) were similar with respect to mean age, sex, school type, ethnicity, sexual orientation, previous sexual experience, and mean score of knowledge at pre-test. However, the two groups were dissimilar with respect to mean score of attitude at pre-test and mean score of behavior intention at pre-test. Students in the lost to follow-up group had significantly a lower mean score on attitude (98.5, SD=19.8) and behavior intention (60.0, SD=16.3) tests at pre-test compared to the completers (112.5, SD=14.6) and (69.6, SD=11.6), respectively (Independent sample t-test adjusted for clustering was significant at $p < 0.05$).

In the control group (Table 4.3), students in the lost to follow-up group and the completers were similar with respect to mean age, sex, school type, ethnicity, sexual orientation, previous sexual experience, mean score of knowledge and behavior intention tests at pre-test. However, the two groups were not similar with respect to mean score of attitude test at pre-test, with students in the lost to follow-up group having significantly had lower mean score of attitude test at pre-test (102.5, SD=19.6) compared to the completers (110.8, SD=15.5).

In sum, both the lost to follow-up and the completers groups in the intervention and control groups, were similar with respect to demographic characteristics, previous sexual experiences, and mean score of knowledge test at pre-test. In both the intervention and the control group, the lost to follow-up group had significantly a lower score on the attitude test at pre-test compared to the completers.

The lost to follow-up group and the completers groups in the intervention and control groups were not similar with respect to the behavior intention test at pre-test. In the intervention group, the lost to follow-up significantly had lower score of behavior intention test at pre-test compared to the completers. The loss to follow-up was related to the students' participation in the science and sports school competition which was being held when I carried out the post-test from the middle to the last week of May in West Papua Province. However, some students were absent on the post-test day and this

could have likely been related to their lower score on the behavior intention test at pre-test.

Table 4.3 Lost to follow-up in the control group

Characteristics	Lost to follow up (N= 30) (%)	Completed both tests (N=506) (%)	P
Mean age (SD) [§]	19.3 (1.3)	18.8 (1.2)	>0.05
Sex*			
Male	42 (65.6%)	236 (49.0%)	>0.1
Female	22 (34.4%)	246 (51.0%)	
School type*			
Government school	11 (17.2%)	134 (27.8%)	>0.2
Private school	37 (57.8%)	237 (49.2%)	
Vocational school	16 (25.0%)	111 (23.0%)	
Ethnicity*			
Papuan	43 (67.2%)	276 (57.3%)	>0.2
Non-Papuan	19 (29.7%)	181 (37.6%)	
Mixed	2 (3.1%)	25 (5.2%)	
Sexual orientation*			
Homosexual	2 (3.1%)	2 (0.4%)	>0.2
Heterosexual	58 (90.6%)	462 (95.9%)	
Bisexual	4 (6.2%)	17 (3.5%)	
Transgender	0 (0.0%)	1 (0.2%)	
Religion*			
Catholic	5 (7.8%)	68 (14.1%)	>0.2
Protestant	52 (81.2%)	372 (77.2%)	
Islam	4 (6.2%)	32 (6.6%)	
Other	3 (4.7%)	10 (2.1%)	
Previous sexual experience*			
None	20 (31.2%)	161 (33.4%)	>0.2
Some	14 (21.9%)	119 (24.7%)	
Sexual intercourse	30 (46.9%)	198 (41.1%)	
Missing information	0 (0.0%)	4 (0.8%)	
Total	64 (100.0%)	482 (100.0%)	
Mean knowledge score (SD) at pre-test [§]	13.7 (3.2)	14.4 (3.1)	>0.05
Mean attitude score (SD) at pre-test [§]	102.5 (19.6)	110.8 (15.5)	<0.05
Mean behavioral intention score (SD) at pre-test [§]	63.8 (16.0)	68.9 (12.6)	>0.05

Note: Column percentage. *Pearson Chi-square test adjusted for clustering. [§]Independent sample t-test adjusted for clustering.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

4.4 Baseline characteristics

4.4.1 Characteristics of intervention and control group

Tables 4.4, 4.5, and 4.6 presented the results of characteristics analyses using Pearson Chi-square and independent sample t-test adjusted for clustering by dividing Pearson Chi-square test with the design effect $1 + (m - 1)\rho$ (=3.4) (Donner and

Donald 1988; Kaczorowski 2011; Jung, Ahn, and Donner 2001), and dividing t-test with square root of the design effect (=1.8) (Donner and Klar 2000; Kaczorowski 2011), then looking at the table of critical values for Chi-square and t-test or calculating the confidence interval (NIST/SEMATECH 2012; Zhang 2006; Miles 2008). These tests were carried out to assess whether randomization was conducted fairly.

4.4.2 Demographic characteristics

Of the total 988 students, 47.3 percent (467) were males and 52.7 percent (521) were females. The mean age was 18.9 years (SD = 1.1) and students' ages ranged from 16.8 to 21.5 years. The students who came from public schools made up 26.3 percent (260), those from private schools were 48.7 percent (481) and those from vocational schools made up 25.0 percent (247) (Table 4.4).

Overall, 57.6 percent (569) of students were Papuan, 36.4 percent (360) were non-Papuan and 6.0 percent (59) were of mixed ethnicity. Ninety-five percent (936) of students identified themselves as having heterosexual orientation, 4.0 percent (40) identified as bisexual, 1.1 percent (11) was homosexual, and 0.1 percent (one) was transgender.

More students in the control group followed Catholic and Protestant religions (13.9 percent and 77.2 percent, respectively) compared to intervention group (9.5 percent and 72.1 percent, respectively). Islam and other religion were more common among students in the intervention group (9.7 percent and 8.7 percent, respectively) compared to control group (7.3 percent and 1.7 percent, respectively). The difference was significant at $0.025 < p < 0.05$.

Around 45.7 percent students in the intervention group and 55.7 percent students in the control group reported their religiosity as ordinary, whereas 37.9 percent of students in the intervention group and 28.7 percent students in the control group declared they were very religious.

Previous sexual experience among students in the intervention and control group was not significantly different. In both the control and intervention groups, a higher percentage of students had engaged in sexual intercourse (41.1 percent and 34.8 percent, respectively), followed by not having any sexual intercourse (33.4 percent and 33.6 percent, respectively) and having had some sexual intercourse (24.9 percent and 30.2

percent, respectively). More detail about self-reported sexual practices will be further described in Chapter 5.

Table 4.4 Demographic characteristics of intervention and control group

Characteristics	Control (N= 482)	Intervention (N=506)
Mean age (SD) in years	18.8 (1.2)	18.9 (1.1)
Sex		
Male	229 (47.5%)	238 (47.0%)
Female	253 (52.5%)	268 (53.0%)
School type		
Government school	134 (27.8%)	126 (24.9%)
Private school	237 (49.2%)	244 (48.2%)
Vocational school	111 (23.0%)	136 (26.9%)
Ethnicity		
Papuan	270 (56.0%)	299 (59.1%)
Non-Papuan	189 (39.2%)	171 (33.8%)
Mixed	23 (4.8%)	36 (7.1%)
Sexual orientation		
Homosexual	6 (1.2%)	5 (1.0%)
Heterosexual	452 (93.8%)	484 (95.7%)
Bisexual	23 (4.8%)	17 (3.4%)
Transgender	1 (0.2%)	0 (0.0%)
Religion*		
Catholic	67 (13.9%)	48 (9.5%)
Protestant	372 (77.2%)	365 (72.1%)
Islam	35 (7.3%)	49 (9.7%)
Other	8 (1.7%)	44 (8.7%)
Religiosity		
Not religious	75 (15.6%)	83 (16.4%)
Ordinary	268 (55.7%)	231 (45.7%)
Very religious	138 (28.7%)	192 (37.9%)
Number of friends having sex		
None	114 (23.7%)	154 (30.4%)
Some	206 (42.7%)	251 (49.6%)
Many	149 (30.9%)	98 (19.4%)
All	13 (2.7%)	3 (0.6%)
Living arrangements		
Lived with parents	113 (23.4%)	130 (25.7%)
Lived with relatives	49 (10.2%)	68 (13.4%)
Lived with friends	282 (58.5%)	289 (57.1%)
Missing information	38 (7.9%)	19 (3.8%)
Previous sexual experience		
None	161 (33.4%)	170 (33.6%)
Some	120 (24.9%)	153 (30.2%)
Sexual intercourse	198 (41.1%)	176 (34.8%)
Missing information	3 (0.6%)	7 (1.4%)
Total	482 (48.8%)	506 (51.2%)

Note: Column percentage

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

4.4.3 Alcohol and drug use

Alcohol and drug use among students in the intervention and control group was not significantly different. Fewer students reported currently drinking alcohol (16.0 to

16.2 percent) and using drugs (1.4 to 3.9 percent), compared to students who had ever drunk alcohol (30.9 to 33.0 percent) and used drugs (3.9 to 5.1 percent) (Table 4.5).

Table 4.5. Alcohol and drug use in the intervention and control groups

Alcohol and drug use	Control (N=482)	Intervention (N=506)
Ever drank alcohol		
No	319 (66.2%)	332 (65.6%)
Yes	149 (30.9%)	167 (33.0%)
Missing information	14 (2.9%)	7 (1.4%)
Currently drink alcohol		
No	387 (80.3%)	417 (82.4%)
Yes	77 (16.0%)	82 (16.2%)
Missing information	18 (3.7%)	7 (1.4%)
Ever used drug		
No	448 (92.9%)	473 (93.5%)
Yes	19 (3.9%)	26 (5.1%)
Missing information	15 (3.1%)	7 (1.4%)
Currently use drug		
No	457 (94.8%)	488 (96.4%)
Yes	6 (1.2%)	11 (2.2%)
Missing information	19 (3.9%)	7 (1.4%)
Total	482 (48.8%)	506 (51.2%)

Note: Column percentage.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

4.4.4 Source of information and enthusiasm to know about reproductive health education

As depicted in Table 4.6, a majority of students in the intervention (67.4 percent) and control group (62.0 percent) reported obtaining information on HIV and sexuality primarily from the media (printed and/or electronic). The second most cited source of HIV and sexuality information was school (22.3 percent in the intervention group and 20.7 percent in the control group), followed by parents, friends and other (including from NGO, and health workers).

Students were also asked whether they were interested in learning about some topics related to reproductive health education including the menstrual cycle, how pregnancy occurs, STI, contraception, and HIV prevention. Of these five topics, the most interesting topic to the students was HIV prevention (68.3 to 73.1 percent), followed by STI (58.7 to 64.0 percent), how pregnancy occurred (40.5 to 42.9 percent), contraception (32.8 percent), and the least interesting topic for students was menstrual cycle (30.7 to 34.2 percent).

In sum, the intervention and control groups were similar in most demographic characteristics, alcohol and drug use, as well as source of information and enthusiasm to

know about reproductive health education, except religion. These results indicated that randomization achieved a good balance between groups.

Table 4.6. Source of HIV and sexuality information and enthusiasm for reproductive health education

Source of HIV and sexuality information and enthusiasm to learn about reproductive health education	Control (N=482)	Intervention (N=506)
Source of HIV and sexuality information		
Media (printed and/or electronics)	299 (62.0%)	341 (67.4%)
School	100 (20.7%)	113 (22.3%)
Parents	22 (4.6%)	22 (4.3%)
Friends	15 (3.1%)	13 (2.6%)
Other	38 (7.9%)	14 (2.8%)
Missing information	8 (1.7%)	3 (0.6%)
Want to know about menstrual cycle		
Doesn't want to know	152 (31.5%)	139 (27.5%)
A little	161 (33.4%)	186 (36.8%)
Much	148 (30.7%)	173 (34.2%)
Missing information	21 (4.4%)	8 (1.6%)
Want to know about how pregnancy occur		
Doesn't want to know	78 (16.2%)	106 (20.9%)
A little	181 (37.6%)	188 (37.2%)
Much	207 (42.9%)	205 (40.5%)
Missing information	16 (3.3%)	7 (1.4%)
Want to know about STI		
Doesn't want to know	65 (13.5%)	61 (12.1%)
A little	121 (25.1%)	113 (22.3%)
Much	283 (58.7%)	324 (64.0%)
Missing information	13 (2.7%)	8 (1.6%)
Want to know about contraception method		
Doesn't want to know	114 (23.7%)	153 (30.2%)
A little	190 (39.4%)	178 (35.2%)
Much	158 (32.8%)	166 (32.8%)
Missing information	20 (4.1%)	9 (1.8%)
Want to know about HIV prevention		
Doesn't want to know	57 (11.8%)	56 (11.1%)
A little	85 (17.6%)	73 (14.4%)
Much	329 (68.3%)	370 (73.1%)
Missing information	11 (2.3%)	7 (1.4%)
Total	482 (48.8%)	506 (51.2%)

Note: Column percentage.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

4.5 Analyses

4.5.1 Interaction

Kirby, Baumler, et al. (2004), Danielson, Marcy, et al. (1990), Fitzgerald, Stanton, et al. (1999), and Klepp, Ndeki, et al. (1997) reported that reproductive health education programs had different effects by sex. Martiniuk, O'Connor, et al. (2003)

reported that previous sexual experience modified the effect of reproductive health education programs.

I checked any possible interaction by creating product terms of several covariates and including them in the multivariate analyses, but none of them was significant. Accordingly, it was unlikely that my data had any possible interaction. Finally, I included religion, age, sex, previous sexual experience, school type and related score at pre-test in the multivariate analyses as these variables had prognostic strength on the outcome.

4.5.2 Change scores and different scores

Change scores refer to the average change in mean score from pre-test to post-test for either the intervention or control group. The change scores were analyzed using paired t-tests separately for intervention and control groups.

Different scores refer to the difference in change score between the intervention and control groups. Crude analysis was carried out using independent t-test adjusted for clustering (Kaczorowski 2011; Donner and Klar 2000). Adjusted analysis was carried out using linear mixed model (Donner and Klar 1994, 2000; Beaumont 2012; Garson 2012; Kaczorowski 2011).

A linear mixed model is a parametric linear model for clustered, longitudinal, or repeated-measures data that quantifies the relationships between a continuous dependent variable and various predictor variables. It also handles more complex situations in which the experimental units are nested in a hierarchy. The data in my study are 'repeated-measure data', in which the dependent variable (knowledge test) is measured more than once on the same unit of analysis across levels of a repeated-measures factor (test) (West, Welch, and Gatecki 2007). The equation model that I had developed for an individual observation in a linear mixed model was based on West, Welch, et al. (2007, :15):

$$Y_{ti} = \beta_1 \text{Group} + \beta_2 \text{Time} + \beta_3 \text{Group} * \text{Time} + \dots + \beta_p X_{ti}^{(p)} \} \text{fixed} \\ + u_{1i} + Z_{ti}^{(1)} + \dots + u_{qi} + Z_{ti}^{(q)} + \varepsilon_{ti} \} \text{random}$$

Y_{it} : measured of the continuous response variable Y taken on the t -th occasion for the i -th subject.
 t ($t = 1, \dots, n_i$) indexed the n_i longitudinal observations on the dependent variable for a given subject.
 i ($i = 1, \dots, m$) indicated the i -th subject (unit of analysis).

X and Z were covariates. ε was residual.

The first set contained group, time, and time-by-group interaction. p denoted number of covariates, $X^{(1)}, \dots, X^{(p)}$, associated with the coefficient of fixed effects β_1, \dots, β_p .

The second set contained q covariates, $Z^{(1)}, \dots, Z^{(q)}$, associated with the random effects u_{1i}, \dots, u_{qi} that were specific to subject i .

The X and/or Z covariates might be continuous or indicator variables.

A linear mixed model may include both fixed-effect parameters and random effects. Fixed effects, which contained regression coefficients, describe the relationships between the dependent variable and predictor variables for an entire population of units of analysis. In my model, the fixed effects contained group (intervention or control group), time (pre-test and post-test), time-by-group interaction, and other covariates. These covariates included sex, age, ethnicity, school type, sexual experience in the previous month before pre-test and post-test, and the enthusiasm to know more about the menstrual cycle, how pregnancy occurs, contraception, STI, and HIV prevention.

Random effects were random values associated with the levels of a random factor, represent random deviations from the relationships described by fixed effects (SPSS Inc 2005; West, Welch, and Gatecki 2007; UCLA Academic Technology Services 2009). In my study the random effects were students nested within school.

Data preparation for mixed model in my analysis included restructuring data from 'one subject with multiple variables in a row' to 'one subject in multiple rows dependent upon the number of variable groups'. A variable group was a group of related variables that has been created to represent repeated measurement on one variable (West, Welch, and Gatecki 2007; UCLA Academic Technology Services 2009; SPSS Inc 2005). In my study each variable was measured twice in the pre-test and post-test, therefore, each subject had two rows in the restructured data.

4.5.3 Knowledge test

In total there were 25-true/false questions in the knowledge test. The knowledge test consisted of five components: HIV (nine questions), safer sex (three questions), sexual myths (three questions), condoms and the pill (five questions), and STIs (five questions) (Table 4.7). A correct answer scored one, whereas the wrong answer scored zero, with a maximum score of 25.

4.5.3.1 Change scores in knowledge test

At pre-test, the mean score for the overall 25 questions in the knowledge test and four components of the knowledge test was no different between the intervention and control groups. The difference was prominent for the sexual myth questions only with a perfect score of three, for which the intervention group had a slightly better mean score (1.8) compared to the control group (1.6). The difference was 0.2, 95% CI 0.07-0.3.

Change scores in the knowledge test are presented in Table 4.7 and Figure 4.2. The overall mean knowledge score in the intervention group at pre-test was 14.7 (SD=2.9) (58.8 percent of the maximum score of 25), which increased to 17.5 (SD=3.2) (70.0 percent of the maximum score of 25) at post-test. Therefore the change score in the intervention group was 3.2.

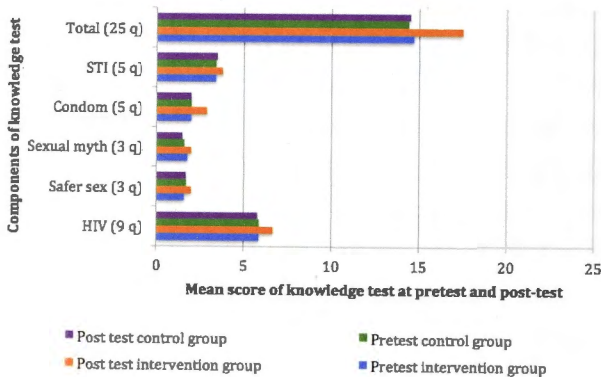


Figure 4.2 Mean scores of knowledge test at pre-test and post-test in the intervention and control group

Note : q=questions

Source : *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

In the control group, the overall mean knowledge score was 14.4 (SD=3.1) (57.6 percent of the maximum score of 25) at pre-test increasing to 14.5 (SD=3.1) (58 percent of the maximum score of 25) at post-test, therefore the change score was 0.1 Table 4.7 and Figure 4.2.

All change scores in the intervention group for the overall knowledge test, HIV, safer sex, sexual myths, condoms and the pill, and STI questions were significant at $p < 0.05$. Of the knowledge test components, the lowest change scores in the intervention

group was 0.2 for sexual myth questions, 0.4 for safer sex questions and STI questions, 0.8 for HIV questions, and the highest was 0.9 for the condoms and the pill question (Table 4.7). Conversely, in the control group, only a change score of STI question (0.1) was found to be significant (Table 4.7).



Figure 4.3 Pre-test and post-test in some senior high schools

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

Table 4.7 Change score in the knowledge test

Knowledge questions (correct answer in brackets)	Intervention (SD)			Control (SD)		
	Pretest	Post-test	Change score	Pretest	Post-test	Change score
HIV (nine questions)						
1. A person who is suffering from STI will increase his/her risk to get HIV infection (T)	5.9 (1.4)	6.7 (1.5)	0.8*	5.9 (1.5)	5.8 (1.4)	-0.1
2. You can be infected with HIV for up to nine months before the virus is detected (F)	0.5 (0.5)	0.6 (0.5)	0.1	0.5 (0.5)	0.6 (0.5)	0.1
3. HIV infection can be cured if diagnosed and treated early (F)	0.2 (0.4)	0.5 (0.5)	0.3	0.3 (0.4)	0.2 (0.4)	-0.1
4. Someone can be infected with HIV for more than ten years without showing any symptoms (T)	0.5 (0.5)	0.6 (0.5)	0.1	0.6 (0.5)	0.5 (0.5)	-0.1
5. Someone can get HIV infection from vaginal, anal, or oral sexual contact (T)	1.0 (0.2)	1.0 (0.2)	0	0.9 (0.3)	0.9 (0.3)	0
6. An HIV infected person can transmit the virus through toilet seat, water and door handle (F)	0.5 (0.5)	0.6 (0.5)	0.1	0.5 (0.5)	0.5 (0.5)	0
7. You can tell a person is infected with HIV by the way he or she looks (F)	0.8 (0.4)	0.8 (0.4)	0	0.8 (0.4)	0.8 (0.4)	0
8. Sharing needles to inject drugs is one way to get HIV (T)	0.6 (0.5)	0.7 (0.5)	0.1	0.6 (0.5)	0.6 (0.5)	0
9. You can get a test for HIV and STI at Indonesian Red Cross (PMI), hospitals, public health centers (Puskesmas), NGO (LSM), and private laboratory (T)	0.9 (0.2)	1.0 (0.2)	0.1	0.9 (0.3)	0.9 (0.3)	0
1.0 (0.2)	0.9 (0.3)	-0.1	0.9 (0.3)	0.9 (0.3)	0	
Safer sex (three questions)						
1. If a guy pulls his penis out of a girl in time (before he ejaculates), he can be sure to prevent HIV infection, STIs and pregnancy (F)	1.6 (0.7)	2.0 (0.8)	0.4*	1.7 (0.8)	1.7 (0.7)	0
2. Abstinence is the most effective method of avoiding HIV infection, STI and unintended pregnancy (T)	0.6 (0.5)	0.7 (0.5)	0.1	0.6 (0.5)	0.6 (0.5)	0
3. Girls can get pregnant even if the penis doesn't actually enter the vagina (T)	0.8 (0.4)	0.9 (0.4)	0.1	0.8 (0.4)	0.8 (0.4)	0
0.3 (0.5)	0.5 (0.5)	0.2	0.3 (0.5)	0.3 (0.5)	0	
Sexual myth (three questions)						
1. Most sexual assaults are committed by strangers (F)	1.8 (0.9)	2.0 (0.8)	0.2*	1.6 (0.9)	1.5 (0.9)	-0.1
2. Washing genitals after having sex will wash out the sperm and protect against HIV infection, STIs, and pregnancy (F)	0.8 (0.4)	0.8 (0.4)	0	0.7 (0.5)	0.7 (0.5)	0
3. Urinating after sex will wash out the sperm and protect against HIV infection, STIs, and pregnancy (F)	0.5 (0.5)	0.6 (0.5)	0.1	0.4 (0.5)	0.4 (0.5)	0
0.5 (0.5)	0.7 (0.5)	0.2	0.5 (0.5)	0.5 (0.5)	0	
Condom and pill (five questions)						
1. Teenagers can get pill contraception and condoms from a pharmacy without permission from a parent (T)	2.0 (1.1)	2.9 (1.2)	0.9*	2.0 (1.1)	2.0 (1.1)	0
2. Pill contraception can protect a woman from STIs, especially gonorrhoea (F)	0.5 (0.5)	0.6 (0.5)	0.1	0.5 (0.5)	0.5 (0.5)	0
3. A woman is protected from pregnancy the day she begins taking the pill (F)	0.6 (0.5)	0.7 (0.5)	0.1	0.6 (0.5)	0.6 (0.5)	0
4. Condoms can give 100 percent protection against HIV and all STIs if they are put on correctly (F)	0.4 (0.5)	0.6 (0.5)	0.2	0.4 (0.5)	0.4 (0.5)	0
5. The correct way to use a condom is to pull it on tight so there is no space between the condom and the end of the penis (F)	0.3 (0.4)	0.5 (0.5)	0.2	0.2 (0.4)	0.2 (0.5)	0
0.3 (0.5)	0.5 (0.5)	0.2	0.2 (0.4)	0.3 (0.4)	0.1	
STIs (five questions)						
	3.4 (1.1)	3.8 (1.1)	0.4*	3.4 (1.1)	3.5 (1.1)	0.1*

1. AIDS and other STIs are preventable diseases (T)	0.7 (0.5)	0.8 (0.4)	0.1	0.6 (0.5)	0.7 (0.5)	0.1
2. Many people with STIs have no signs of illness (T)	0.6 (0.5)	0.7 (0.5)	0.1	0.7 (0.5)	0.7 (0.5)	0
3. A person can get the same STI more than once (T)	0.8 (0.4)	0.8 (0.4)	0	0.8 (0.4)	0.8 (0.4)	0
4. STIs are rare among teenagers (F)	0.7 (0.5)	0.7 (0.5)	0	0.6 (0.5)	0.7 (0.5)	0.1
5. Untreated STIs can lead to both men and women being unable to have children (T)	0.7 (0.4)	0.8 (0.4)	0.1	0.8 (0.4)	0.8 (0.4)	0
All 25 knowledge questions	14.7 (2.9)	17.5 (3.2)	2.8†	14.4 (3.1)	14.5 (3.1)	0.1

Notes: T = true. F = false. Change score = mean score post-test – pre-test in intervention or control group.

†Significant at $p < 0.05$

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

4.5.3.2 Different scores in knowledge test

Different scores in mean knowledge test are presented in Table 4.8. The results of crude analyses indicate the different scores between the intervention and control group for HIV, safe sex, sexual myths, condoms and the pill, STIs, and the overall knowledge tests were significant.

Table 4.8. Different scores in mean knowledge test

Knowledge test	Different scores (95% CI) ^a	
	Crude ^a	Adjusted ^b
HIV (nine questions)	0.9 (0.7, 1.1)	0.9 (0.6, 1.1)
Safer sex (three questions)	0.3 (0.2, 0.4)	0.3 (0.2, 0.5)
Sexual myth (three question)	0.4 (0.3, 0.5)	0.4 (0.2, 0.5)
Condom and pill (five questions)	0.9 (0.7, 1.1)	0.9 (0.7, 1.1)
STI (five questions)	0.2 (0.0, 0.3)	0.1 (-0.1, 0.3)
Overall (25 questions)	2.8 (2.3, 3.1)	2.6 (2.1, 3.1)

Notes: ^aDifference scores = difference in change scores between intervention and control group

^a Independent t-test adjusted for clustering.

^b Linear mixed model adjusted for group (intervention and control group), time (pre-test and post-test), time-by-group interaction, sex, age, ethnicity, school type, and sexual experience in the previous month before pre-test and post-test.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

The results of the linear mixed model presented in in Table 4.8 indicate the differences in scores between the intervention and the control group for HIV, safe sex, sexual myth, condom and pill, and the overall knowledge tests were significant, except in the STI question with mean difference of 0.1 (95% CI -0.1, 0.3).

Table 4.9 presents the estimates of fixed effects in the linear mixed model of the overall knowledge test. Results suggest that being in the control group, sexual experience in the previous month before pre-test and post-test and age were predictors of difference score of the overall knowledge test from pre-test to post-test between intervention and control group.

Being in the control group, compared to being in the intervention group, decreased the mean score of the overall knowledge test by 2.8 points (95% CI -3.6, -2.1). Students who had not had any sexual experience and had some sexual experience in the previous month before pre-test and post-test, compared to those students who had experienced sexual intercourse, increased the mean score of the overall knowledge test by 0.6 points (95% CI 0.3, 0.9). Each year increase in the students' ages lowered the mean score of the overall knowledge test by 0.3 points (95% CI -0.5, -0.2) controlling for other variables in the model.

Table 4.9. Estimates of fixed effects in linear mixed model of the overall knowledge test

Parameter	Estimate	SE	t	p-value	95% CI	
					Lower	Upper
Intercept ^a	23.7	1.4	17.1	<0.001	20.9	26.4
Group: Control ^a	-2.8	0.3	-8.4	<0.001	-3.6	-2.1
School type (reference category: vocational school)						
Government	0.8	0.4	1.9	0.086	-0.1	1.8
Private	-0.5	0.4	-1.3	0.219	-1.4	0.3
Sex: Male	-0.3	0.1	-1.9	0.062	-0.5	0.0
Ethnicity (reference category: mixed ethnicity)						
Papuan	-0.5	0.3	-1.6	0.119	-1.0	0.1
Non-Papuan	-0.1	0.3	-0.3	0.799	-0.7	0.5
Sexual experience in the previous month before pre-test and post-test (reference category: having had sexual intercourse)						
None and some ^a	0.6	0.1	3.9	<0.001	0.3	0.9
Time: pre-test ^a	-2.8	0.2	-15.4	<0.001	-3.2	-2.4
Age (in years) ^a	-0.3	0.1	-4.6	<0.001	-0.5	-0.2
Time (pre-test)-by group (control) interaction ^a	2.6	0.3	10.0	<0.001	2.1	3.1

Notes: ^aStatistically significant at 0.05 level. The estimate is the difference relative to the reference category.

Linear mixed model adjusted for group (intervention and control group), time (pre-test and post-test), time-by-group interaction, sex, age, ethnicity, school type, and sexual experience in the previous month before pre-test and post-test.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

In the model shown in Table 4.9, time-by-group interaction was statistically significant. The significance in the time-by-group interaction implied the difference in mean score of the overall knowledge test from pre-test to post-test between intervention and control group.

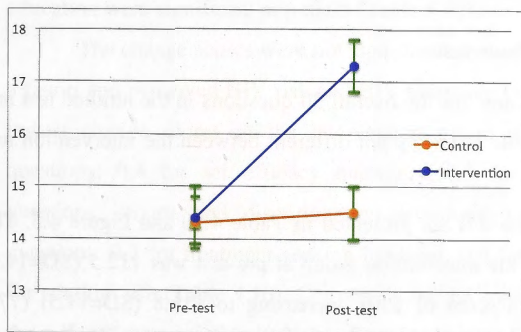


Figure 4.4 Estimated means and 95% CI for time-by-group interaction in knowledge test

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

Figure 4.4 shows clearly the effect of the '*Reducing the Risk of HIV Infection: Intervention trial for Young Papuans*' module on the pre-test and post-test of the overall knowledge test between the intervention and control group.

The mean score of knowledge at pre-test in the control group was 14.4 (95% CI 13.8, 14.8) increasing to 14.5 (95% CI 14.0, 15.0) at post-test. The increase of mean score of knowledge was higher in the intervention group, from 14.4 (95% CI 13.9, 15.0) at pre-test to 17.3 (95% CI 16.8, 17.8) at post-test. Therefore, the '*Reducing the Risk of HIV Infection: Intervention trial for Young Papuans*' module showed efficacy of 2.6 points (95% CI 2.1, 3.1) better mean score for the overall knowledge test which was different from pre-test to post-test between intervention and control group.

4.5.4 Attitude test

In total there were 30 questions in the attitude test. The attitude test consisted of ten components: condom use (five questions); refusal/delaying tactics (three questions); sex in exchange for money, a gift, or a favor (one question); social norms (six questions), sexual and reproductive rights (two questions); self-efficacy (two questions); treatment-seeking behavior (three questions); stigma and discrimination (two questions); perceived HIV risk and HIV infection (five questions); and reproductive health education (one question). The responses were chosen from five points on a Likert scales (strongly agree, agree, neutral, disagree, and strongly disagree). The most correct answer scored five, whereas the most wrong answer scored one, corresponding to a maximum score of 150.

4.5.4.1 Change scores in attitude test

At pre-test, the mean scores for the overall 30 questions in the attitude test and all ten components of the attitude test were not different between the intervention and control group.

Change scores in attitude test are presented in Table 4.10 and Figure 4.5. The overall mean attitude score in the intervention group at pre-test was 112.5 (SD=14.6) (75.0 percent of the maximum score of 150), increasing to 116.8 (SD=14.5) (77.9 percent of the maximum score of 150) at post-test. The increase corresponded to the change score of 4.3 (Figure 4.5 and Table 4.10).

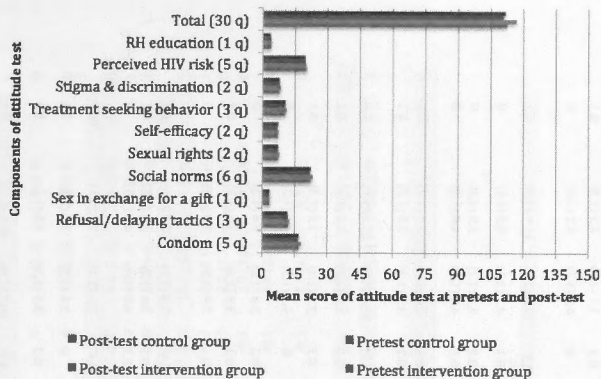


Figure 4.5 Mean scores of attitude test at pre-test and post-test in the intervention and the control group

Note : q=questions

Source : The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans

In the control group, the overall mean attitude score was 110.8 (SD=15.5) (73.9 percent of the maximum score of 150) at pre-test, increasing to 111.8 (SD=16.7) (74.5 percent of the maximum score of 150) at post-test. The increase corresponded to the change score of 1.0 (Figure 4.5 and Table 4.10).

Change scores among intervention group for the overall attitude test, condom use, refusal/delaying tactics, social norms, sexual and reproductive rights, self-efficacy, treatment-seeking behavior, stigma and discrimination, and reproductive health education were significant at $p < 0.05$ (Table 4.10).

The change scores were not significant for sex in exchange for money, a gift, or a favor; and perceived HIV risk and HIV infection. Of the attitude test components, the lowest change scores in the intervention group were 0.2 for reproductive health questions; 0.4 for self-efficacy questions; 0.5 for sexual and reproductive rights questions, stigma and discrimination questions, and refusal and delaying tactics questions; 0.7 for treatment-seeking behavior; 0.9 for social norms questions, and 1.1 for condom use (Table 4.10). Conversely, in the control group, only a change score in the self- efficacy question (0.3) was found to be significant (Table 4.10).

Table 4.10 Change scores in the attitude test

Attitude questions (correct answer in brackets)	Intervention (SD)			Control (SD)		
	Pretest	Post-test	Change score	Pretest	Post-test	Change score
Condom use (five questions)	17.0 (2.9)	19.1 (2.9)	1.1[†]	16.8 (3.0)	17.1 (3.1)	0.3
1. Condom use creates doubt between sexual partner (SD)	3.2 (1.3)	3.5 (1.2)	0.3	3.0 (1.3)	3.2 (1.3)	0.2
2. Using a condom spoils the enjoyment of sexual intercourse (SD)	3.1 (1.2)	3.6 (1.1)	0.5	3.1 (1.3)	3.1 (1.2)	0
3. Young people should be taught how to use a condom correctly (SA)	3.6 (1.2)	3.7 (1.1)	0.1	3.6 (1.2)	3.6 (1.2)	0
4. Someone who carries a condom means that he/she is going to have sex (SD)	3.1 (1.2)	3.3 (1.1)	0.2	3.1 (1.2)	3.2 (1.2)	0.1
5. Using a condom correctly every time people have sex will reduce their chance of getting HIV infection (SA)	4.3 (1.0)	4.3 (1.0)	0	4.2 (1.1)	4.2 (1.1)	0
Refusal/delaying tactics (three questions)	12.2 (2.7)	12.7 (2.5)	0.5[†]	12.0 (2.8)	11.9 (3.0)	-0.1
1. Avoiding sex with a person other than your sexual partner makes you seem sexually weak (SD)	4.3 (1.1)	4.4 (1.0)	0.1	4.2 (1.0)	4.2 (1.1)	0
2. You may lose your partner if you refuse having sex with him/her (SD)	3.9 (1.3)	4.1 (1.1)	0.2	3.9 (1.2)	3.9 (1.3)	0
3. You should have sex after six months of dating (SD)	4.1 (1.1)	4.3 (1.0)	0.2	4.0 (1.2)	4.0 (1.3)	0
Sex in exchange for money, a gift, or a favor (one question)	3.5 (1.3)	3.6 (1.3)	0.1	3.4 (1.3)	3.5 (1.3)	0.1
1. If someone spends a lot of money on a date, you owe him/her at least a kiss (SD)	3.5 (1.3)	3.6 (1.2)	0.1	3.5 (1.3)	3.6 (1.2)	0.1
Social norms (six questions)	22.4 (4.5)	23.3 (4.3)	0.9[†]	22.1 (4.8)	22.5 (4.5)	0.4
1. If someone is wearing body-revealing clothes, you expect to have sex with him/her (SD)	3.8 (1.2)	3.9 (1.1)	0.1	3.8 (1.2)	3.9 (1.1)	0.1
2. Having sex is the best way to show affection to someone you love (SD)	3.8 (1.3)	4.1 (1.2)	0.3	3.7 (1.4)	3.8 (1.3)	0.1
3. Having sex in the traditional celebration or ritual ceremony should be preserved as a cultural tradition (SD)	4.1 (1.2)	4.1 (1.2)	0	4.1 (1.3)	4.1 (1.2)	0
4. If you talk about sexuality with your partner, it means that you want to have sex with him/her (SD)	3.7 (1.2)	3.9 (1.1)	0.2	3.6 (1.2)	3.6 (1.2)	0
5. A man can have premarital or extramarital sex, but a woman cannot (SD)	3.4 (1.4)	3.5 (1.2)	0.1	3.3 (1.3)	3.4 (1.2)	0.1
6. You would persuade your partner to use alcohol to increase your chances of having sexual intercourse (SD)	3.9 (1.3)	4.0 (1.2)	0.1	3.9 (1.2)	3.9 (1.2)	0
Sexual and reproductive health rights (two questions)	7.4 (2.2)	7.9 (1.8)	0.5[†]	7.3 (2.1)	7.4 (2.0)	0.1
1. Women have the rights to decide how far to go in a relationship (SA)	3.5 (1.3)	3.8 (1.1)	0.3	3.4 (1.3)	3.5 (1.2)	0.1
2. Women have the rights to have a safe and pleasurable sexual life (SA)	4.0 (1.3)	4.1 (1.2)	0.1	4.0 (1.4)	4.0 (1.3)	0
Self-efficacy (two questions)	7.2 (2.1)	7.6 (1.9)	0.4[†]	7.1 (2.1)	7.4 (2.1)	0.3[†]
1. You know how to protect yourself from HIV, other STIs and unintended pregnancy (SA)	3.9 (1.3)	3.9 (1.1)	0	3.8 (1.3)	3.9 (1.2)	0.1
2. You should talk about sexuality, pregnancy, alcohol or drugs with your parents (SA)	3.5 (1.3)	3.8 (1.1)	0.3	3.5 (1.3)	3.6 (1.2)	0.1
Treatment seeking behavior (three questions)	10.5 (2.6)	11.2 (2.3)	0.7[†]	10.5 (2.5)	10.6 (2.3)	0.1
1. You should tell your partner if you are infected with HIV or other STI (SA)	2.8 (1.3)	3.3 (1.2)	0.5	2.8 (1.3)	2.9 (1.3)	0.1

2. You are confident to see a medical professional if you have a symptom of sexually transmitted infections (SA)	3.8 (1.5)	3.8 (1.3)	0	3.8 (1.5)	3.8 (1.4)	0
3. Buying over the counter medicine is the best choice if you have ulcers and/or pus in the genitals or pain when urinating (SD)	4.2 (1.0)	4.2 (1.0)	0	4.1 (1.1)	4.1 (1.1)	0
Stigma and discrimination (two questions)	8.0 (1.8)	8.5 (1.5)	0.5[†]	8.0 (1.9)	8.0 (1.9)	0
1. The school and community should be told when someone has HIV infection (SD)	3.6 (1.3)	3.9 (1.2)	0.3	3.6 (1.4)	3.7 (1.4)	0.1
2. HIV infected patient should not be allowed to go to school or work (SD)	4.5 (0.9)	4.5 (1.0)	0	4.5 (0.9)	4.4 (1.0)	-0.1
Perceived HIV risk and HIV infection (five questions)	20.4 (3.6)	20.1 (3.5)	-0.3	19.8 (3.7)	19.7 (3.9)	-0.1
1. To get a better partner you must have sexual intercourse with several partners (SD)	4.4 (0.9)	4.2 (1.0)	-0.2	4.3 (1.0)	4.2 (1.0)	-0.1
2. Limiting your sexual desire to only one partner will reduce your sexual pleasure (SD)	4.2 (1.0)	4.3 (1.0)	0.1	4.1 (1.1)	4.1 (1.1)	0
3. Abstinence is the best HIV prevention measure that you should follow (SA)	4.1 (1.1)	4.0 (1.2)	-0.1	3.9 (1.2)	3.9 (1.3)	0
4. Staying faithful to one uninfected sexual partner can reduce a person's chance of getting HIV infection (SA)	4.3 (1.1)	4.2 (1.2)	-0.1	4.1 (1.2)	4.0 (1.2)	-0.1
5. You are confident to tell your friends that being abstinent is a sign of emotional and moral maturity (SA)	3.8 (1.2)	3.5 (1.2)	-0.3	3.7 (1.2)	3.7 (1.2)	0
Reproductive health education (one question)	3.8 (1.3)	4.0 (1.2)	0.2[†]	3.8 (1.3)	3.7 (1.4)	-0.1
1. Reproductive health education should not be taught at school as it encourages students to have sex (SD)	3.9 (1.3)	4.0 (1.2)	0.1	3.8 (1.3)	3.8 (1.3)	0
All 30 attitude questions	112.5 (14.6)	116.8 (14.5)	4.3[†]	110.8 (15.5)	111.8 (16.7)	1.0

Notes: SA = strongly agree. SD = strongly disagree. Change score = mean score at post-test – pre-test.

[†] Significant at $p < 0.05$

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

4.5.4.2 Different scores in attitude test

Different scores of attitude test are presented in Table 4.11. Results of crude analyses indicate the different scores between intervention and control group in the overall attitude test, condom use, refusal/delaying tactics, social norms, sexual and reproductive rights, treatment-seeking behavior, stigma and discrimination, and reproductive health education questions were significant. Different scores were not significant for sex in exchange for a gift, self-efficacy, and perceived HIV risk and HIV infection questions.

Table 4.11. Different scores of attitude test

Attitude test	Different scores (95% CI) ^a	
	Crude ^a	Adjusted ^b
Condom use (five questions)	0.8 (0.3, 1.2)	0.7 (0.2, 1.2)
Refusal/delaying tactics (three questions)	0.6 (0.2, 0.9)	0.4 (0.0, 0.9)
Sex in exchange for a gift (one question)	0.0 (-0.2, 0.2)	-0.0 (-0.3, 0.2)
Social norms (six questions)	0.5 (0.0, 1.1)	0.3 (-0.4, 1.1)
Sexual and reproductive rights (two questions)	0.3 (0.1, 0.6)	0.4 (-0.0, 0.6)
Self-efficacy (two questions)	0.1 (-0.4, 0.2)	0.0 (-0.3, 0.4)
Treatment-seeking behavior (three questions)	0.5 (0.2, 0.9)	0.4 (0.1, 0.7)
Stigma and discrimination (two questions)	0.4 (0.2, 0.6)	0.4 (0.2, 0.7)
Perceived HIV risk and HIV infection (five questions)	0.2 (-0.2, 0.7)	-0.4 (-0.9, 0.2)
Reproductive health education (one question)	0.3 (0.1, 0.4)	0.2 (0.0, 0.5)
Overall (30 questions)	3.3 (1.6, 4.9)	2.5 (0.3, 4.8)

Notes: ^aDifference scores = difference in change scores between intervention and control group

^a Independent t-test adjusted for clustering.

^b Linear mixed model adjusted for group (intervention and control group), time (pre-test and post-test), time-by-group interaction, sex, age, ethnicity, school type, and sexual experience in the previous month before pre-test and post-test.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

Results of the linear mixed model presented in Table 4.11 indicate the difference scores between intervention and control group in the overall attitude test, condom use, refusal/delaying tactics, treatment-seeking behavior, stigma and discrimination, and reproductive health education questions were significant. Different scores in social norms, and sexual and reproductive rights that were significant in the crude analysis were found to be not significant in the adjusted analysis. Different scores in the adjusted analyses were not significant for sex in exchange for a gift, social norms, sexual and reproductive rights, self-efficacy, and perceived HIV risk and HIV infection questions.

Table 4.12 presents the estimates of fixed effects in the linear mixed model of the overall attitude test. Results suggest that sex, ethnicity, sexual experience in the

previous month before pre-test and post-test, and age were predictors of difference score of the overall attitude test between the intervention and control group.

Table 4.12. Estimates of effects in linear mixed model of the overall attitude test

Parameter	Estimate	SE	t	p-value	95% CI	
					Lower	Upper
Intercept [#]	161.9	6.5	25.0	<0.001	149.2	174.7
Group: Control	-4.0	2.4	-1.7	0.118	-9.2	1.2
School type (reference category: vocational school)						
Government	1.2	3.3	0.4	0.713	-6.0	8.5
Private	-5.3	2.9	-1.8	0.094	-11.5	1.0
Sex: Male [#]	-5.7	0.6	-9.2	<0.001	-6.9	-4.5
Ethnicity (reference category: mixed ethnicity)						
Papuan [#]	-3.4	1.3	-2.6	0.008	-5.9	-0.9
Non-Papuan	-1.7	1.3	-1.4	0.177	-4.3	0.8
Sexual experience in the previous month before pre-test and post-test (reference category: having had sexual intercourse)						
None and some [#]	5.2	0.6	8.2	<0.001	4.0	6.5
Time: pre-test [#]	-3.9	0.8	-5.0	<0.001	-5.5	-2.4
Age (in years) [#]	-2.2	0.3	-7.0	<0.001	-2.8	-1.6
Group (control)-by-Time (pre-test) interaction [#]	2.5	1.1	2.2	0.026	0.3	4.8

Notes: [#]Statistically significant at 0.05 level. The estimate is the difference relative to the reference category.

Linear mixed model adjusted for group (intervention and control group), time (pre-test and post-test), time-by-group interaction, sex, age, ethnicity, school type, and sexual experience in the previous month before pre-test and post-test.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

Being male, compared to female, lowered the mean score of the overall attitude test by 5.7 points (95% CI -6.9, -4.5). Papuan students, compared to mixed ethnicity students, lowered the mean score of the overall knowledge test by 3.4 points (95% CI -5.9, -0.9). Students who did not have any sexual experience and had had some sexual experience in the previous month before pre-test and post-test, compared to students who had experienced sexual intercourse, increased the mean score of the overall attitude test by 5.2 points (95% CI 4.0, 6.5). Each year increase in students' ages lowered the mean score of the overall attitude test by 2.2 points (95% CI -2.8, -1.6), controlling for other variables in the model.

In the model described in Table 4.12, time and time-by-group interaction was statistically significant. The significance in the time-by-group interaction implied the different mean score of the overall attitude test from pre-test to post-test between the intervention and the control group.

Figure 4.6 shows the effect of the 'Reducing the Risk of HIV Infection: Intervention trial for Young Papuans' module on the pre-test and post-test of the overall attitude test between the intervention and control group.

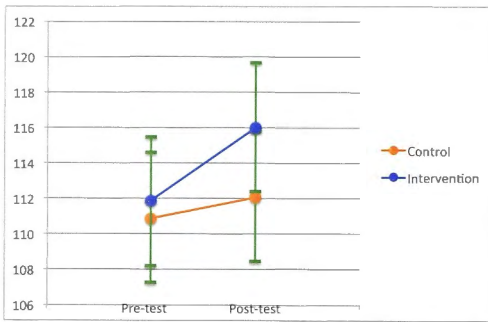


Figure 4.6 Estimated means and 95% CI for time-by-group interaction in attitude test. Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

The mean score of attitude at pre-test in the control group was 110.9 (95% CI 107.3, 114.6) increasing to 112.1 (95% CI 108.5, 115.8) at post-test. The increase of mean score of attitude test was higher in the intervention group, from 111.9 (95% CI 108.2, 115.5) at pre-test to 116 (95% CI 112.4, 119.7) at post-test. Therefore, the 'Reducing the Risk of HIV Infection: Intervention trial for Young Papuans' module showed an efficacy of 2.5 points (95% CI 0.3, 4.8) better mean score for the overall attitude test different from pre-test to post-test between intervention and control group.

4.5.5 Behavior intention test

In total there were 18 questions in the behavior intention test. The responses were given in five Likert scales. As in the attitude test, a score of five was given to the most correct answer and one to the most wrong answer, which corresponded to a maximum score of 90. There were four components of behavior intention: condom use (three questions), social norms (five questions), HIV prevention (seven questions), and treatment-seeking behavior (three questions).

4.5.5.1 Change scores in behavior intention test

At pre-test, the mean score of the overall 18 questions in the behavior intention test and all four components of behavior intention test were not significantly different between the intervention and the control group.

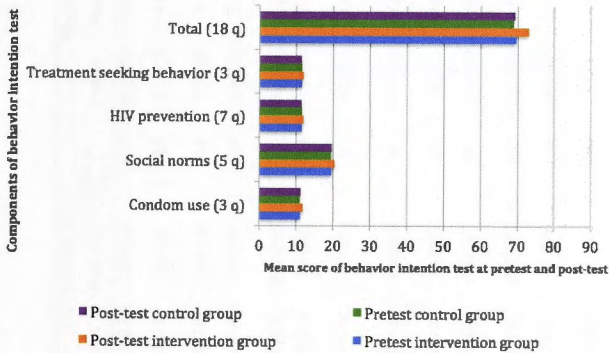


Figure 4.7 Mean scores of behavior intention test at pre-test and post-test in the intervention and the control group

Note : q=questions

Source : The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans

Change scores in the behavior intention test are presented in Table 4.13 and Figure 4.7. The overall mean behavior intention score in the intervention group at pre-test was 69.6 (SD=11.6) (77.3 percent of the maximum score of 90) and increased to 73.0 (SD=10.6) (81.1 percent of the maximum score of 90) at post-test. The increase corresponded to a change score of 3.4. In the control group, the overall mean knowledge score was 68.9 (SD=12.6) (76.6 percent of the maximum score of 90) at pre-test and increased to 69.3 (SD=13.5) (77.0 percent of the maximum score of 90) at post-test. The increase corresponded to a change score of 0.4.

Change scores among the intervention group for the overall behavior intention test, and all behavior intention components including condom use, social norms, HIV prevention, and treatment-seeking behavior were significant at $p < 0.05$. Of the behavior intention test components, the lowest change scores in the intervention group were 0.4 for HIV prevention and treatment-seeking behavior; 0.4 for self-efficacy questions; 0.5

for sexual and reproductive rights questions, stigma and discrimination questions, and refusal and delaying tactics questions; 0.7 for condom use; and the highest 0.9 for social norms questions.

In contrast, there was no significant change score in any topic of the behavior intention domain in the control group.

Table 4.13 Change scores in behavior intention test

Behavior intention questions (correct answer in brackets)	Intervention (SD)			Control (SD)		
	Pretest	Post-test	Change score	Pretest	Post-test	Change score
Condom use (three questions)	11.2 (2.7)	11.9 (2.5)	0.7 [†]	11.1 (2.8)	11.3 (2.9)	0.2
1. If your partner wants to have sex with you without a condom, but you are afraid to lose your partner if you insist on using a condom, then you intend to have sex without a condom, anyway (SD)	3.5 (1.3)	3.8 (1.1)	0.3	3.7 (1.2)	4.1 (9.6)	0.4
2. Based on what you know about HIV infection and AIDS, if your partner wants to use a condom, then you intend to convince your partner that a condom is useless (SD)	3.6 (1.3)	3.9 (1.1)	0.3	3.7 (1.2)	3.7 (1.2)	0
3. Based on what you know about HIV infection and AIDS, then you are not confident of using a condom or request that your partner use a condom (SD)	4.2 (1.0)	4.2 (0.9)	0	4.0 (1.1)	4.0 (1.1)	0
Social norms (five questions)	19.6 (3.6)	20.5 (3.3)	0.9 [†]	19.5 (4.0)	19.7 (3.9)	0.2
1. If your partner wants to have sex with you, but you don't want to have sex before marriage, then you are confident to refuse your partner's request (SA)	3.8 (1.2)	3.8 (1.3)	0	3.8 (1.3)	3.8 (1.2)	0
2. If you are attending a party and some of your friends are drunk and use drug, but you don't want to lose your friends, then you intend to get drunk and use drug to be accepted by your peers (SD)	4.0 (1.0)	4.1 (1.0)	0.1	4.1 (1.0)	4.1 (1.0)	0
3. If you live in a place where majority of teenagers have sex before marriage, but you don't want to be thought of as being different, then you intend to have sex to be accepted by your peers (SD)	4.2 (1.1)	4.3 (0.9)	0.1	4.1 (1.2)	4.1 (1.1)	0
4. If you have been dating for more than six months and you plan to marry your partner, then you intend to have sex with your partner before marriage (SD)	3.9 (1.2)	4.1 (1.0)	0.2	3.9 (1.2)	3.9 (1.2)	0
5. If you have one permanent partner but you attend a traditional celebration or travel to other city, then you intend to have sex with other people (SD)	4.1 (1.1)	4.2 (1.0)	0.1	4.1 (1.0)	4.0 (1.1)	-0.1
HIV prevention (seven questions)	11.6 (2.6)	12.0 (2.2)	0.4 [†]	11.6 (2.4)	11.5 (2.7)	-0.1
1. If you have received information that having multiple sexual partners increases your risk of getting HIV infection, then you intend to have sex with more than one sexual partners, anyway (SD)	4.3 (0.9)	4.3 (0.9)	0	4.2 (1.0)	4.2 (1.0)	0
2. If you really love your partner and you don't want to lose your partner, then you intend not to tell your partner about your HIV/STI status (SD)	3.5 (1.4)	4.1 (1.0)	0.6	3.4 (1.4)	3.5 (1.3)	0.1
3. Based on what you know about HIV infection and AIDS, you intend to engage in sexual activity with more than one partner (SD)	3.8 (1.2)	4.0 (1.1)	0.2	3.8 (1.2)	3.8 (1.2)	0
4. If you really want to have sex with a person, then you intend not to ask about their sexual history before having sex with his/her (SD)	3.8 (1.1)	3.9 (1.0)	0.1	3.7 (1.2)	3.8 (1.1)	0.1
5. Based on what you know about HIV infection and AIDS, you are not confident that you can protect yourself from becoming infected (SD)	4.0 (1.1)	4.1 (1.1)	0.1	3.9 (1.1)	3.9 (1.1)	0
6. Based on what you know about HIV infection and AIDS, then you are not confident to get tested for HIV infection or other STIs (SD)	4.2 (1.0)	4.4 (0.9)	0.2	4.2 (1.1)	4.2 (1.1)	0

7. Based on what you know about HIV infection and AIDS, then you are not confident to postpone sexual activity (SD)	3.8 (1.3)	4.1 (1.1)	0.3	3.7 (1.3)	3.8 (1.3)	0.1
Treatment seeking behavior (three questions)	11.6 (2.6)	12.0 (2.2)	0.4†	11.6 (2.4)	11.5 (2.6)	-0.1
1. If your friend told you that he/she is having genital ulcer/discharge/sore (penis, anal, and/or vagina), then you are confident to recommend that your friend visit VCT clinic for an exam or to talk about protection (SA)	4.1 (1.2)	4.1 (1.1)	0	4.1 (1.2)	3.9 (1.3)	-0.2
2. If you had a genital ulcer/discharge/sore (penis, anal, and/or vagina), but you want to have sex, then the first place you intend to go for treatment is pharmacy (SD)	3.5 (1.3)	3.7 (1.2)	0.2	3.5 (1.2)	3.7 (1.2)	0.2
3. Based on what you know about HIV infection and STIs, then you are confident to visit a medical professional to get more information on prevention and treatment of HIV or sexually transmitted infection (SA)	4.0 (1.2)	4.2 (1.0)	0.2	4.1 (1.1)	4.0 (1.1)	-0.1
All 18 behavior intention questions	69.6 (11.6)	73.0 (10.6)	3.4†	68.9 (12.6)	69.3 (13.5)	0.4

Notes: SA = strongly agree. SD = strongly disagree. Change score = mean score post-test – pre-test. † Significant at $p < 0.05$

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

4.5.5.2 Different scores in behavior intention test

Different scores of behavior intention test are presented in Table 4.14. Results of crude analyses indicate the difference scores between intervention and control group in the overall behavior intention test, condom use, social norms, HIV prevention, and treatment-seeking behavior were significant.

Table 4.14. Different scores of behavior intention test

Behavior intention test	Different scores (95% CI) [‡]	
	Crude ^a	Adjusted ^b
Condom use (three questions)	0.5 (0.1, 0.9)	0.4 (-0.1, 0.8)
Social norms (five questions)	0.7 (0.2, 1.2)	0.5 (-0.1, 1.1)
HIV prevention (seven question)	0.6 (0.2, 0.9)	0.5 (0.1, 0.9)
Treatment-seeking behavior (three questions)	0.6 (0.2, 0.9)	0.5 (0.1, 0.9)
Overall (18 questions)	2.9 (1.5, 4.3)	2.7 (0.9, 4.6)

Notes: [‡]Difference scores = difference in change scores between intervention and control group

^a Independent t-test adjusted for clustering.

^b Linear mixed model adjusted for group (intervention and control group), time (pre-test and post-test), time-by-group interaction, sex, age, ethnicity, school type, and sexual experience in the previous month before pre-test and post-test.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

Conversely, the results of linear mixed model presented in Table 4.14 indicate that the difference scores between intervention and control group in condom use and social norms were not statistically significant. The linear mixed model suggested significant difference scores in HIV prevention, treatment-seeking behavior and the overall behavior intention test.

Table 4.15 presents the estimates of fixed effects in linear mixed model of the overall behavior intention test. Results suggest that school type, sex, sexual experience in the previous month before pre-test and post-test and age were predictors of difference scores in the overall attitude test from pre-test to post-test between intervention and control group.

Being in a private school, compared to a vocational school, lowered the mean score of the overall behavior intention test by 4.5 points (95% CI -8.8, -0.3). Being male, compared to female, lowered the mean score of the overall attitude test by 4.6 points (95% CI -5.6, -3.4). Students who did not have any sexual experience and had some sexual experience in the previous month before pre-test and post-test, compared to students who had experienced sexual intercourse, increased the mean score of the overall behavior intention test by 4.3 points (95% CI 3.3, 5.3). Each year increase in

students' ages lowered the mean score of the overall behavior intention test by 1.3 points (95% CI -1.8, -0.8), controlling for other variables in the model.

Table 4.15. Estimates of fixed effects in linear mixed model of the overall behavior intention test

Parameter	Estimate	SE	t	p-value	95% CI	
					Lower	Upper
Intercept [#]	100.4	5.2	19.3	<0.001	90.2	110.6
Group: Control	-2.8	1.6	-1.7	0.107	-6.3	0.7
School type (reference category: vocational school)						
Government	-0.5	2.2	-0.2	0.824	-5.3	4.3
Private [#]	-4.5	1.9	-2.3	0.037	-8.8	-0.3
Sex: Male [#]	-4.6	0.5	-8.9	<0.001	-5.6	-3.4
Ethnicity (reference category: mixed ethnicity)						
Papuan	-1.5	1.1	-1.3	0.188	-3.5	0.7
Non-Papuan	-0.0	1.1	-0.0	0.983	-2.1	2.1
Sexual experience in the previous month before pre-test and post-test (reference category: having had sexual intercourse)						
None and some [#]	4.3	0.5	8.2	<0.001	3.3	5.3
Time: pre-test [#]	-3.1	0.7	-4.8	<0.001	-4.4	-1.8
Age (in years) [#]	-1.3	0.3	-5.2	<0.001	-1.8	-0.8
Group (control)-by-Time (pre-test) interaction [#]	2.4	0.9	2.5	0.011	0.5	4.2

Notes: [#]Statistically significant at 0.05 level.

The estimate is the difference relative to the reference category.

Linear mixed model adjusted for group (intervention and control group), time (pre-test and post-test), time-by-group interaction, sex, age, ethnicity, school type, and sexual experience in the previous month before pre-test and post-test.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

In the model described in Table 4.15, time-by-group interaction was statistically significant. The significance in the time-by-group interaction implied the different mean score of the overall behavior intention test from pre-test to post-test between intervention and control group. Therefore, '*Reducing the Risk of HIV Infection: Intervention trial for Young Papuans*' program showed an efficacy of 2.4 points (95% CI 0.5, 4.2) better mean score for the overall behavior intention test different from pre-test to post-test between intervention and control group.

Figure 4.8 shows the effect of the '*Reducing the Risk of HIV Infection: Intervention trial for Young Papuans*' module on the pre-test and post-test of the overall behavior intention test between the intervention and control group. The mean score of behavior intention at pre-test in the control group was 69.3 (95% CI 66.9, 71.7) increasing to 69.8 (95% CI 67.4, 72.2) at post-test. The increase of mean score of behavior intention test was higher in the intervention group, from 68.9 (95% CI 66.5, 71.3) at pre-test to 72.1 (95% CI 69.7, 74.5) at post-test.

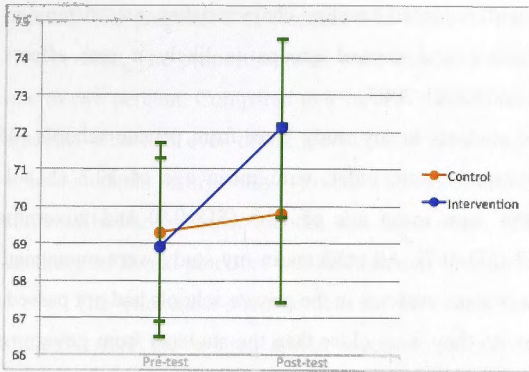


Figure 4.8 Estimated means and 95% CI for time-by-group interaction in behavior intention test.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

Therefore, the '*Reducing the Risk of HIV Infection: Intervention trial for Young Papuans*' module showed an efficacy of 2.4 points (95% CI 0.5, 4.2) better mean score for the overall behavior intention test different from pre-test to post-test between intervention and control group.

4.6 Discussion

4.6.1 Characteristics of respondents

Reporting baseline data seemed simple, however, it was crucial information for readers in judging the validity of the trial, the generalizability of the results, and the success of randomization (Burgess, Gebski, and Keech 2003). Therefore, researchers are required to report their baseline characteristics of intervention and control groups (Moher, Schulz, and Altman 2001)

There has not been any randomized controlled trial on reproductive health carried out on students in Indonesia. This condition made it difficult for me to compare my study results with similar studies in Indonesia.

The characteristics of intervention and control groups in my study were balanced on all covariates, except on religion, which was likely due to the clustered nature of the data. The results indicated that randomization had worked well by achieving a good balance between the intervention and control group at baseline. This finding was a good

sign, because in a study with well balanced baseline characteristics, any difference in outcome between the intervention and control groups is likely a real effect of intervention (Burgess, Gebski, and Keech 2003).

A higher percentage of students in my study were from private schools (48.7 percent). Students in private schools were older, with mean age of 19.3 (SD=1.2) compared to vocational schools with mean age of 18.5 (SD=0.9) and government schools with mean age of 18.3 (SD=0.7). All students in my study were unmarried at the time of the research, however some students in the private schools had not passed on to the next grade several times, so they were older than the students from government schools. Additional analysis indicated that the majority (81.5 percent) of students in private schools were Papuan, 15.0 percent were non-Papuan, and 3.5 percent were of mixed ethnicity. However, 62.3 percent of the students in vocational schools and 51.5 percent of students in government schools were non-Papuan. This finding was in line with the *Special Autonomy Law* of 2001 that protects minority ethnic groups in all sectors, including in the education system. Prior to 2001, entry to a government school was more difficult than to a private school, as the entry was based on grades. Previously non-Papuan students dominated government schools. After 2001, the education bureau adopted a policy for government schools to allocate 50 percent of the places for indigenous Papuans (Mollet 2007).

Around 75 percent of students were Christian, 11.6 percent were Catholic, 8.5 percent were Moslem, and 5.3 percent were other. In my study, religiosity was reported as a self-assessment from the students. Fifty percent of students in my study reported they were ordinarily religious, 33.4 percent declared they were very religious, and 16 percent reported they were not religious. Some studies found an influence of religion on HIV sexual experience and HIV-related stigma. A survey of 522 youth aged 12-28 years in Mozambique indicated that religious males were 1.6 times more likely to be sexually inexperienced than non-religious males (OR = 1.57, 95% CI 1.4, 1.8) (Noden, Gomes, and Ferreira 2010). A survey of 438 parishioners in Tanzania revealed an association between HIV stigma and beliefs that HIV was a punishment from God ($p < 0.01$), and PLHIV had not followed the word of God ($p < 0.001$). Further, 80.8 percent of respondents believed that prayer could cure HIV (Zou et al. 2009).

Around 30 percent of students in my study had ever drunk alcohol. However, the proportion of students who were currently drinking alcohol was lower, around 16

percent. The proportion of students who had ever used drugs was low, around four to five percent. The proportion who were currently using drugs was even lower, around one to two percent. Compared to a survey in 2003, the proportion of junior high school students who had ever drunk alcohol and used drugs was lower for the senior high school students in my study. Around 11 percent and 0.3 percent of junior high school students had ever drunk alcohol and used drugs (CHR-UI 2003). The influence of drinking on sexual practices was discussed in Chapter 5.

The two most-cited sources of HIV and sexuality information reported by students were the printed and/or electronic media (64.8 percent) and school (21.6 percent). Only 0.4 percent and 0.3 percent of students reported parents and friends as their main source of information, whereas 5.3 percent students reported obtaining information mainly from others. Students wrote that 'others' meant health staff, local NGOs, community and religious leaders. The 2003 junior high school student survey also reported that the most-cited source of HIV information reported by students was the media (television) at 51.2 percent (CHR-UI 2003). A survey in 2007 also reported similar findings. The three most-cited sources of AIDS information by female respondents aged 15-19 years and 20-24 years were television (76.2-82.8 percent), school (42.4-53.2 percent) and newspaper or magazine (35.5-49.6 percent). However, male respondents reported television (73.7-80.1 percent), school (36.3-47.6 percent) and friends (36.7 percent) as their main source of AIDS information (BPS-Statistics Indonesia and Macro International 2008).

A report from the United States found that most sexual content in the media did not promote sexual health (Brown et al. 2008), and a study from China indicated a low coverage of HIV prevention in the media (Tan et al. 2007). Moreover, a cross-sectional survey in the UK showed when the main source of information on sexual matters was from the school, compared to other sources including media and friends, then students were more likely to delay sexual initiation and engage in safer sexual practices (Wellings et al. 1995). Therefore, it was regrettable that students reported they had obtained HIV information mostly from the media.

The five questions on enthusiasm for reproductive health education in my study were adopted from Purdy's study (Purdy 2006). His survey was carried out on 474 respondents aged 15-24 years in Jakarta, Surabaya, Medan, and Bandung. Both my study and Purdy's study found young people wanted to know much more about HIV

prevention (70.7 percent) and STI (61.4 percent), whereas menstrual cycle and contraception were the least interesting topics for them (Figure 4.9). In my study the proportion of students saying they only wanted to know a little and did not want to know about specific reproductive health topics was quite high.

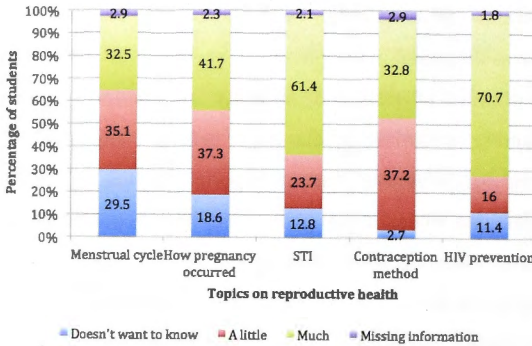


Figure 4.9 Enthusiasm for some topics in reproductive health

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

All teachers in my study agreed with the importance of reproductive health education, although one teacher said she would explain the STI topic when she had time. Some teachers also reported enthusiasm among students when the teachers taught reproductive health topics. A study from the United States found a discrepancy between what teachers believed should be covered on some topics in sexuality education and what they actually taught to their students. Teachers realized the importance of comprehensive reproductive health education, but they felt it was taboo to discuss some sensitive topics including condom use (Dailard 2001). A study in some Asia-Pacific countries including Indonesia reported reproductive health education might not be taught because the curriculum for health education was already full (Smith, Kippax, and Aggleton 2000). Therefore, it was likely some teachers might not teach some topics of reproductive health to their students in Papua and West Papua Provinces.

4.6.2 Knowledge

My study found the overall mean knowledge score in the intervention group at pre-test was 14.7 (SD=2.9) (58.8 percent of the maximum score of 25), which increased

to 17.5 (SD=3.2) (70.0 percent of the maximum score of 25) at post-test. Therefore the change score was 3.2, which corresponded to 3.2 more correct answers. In the control group, the overall mean knowledge score was 14.4 (SD=3.1) (57.6 percent of the maximum score of 25) at pre-test, and this increased to 14.5 (SD=3.1) (58 percent of the maximum score of 25) at post-test. Therefore, the change score was 0.1.

Of the knowledge test components, the lowest change scores in the intervention group were 0.2 for sexual myth questions, 0.4 for safer sex questions and STI questions, 0.8 for HIV questions, and the highest was 0.9 for the condom and pill question. In the control group, only the change score in the STI question (0.1) was found to be significant. In the intervention group, a higher change score reflected a better effect of intervention compared to a lower change score.

It should be noted that in some cases, a low change score had two implications. First, it meant students were familiar with the issue. This was marked with a high score at pre-test, almost reaching the maximum score, and of course their score at post-test could not change much. I called this phenomenon 'low change score but high understanding'.

Second, a low change score meant the issue was new and difficult for students. This was marked with a low score at pre-test, but their score at post-test did not change much. This could have been because the students did not understand the issue well, assuming that all medical doctors had delivered complete messages from the intervention program to them. There was also the possibility that some messages were not delivered to the students. The last possibility was that students had forgotten about the messages given, or that the intervention program had only been given once after pre-test, and the period between pre-test and post-test was quite long.

4.6.2.1 Low change scores but high understanding

Some zero and 0.1 change scores in some knowledge questions in the intervention group fit in the category 'low change but high understanding' (Table 4.7). These questions were very general questions on awareness of HIV transmission, HIV test, abstinence, sexual assault, and STI. The mean scores of these questions at pre-test were already high, reaching 0.8 (80 percent) or more of the maximum score of one, implying that the students already understood about the topic. Seven out of 25 questions in the knowledge domain fell into this category. Four out of nine questions in HIV topic

were in this category. Other topics in this category were one question on safer sex, one question on sexual myths, and one question on STIs.

In the HIV topic, the four questions were: 'Someone can be infected by HIV for more than ten years without showing any symptoms'; 'An HIV infected person can transmit the virus through toilet seat, water and door handle'; 'Sharing needles to inject drugs is one way to get HIV'; and 'You can get a test for HIV and STIs at Indonesian Red Cross (*PMI*), hospital, public health center (*Puskesmas*), NGO (*LSM*), and private laboratory'. In the safer sex topic, the question was 'Abstinence is the most effective method of avoiding HIV infection, STIs and unintended pregnancy'. In the sexual myth topic, the question was 'Most sexual assaults are committed by strangers'. In the STI topic, the question was 'A person can get the same STIs more than once'.

The high score that had been achieved by Papuan students in the pre-test might also be related to their previous knowledge from school textbooks and the media. From our analysis of Indonesian school textbooks, theories on HIV and other STIs in general, and abstinence, were covered in the Year 7 and Year 11 Sport and Health Education (*Penjaskes*) textbooks, as well as in the Year 9 and Year 11 Science textbooks. Avoiding sexual harassment and violence was introduced in the Years 4,5, and 6 Sport and Health Education textbooks. Years 8 and 10 Sport and Health Education textbooks further discussed sexual harassment and violence (Utomo and Diarsvitri: Forthcoming). It was likely that students had been exposed to such materials since they were in elementary schools.

4.6.2.2 Medium score achievement in knowledge test

Students seemed to have little deeper knowledge on the STI topic. Their mean scores of some questions reached 70 percent of the maximum score of one at pre-test. Three of 25 questions in the knowledge domain fell into this category. All three questions were from the STI topic (Table 4.7).

These three questions were 'AIDS and other STIs are preventable diseases'; 'STIs are rare among teenagers'; and 'Untreated STIs can lead to both men and women being unable to have children'. However, their scores at post-test had not changed a lot, even though the materials were covered in the intervention module.

Lack of awareness of these topics might lead students to ignore the risk of acquiring HIV and other STIs. Ignorance of the risk could cause students to develop

high-risk sexual practices. Some studies confirmed that the perception of the risk of acquiring HIV and other STIs was low among young people. Many sexually active young people at risk of HIV do not perceive themselves to be at risk, and around 20-80 percent of people with HIV around the world do not know they are infected (Samet et al. 2001; UNICEF, UNAIDS, and WHO 2002; Marks et al. 2005). Perceived risk of HIV infection was also low even among female sex workers (Ministry of Health of the Republic of Indonesia 2008a).

Theories on HIV and other STIs in general were covered in the Year 7 and Year 11 Sport and Health Education (*Penjaskes*) textbooks, as well as in the Year 9 and Year 11 Science textbooks. However, none of the textbooks provided information on STIs among teenagers (Utomo and Diarsvitri: Forthcoming). Therefore, I suggest that school textbooks should provide correct information on STIs among teenagers. Awareness of this fact might lead students to avoid the risk of acquiring HIV and other STIs by adopting safer sex practices.

The '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuan*' program highlighted that Chlamydia was common among teenagers worldwide (CDC 2011b). Moreover, anybody with high-risk sexual practices could acquire HIV and other STIs. Therefore, these topics should be emphasized in the delivery of the intervention program.

4.6.2.3 Low score achievement in knowledge test

Students reached 60 percent or less of the maximum score of one at pre-test on some fundamental questions, and their scores at post-test were below 80 percent (Table 4.7). In total, fifteen out of 25 questions in the knowledge domain fell into this category. Five out of nine questions on the HIV topic and five (all) questions on the condom and pill topics were in this category.

Two out of three questions in the safer sex and sexual myth topics were also in this category. One of five questions in the STI topic was in this category. These questions were critical for developing comprehensive knowledge that could influence positive attitudes, behavior intention, and sexual practices. The corresponding mean score at post-test of these topics also did not change very much, suggested the topics needed to be emphasized during the delivery of the intervention program.

On the HIV topic, there were five fundamental questions: 'A person who is suffering from STIs will increase his/her risk of getting HIV infection', 'You can be infected with HIV for up to nine months before the virus is detected', 'HIV infection can be cured if diagnosed and treated early', 'Someone can get HIV infection from vaginal, anal, or oral sexual contact', and 'You can tell a person is infected with HIV by the way he or she looks'.

In the safer sex topic, there were two fundamental questions: 'If a guy pulls his penis out of a girl in time (before he ejaculates), he can be sure to prevent HIV infection, STIs and pregnancy'; and 'Girls can get pregnant even if the penis doesn't actually enter the vagina'.

In the sexual myth topic, there were two difficult questions: 'Washing genitals after having sex will wash out the sperm and protect against HIV infection, STIs, and pregnancy'; and 'A woman is protected from pregnancy the day she begins taking the pill'.

Students had low mean scores on all five questions on the condom and pill topic. These questions were 'Teenagers can get pill contraception and condoms from pharmacy without permission from a parent'; 'Pill contraception can protect a woman from STIs, especially gonorrhea'; 'A woman is protected from pregnancy the day she begins taking the pill'; 'Condoms can give 100 percent protection against HIV and all STIs if it is put on correctly'; and 'The correct way to use a condom is to pull it on tight so there is no space between the condom and the end of the penis'. In the STI topic, the question was 'Many people with STIs have no signs of illness'.

Some female students from different schools asked me and other medical doctors about the withdrawal method to prevent pregnancy. Withdrawal was common among students who reported having had sexual intercourse. This issue is covered in Chapter 5 of this thesis.

Lack of awareness of HIV detection, HIV transmission through different types of sexual contact, the association between STI and HIV, the dual advantages of condoms as contraception and STI prevention, and how to use a condom correctly might lead students to engage in high-risk sexual practices. As presented in Table 4.4, 37.9 percent of students had had sexual intercourse and 27.6 percent of students had had some sexual experience including petting. Moreover, the proportion of students in my study who reported having had sexual intercourse was higher than junior high school

students (12 percent) in the 2003 survey (CHR-UI 2003). Therefore, these topics should be more emphasized during the delivery of the intervention program.

Students in my study lacked knowledge in two questions in the sexual myth topic. They did not understand that washing genitals and urinating after having sex could not protect them against HIV and STI. Many vaginal douche products are available in Indonesia. However, so far there are no known potent microbicides that could kill HIV (Nelson 2007). Moreover a vaginal douche could trigger bacterial vaginitis, contact dermatitis, and vulvitis (Hillier 1999; Pray and Prey 2004; Murtiastutik 2008; Tansupasiri et al. 2005; Rippke et al. 2004). These materials are covered in the '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' program. Therefore, these topics should be emphasized more during the delivery of the intervention program.

4.6.2.4 Comparison of knowledge score achievement with Belize study

Eleven questions in the knowledge test in my study were from the knowledge test used in a cluster randomized trial on a reproductive health education program called 'The Responsible Sexuality Education Program'. The study randomized 19 classrooms from seven high schools in Belize, Central America. Eight classrooms were in the intervention group and 11 classrooms were in the control group. The total sample in the pre-test was 468 students in forms 1 through 4 of the British school system. Loss to follow up was 15 percent in the intervention group and 14 percent in the control group, leaving 399 students in the final analysis. The age of students ranged from 13 to 19 years, with mean age of 15.5 years. The intervention and control groups were not similar with respect to gender and previous sexual experience. A pair of students delivered the program to each class. The test included knowledge, attitude, and behavior intention domains. The post-test was carried out two weeks after the pre-test (Martiniuk 2000; Martiniuk, O'Connor, and King 2003).

Of the 11 questions in the knowledge test that I adapted from 'The Responsible Sexuality Education Program', the Papuan students in the intervention group showed better scores in five questions on the pre-test and post-test compared to students in the intervention group in Belize study. The Papuan students already knew (score 1=maximum score) that someone could be infected with HIV for more than ten years without showing any symptoms. A much better score (0.7 to 0.8) among Papuan

students compared to students in the intervention group in Belize study (0.4 to 0.6) was also achieved in four other questions: Most sexual assaults are committed by strangers; Many people with STIs have no signs of illness; A person can get the same STI more than once; Untreated STIs can lead to both men and women being unable to have children (Martiniuk 2000; Martiniuk, O'Connor, and King 2003).

In the pre-test and post-test, Papuan students and students in the intervention group in the Belize study achieved a similar score (0.6 to 0.9) in four questions. These questions were: You can tell a person is infected with HIV by the way he or she looks; If a guy pulls his penis out of a girl in time (before he ejaculates), he can be sure to prevent HIV infection, STIs and pregnancy; Abstinence is the most effective method of avoiding HIV infection, STI and unintended pregnancy; and STIs are rare among teenagers (Martiniuk 2000; Martiniuk, O'Connor, and King 2003).

However, in the pre-test and post-test, Papuan students in the intervention group obtained lower score (0.3-0.6) in two questions compared to students in the intervention group in Belize study (0.6-0.7). These questions were: HIV infection can be cured if diagnosed and treated early; and Condoms can give 100 percent protection against HIV and all STIs if it is put on correctly (Martiniuk 2000; Martiniuk, O'Connor, and King 2003). Of the two questions, the lowest score in the pre-test for Papuan students (0.3) was on the question about condom.

The lowest score on condom use might be due to the fact that Indonesian school textbooks emphasize on the abstinence as a preventive measure for pregnancy, HIV, and other STIs, but do not provide information on safer safe practices; despite increasing sexual permissiveness among students (Utomo and Diarsvitri: Forthcoming). Condom as a method of contraception was covered in Year 8, Year 9, and Year 11 Science textbooks. Condom as a preventive measure for HIV and other STIs was supposed to be covered in Year 7 and Year 11 Sport and Health Education (*Penjaskes*) textbooks, as well as Year 9 and Year 11 Science textbooks. However, none of Year 11 Sport and Health Education (*Penjaskes*) textbooks that we analyzed providing information on condom use to prevent HIV and other STI.

The correct information on condom use as a preventive measure of HIV and STI was found in 40 percent of Year 7 Sport and Health Education (*Penjaskes*) textbooks, and 16.7 percent of Year 11 Science textbooks. However, none of school textbooks provided information on how to use a condom correctly (Utomo and Diarsvitri:

Forthcoming). Further, posters on HIV in Papua did not provide information on how to use a condom correctly (Indonesia HIV/AIDS Prevention and Care Project 2007), parents were reluctant to discuss about sexual matter with their children (Utomo 2003), and students only exposed to HIV awareness once a year from their school.

We cannot deny the fact that Indonesian young people are sexual being, and some of them are sexually active. Some of the sexually active students acquired HIV or other STIs. Without knowledge on safer sex, students put themselves on high-risk of getting HIV and other STIs (Berer 2006). The main source of scientifically grounded information should be from school textbooks. Accordingly, I suggest that school textbooks should provide information on double benefits of condom as a contraception method and as a STI prevention measure. School textbooks should also provide information on how to use a condom correctly.

As emphasized in the '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' program (Chapter 2) and in a study carried out by de Irala and Alonso (2006), using a condom in ABC prevention should be regarded as 'safer sex', but not as 'safe sex'. STIs such as gonorrhea, Chlamydiosis, Trichomoniasis and HIV are transmitted by genital fluids (Nasronudin 2007; Schoub 1994; CDC 2010c; Murtiastutik 2008; CDC 2011b, 2011d). However, genital herpes, human papilloma virus, syphilis and chancroid are transmitted by skin-to-skin contact (CDC 2012b; Murtiastutik 2008; CDC 2010b, 2010d, 2010a). If the infected skin was in the area that is not covered by a condom, then using a condom could not give protection against the disease. Therefore, consistent and correct condom use was likely to provide greater protection against STIs that were transmitted by genital fluids than against infections that were transmitted primarily by skin-to-skin contact. Overall, using a condom was still the best way of preventing most STIs (Department of Health Government of Western Australia 2007; CDC 2011c).

4.6.2.5 Comprehensive knowledge

Comprehensive knowledge of HIV and AIDS was interpreted differently in many studies. The 2010 Basic Health Research (*Riset Kesehatan Dasar*) survey that was carried out in all 33 provinces in Indonesia, translated the term 'comprehensive knowledge' into six questions. These questions included having heard about AIDS, mode of AIDS transmission, misconception about AIDS transmission, some ways of

HIV prevention, AIDS-related stigma when there was an HIV-infected person in the family, and VCT (National Institute of Health Research and Development 2010a). The 2003 and 2007 IYAHRS incorporated wider questions. The same questions that were used in the 2010 basic health research had also been included in the 2003 and 2007 IYAHRS. However, in the HIV/AIDS section, IYAHRS also asked about STI, source of information of STIs, and symptoms of STIs (BPS-Statistics Indonesia and Macro International 2008; BPS-Statistics Indonesia and ORC Macro 2004). The 2006 Integrated Bio-Behavior Surveillance (IBBS) survey in Tanah Papua (both Papua and West Papua Provinces) had applied the same questions as IYAHRS (BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007).

I argue that any survey of this kind in Papua and West Papua Provinces should use questions in the IYAHRS and IBBS, because the questions can capture comprehensive understanding on sexual practices. My study was specifically designed for senior high school students. Some questions in my study that were not found in IYAHRS and IBBS were HIV detection, HIV transmission through type of sexual contact, perceived risk of STI, complications of STI, the association between STI and HIV, sexual myths, withdrawal method, dual advantages of condoms as contraception and STI prevention, and how to use a condom correctly. The Belize study also did not incorporate HIV transmission through type of sexual contacts, the association between STI and HIV, sexual myth, withdrawal method, and how to use a condom correctly.

The Belize study randomized 19 classrooms from seven schools (N=399 students), which might have a higher chance of contamination between intervention and control groups. There were 18 questions in the knowledge domain. The interval between pre-test and post-test was two weeks. The results of the linear mixed model indicated the intervention in Belize study was associated with two more correct answers on the post-test (difference score was 2.2 points, 95% CI 0.5, 3.9) (Martiniuk 2000; Martiniuk, O'Connor, and King 2003).

Compared to my study, the unit of randomization was the school. My study randomized 16 schools (N=988), thus the chance of contamination was lower compared to class randomization. There were 25 questions in the knowledge domain. The interval between pre-test and post-test was two months, which was longer than in Belize study. Linear mixed model analysis indicated the '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' program achieved efficacy of 2.6 points better

result (95% CI 2.1, 3.1) for the overall knowledge test difference from pre-test to post-test between intervention and control group.

4.6.2.6 Predictors of mean score difference in the overall knowledge test

Sex, ethnicity, age, school type, and sexual experience were considered when designing a cluster randomized trial for students. Several studies suggested that these variables are important confounders on the intervention program (Martiniuk, O'Connor, and King 2003; Kirby et al. 2004; Danielson et al. 1990; Eisen, Zellman, and McAlister 1992; Fitzgerald et al. 1999).

The results of linear mixed model suggest that intervention group, sexual experience in the previous month before pre-test and post-test and age are predictors of difference score of the overall knowledge test from pre-test to post-test between intervention and control group.

Being in the control group, compared to intervention group, lowered the mean score of the overall knowledge test by 2.8 points (95%CI -3.6, -2.1), controlling for other variables in the model. Students who did not have any sexual experience and had some sexual experience in the previous month before pre-test and post-test, compared to students who had sexual intercourse, increased the mean score of the overall knowledge test by 0.6 points (95% CI 0.3, 0.9), controlling for other variables in the model. Each year increase in the students' age lowered the mean score of the overall knowledge test by 0.3 points (95% CI -0.5, -0.2), controlling for other variables in the model. The '*Reducing the Risk of HIV Infection: Intervention trial for Young Papuans*' module showed an efficacy of 2.6 points (95% CI 2.1, 3.1) better mean score for the overall knowledge test different from pre-test to post-test between intervention and control group.

4.6.3 Attitude

The overall mean attitude score in the intervention group at pre-test was 112.5 (SD=14.6) (75.0 percent of the maximum score) and increased to 116.8 (SD=14.5) (77.9 percent of the maximum score) at post-test. The increase corresponded to the change score of 4.3. In the control group, the overall mean knowledge score was 110.8 (SD=15.5) (73.9 percent of the maximum score) at pre-test and increased to 111.8

(SD=16.7) (74.5 percent of the maximum score) at post-test. The increase corresponded to the change score of 1.0.

Of the attitude test components, the lowest change scores in the intervention group were 0.2 for reproductive health questions; 0.4 for self-efficacy questions; 0.5 for sexual and reproductive rights questions, stigma and discrimination questions, and refusal and delaying tactics questions; 0.7 for treatment-seeking behavior; 0.9 for social norms questions, and 1.1 for condom use. In the control group, only a change score of self-efficacy question (0.3) was found to be significant.

4.6.3.1 Low change score but high positive attitude

As in the knowledge domain, students were familiar with some issues in the attitude domain. This was marked with a high score at pre-test that almost reached the maximum score, and their score at post-test did not change much. I called this phenomenon 'low change score but high positive attitude'.

Low change score in this category included zero, and 0.1 (Table 4.10). The mean scores of these questions at pre-test were already high, reaching four (80 percent) or more of the maximum score of five, and of course their score at post-test could not change much. These scores suggested that students already had a positive attitude on the topics. In total there were 11 out of 30 questions in this category. Two of three questions in refusal/delaying tactic and four of five questions in perceived HIV risk were in this category. This category also included one question on the condom use topic, one question on the social norms topic, one question on the sexual and reproductive health topic, one question on the treatment-seeking behavior topic, and one question on the stigma and discrimination topic.

The high score achievement in these topics suggested that these students had a positive attitude towards the related issues. As described in The Health Belief Model theory, the positive attitude reflected that students understand the negative consequences of the related issues (perceived threat) and believed in the benefit of the advised action (perceived benefits) (Rosenstock, Strecher, and Becker 1994).

In the condom use topic, the question was 'Using condoms correctly every time people have sex will reduce their chance of getting HIV infection'. The high score achievement in this issue might be related to the students' previous knowledge gained from the media, school, or other sources of information.



Figure 4.10 Posters encouraging people to use condom
 Source: (Indonesia HIV/AIDS Prevention and Care Project 2007; Papuaweb 2010)

There are many billboards and posters encouraging Papuans to use a condom. Some of the billboards and posters display Papua's famous soccer team, Persipura, with slogans such as 'Be a champion, wear a condom'. Persipura managers and players also wore 'Persipura champions' shirts. The back of the shirts is emblazoned with 'HIV/AIDS' and a picture of a condom (Figure 4.10). Around 2006-2007, the Indonesia HIV/AIDS Prevention and Care Project (IHPCP) distributed 2,500 of the same shirts to junior players in the Persipura soccer club. They also distributed free condoms at soccer matches. By distributing condoms it was hoped that people would start asking for them (Indonesia HIV/AIDS Prevention and Care Project 2007). However, none of the posters showed how to use a condom correctly. Further, results from the knowledge test indicated that students had little knowledge that a condom could not give 100 percent protection against HIV and all STIs. They also had little knowledge about how to use a condom correctly.

Students seemed to have a positive attitude toward two of three issues in refusal/delaying tactics and four of five issues in perceived HIV risk. The two questions in refusal/delaying tactic were 'Avoiding sex with anyone other than your sexual partner makes you seem sexually weak', and 'You should have sex after six months of dating'. In the perceived HIV risk and HIV infection topic, the four questions were 'To get a better partner you must have sexual intercourse with several partners', 'Limiting your sexual desire to only one partner will reduce your sexual pleasure', 'Abstinence is the best HIV prevention measure that you should follow', and 'Staying faithful to one uninfected sexual partner can reduce a person's chance of getting HIV infection'.

Abstinence and being faithful were covered in the Year 7 and Year 11 Sport and Health Education (*Penjaskes*) textbooks, as well as in the Year 9 and Year 11 Science textbooks (Utomo and Diarsvitri: Forthcoming). Therefore, students had been exposed to related issues since they were in junior high school. There were many good signs of students' positive attitude towards some issues in refusal/delaying tactic and perceived HIV risk. I considered that the high scores in these topics should be further analyzed, as 27.6 percent of students (273) reported having had some sexual experience and 37.9 percent of students (374) reported having had sexual intercourse.

In the social norms topic, the question was 'Having sex in the traditional celebration or ritual ceremony should be preserved as a cultural tradition'. A high score on this issue suggested students disagreed with having sex in the traditional celebration. Students' positive attitude on this issue was different from the results of the 2006 survey on the general population. The 2006 IBBS in Papua and West Papua Provinces reported 30.8 percent of male respondents and 56.1 percent of female respondents aged 15-49 years reported having had sex at customary festival (BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007). However, there was not any explanation in the survey whether the traditional practices are only found in highland area, as reported by Warwer and Setiadi (2001), Butt, Numbery, et al. (2002), Djoht (2005), and Djoht, Marsum, et al (2005).

In the sexual and reproductive health rights topic, the question was 'Women have the rights to have a safe and pleasurable sexual life'. The high score on these issues were good signs of the students' positive attitude towards gender and sexual rights, even though the indigenous Papuans often treated their partners as their possession (Asdhiana 2009).

In the treatment-seeking behavior topic, the question was 'Buying over-the-counter medicine is the best choice if you have ulcers and/or pus in the genitals or pain when urinating'. The high score on this issue was a good sign, suggesting students' disagreement with self-treatment. Self-reported on the treatment-seeking behavior is discussed in Chapter 5.

In the stigma and discrimination topic, the question was 'HIV infected patients should not be allowed to go to school or work'. A high score on this issue also a good sign that suggested students' positive attitude against stigma and discrimination towards

people living with HIV (PLHIV). It is known that stigma and discrimination have intensified the HIV epidemic (UNICEF Regional Office for South Asia 2003).

4.6.3.2 Medium score achievement in attitude test

The score of students on some issues in the attitude domain fell between 3.1 (61 percent) to 3.9 (79 percent) of the maximum score of five. Their score at post-test reached from 3.3 (66 percent) to 4.1 (82 percent) of the maximum score of five (Table 4.10). Eighteen of the 30 questions in the attitude domain fell into this category.

Four of five questions in the condom use topic, five of six questions in the social norms topic, two (all) questions in the self-efficacy topic, and one (all) question in the reproductive health education topic were in this category. This category also included one question on refusal/delaying tactics, one question on sex in exchange for a gift, one question on treatment-seeking behavior, one question on stigma and discrimination, and one question on perceived HIV.

Four questions in the condom use topic were in this category: 'Condom use creates doubt between sexual partners', 'Using a condom spoils the enjoyment of sexual intercourse', 'Young people should be taught how to use a condom correctly', and 'Someone who carries a condom means that he/she is going to have sex'. As described in Table 4.10, achievement in these issues reached 3.1 to 3.6 of the maximum score of five at pre-test. The achievement in the post-test was 3.3 to 3.7 of the maximum score of five. This is a good sign, that students agreed that young people should be taught how to use a condom correctly. Their score achieved 3.6 (72 percent of the maximum score) and increased to 3.7 (74 percent of the maximum score) at post-test. In the intervention group, the highest change score (0.5) among the four questions on the topic was on the question that using a condom spoils the enjoyment of sexual intercourse. This is also another good sign of a positive attitude to condom use.

In the refusal/delaying tactics topic, the question was 'You may lose your partner if you refuse to have sex with him/her'. Students achieved a lower score on this question compared to the other two questions in the same topic. Further, 9.6 percent of female students who were sexually active reported they had their first sexual intercourse because they were afraid of breaking up with their boyfriend. This reason was only cited by 1.9 sexually active male students (Diarsviti et al. 2011). This finding suggests that

the possibility of losing a partner was a concern that influenced students' attitude on refusal/delaying tactics.

In the sex in exchange for a gift topic, the question was: 'If someone spends a lot of money on a date, you owe him/her at least a kiss'. Butt, Numbery, et al. (2002) reported a trend among young people in Papua to be involved in secret sex that often implied gifts of money or goods. Students' disagreement on this issue was a good sign that this was consistent with their behavior intention and sexual practices.

In the social norms topic, the five questions were 'If someone is wearing body-revealing clothes, you expect to have sex with him/her'; 'Having sex is the best way to show affection to someone you love'; 'If you talk about sexuality with your partner, it means that you want to have sex with him/her'; 'A man can have premarital or extramarital sex, but a woman cannot'; and 'You would persuade your partner to use alcohol to increase your chances of having sexual intercourse'. In the sexual and reproductive health rights, the question was 'Women have the rights to decide how far to go in a relationship'. Students' disagreement on the five statements in the social norms and one statement in the sexual and reproductive health rights suggested students had positive attitudes on the issues.

Related to body-revealing cloth, several Year 5 and 6 Sport and Health Education textbooks reminded female students to wear 'decent' clothes as a preventive measure against sexual harassment. The information in these textbooks implied a gender bias. Further, there could be various interpretations of the term 'decent' clothes, depending on the different cultural contexts. Of five textbooks that suggested students should wear decent clothes, three textbooks explained the meaning of decent. One textbook described decent clothes as clothes that accentuated the body shape. This textbook also prohibited female students from using 'excessive' cosmetics (Supriyanto 2008b, :142). Another textbook suggested students should not wear short skirts or tight clothes (Suryatmo et al. 2007, :62). Another textbook described decent clothes as clothes that did not show the thighs, breasts, or bellies (Tim Penjas SD et al. 2007). All of these suggestions on female clothing were written in sections on how to prevent sexual harassment.

A study explored the reasons for the allegation that female victims of sexual violence precipitate their own assaults by wearing provocative, body-revealing clothes. The study that was carried out on 193 female and 128 male undergraduate students aged

18-24 years in Israel revealed a gender-based attribution gap. Males perceived the sexualized look as indicating an interest in sex and an intent to seduce. Females reported they wore sexy clothes to feel and look attractive (Moor 2010). Women's attractiveness was also connected with color. Guéguen (2012) found that males reported higher sexual intent in women wearing red clothing.

In the self-efficacy topic, the two questions were 'You know how to protect yourself from HIV, other STIs and unintended pregnancy'; and 'You should talk about sexuality, pregnancy, alcohol or drugs with your parents'. In the treatment-seeking behavior topic, the question was 'You are confident to see a medical professional if you have a symptom of STIs'. In the stigma and discrimination topic, the question was 'The school and community should be told when someone has HIV infection'. In the perceived HIV risk and HIV infection topic, the question was 'You are confident to tell your friends that being abstinent is a sign of emotional and moral maturity'. The question in the reproductive health education was 'Reproductive health education should not be taught at school as it encourages students to have sex'.

4.6.3.3 Low score achievement in attitude test

There was only one low mean score in the attitude domain at pre-test that reached only three (60 percent) or less out of the maximum score of five (Table 4.9). The question was in the treatment-seeking behavior topic: 'You should tell your partner if you are infected with HIV or other STI'. The finding implied the issue needs to be emphasized in order to increase positive attitude of the students on the related issue.

Population surveys from 2007–2009 in six sub-Saharan African countries revealed that knowledge of HIV status was still low among people with HIV. The awareness of HIV status ranged from 31 percent in Congo to 68.9 percent in Kenya (WHO 2011b). A 2006 survey conducted on 1,014 Cameroonian HIV-infected women who had a main partner showed that 86.3 percent of respondents disclosed their HIV status to their main partners. Conversely, only 46 percent of respondents knew their partner's HIV status (Loubiere et al. 2009).

However, HIV disclosure might be a double-edged sword. On one side, disclosure might result in stigmatization and violence from a partner (Gielen et al. 2000; Medley et al. 2004; Siegel, Leks, and Schrimshaw 2005; Waugh 2003). On the other side, disclosure might increase self-acceptance of one's condition, emotional and

material support, and responsibility for having safer sexual practices (Bouillon et al. 2007; Parsons et al. 2004; Spire et al. 2005), and access to HIV treatment (Anglemyer et al. 2011; Cohen et al. 2011).

Further, concealment of HIV status might lead to high-risk sexual practices that increase HIV transmission to regular partner (Allen et al. 2003; Celum et al. 2010) and to many people through multiple sexual partners (Lurie et al. 2003; Loubiere et al. 2009). Therefore, WHO suggests that disclosure of HIV status to partner is critical in expanding access to HIV prevention and early treatment (WHO 2012). In addition, New South Wales Health Australia also recommends an STI-infected person notify his/her recent sexual partners so they can see a health-care provider and be treated in order to reduce the risk of transmission, re-infection and complications (NSW Health Australia 2009).

4.6.3.4 Comparison of attitude test achievement with Belize study

I adopted six questions in the attitude test from Belize study. These questions were: 'Using a condom spoils the enjoyment of sexual intercourse', 'Someone who carries a condom means that he/she is going to have sex', 'You should have sex after six months of dating', 'If someone spends a lot of money on a date, you owe him/her at least a kiss', 'If someone wearing body revealing clothes, you expect to have sex with him/her', and 'Women have the rights to decide how far to go in a relationship' (Martiniuk 2000).

The Belize study did not find any significant difference in the intervention effect between the intervention and control group on the attitude and behavior intention domain (Martiniuk 2000; Martiniuk, O'Connor, and King 2003). The Belize study compared percentage of correct answers, whereas my study compared mean score. Martiniuk et al. did not explain how to calculate the percentage of correct answer (Martiniuk 2000; Martiniuk, O'Connor, and King 2003). It can be argued that it was not appropriate to compare the percentage of correct answer, if 'correct answer' meant the maximum score (strongly agree and strongly disagree). This was because the responses to each attitude and behavior intention questions were on a Likert scale.

4.6.3.5 Predictors of mean score difference in the overall attitude test

This thesis also used a linear mixed model with fixed effects included eight variables to predict mean score difference in the overall attitude test from pre-test to post-test between intervention and control group. The results suggest that sex, ethnicity, sexual experience in the previous month before pre-test and post-test, and age were predictors of difference score on the overall attitude test from pre-test to post-test between intervention and control group.

Being male, compared to female, lowered the mean score of the overall attitude test by 5.7 points (95% CI -6.9, -4.5), controlling for other variables in the model. Being a Papuan student, compared to a mixed ethnicity student, lowered the mean score of the overall attitude test by 3.4 points (95% CI -5.9, -0.9). Students who did not have any sexual experience and those who had some sexual experience in the previous month before pre-test and post-test, compared to those who had sexual intercourse, increased the mean score of the overall attitude test by 5.2 points (95% CI 4.0, 6.5) controlling for other variables in the model. Each year increase in a students' age lowered the mean score of the overall attitude test by 2.2 points (95% CI -2.8, -1.6), controlling for other variables in the model. The *'Reducing the Risk of HIV Infection: Intervention trial for Young Papuans'* module showed an efficacy of 2.5 points (95% CI 0.3, 4.8), a better mean score for the overall attitude test different from pre-test to post-test between intervention and control group.

4.6.4 Behavior intention

My study found that the lowest change scores in the intervention group were 0.4 for HIV prevention and treatment-seeking behavior; 0.4 for the self-efficacy questions; 0.5 for the sexual and reproductive rights questions, stigma and discrimination questions, and refusal and delaying tactics questions; 0.7 for condom use; and the highest 0.9 for the social norms questions. In contrast, there was not any significant change score in any topic in the behavior intention domain in the control group.

4.6.4.1 Low change score but high positive behavior intention

In the knowledge and attitude test, there were some low change scores but students achieved high scores at pre-test that almost reached the maximum score. At

post-test these scores could not change much. I called this phenomenon 'low change score but high positive behavior intention'.

Some zero and 0.1 change scores in some behavior intention questions in the intervention group fit into this category (Table 4.13). The mean scores of these questions at pre-test were already high, reaching four (80 percent) or more of the maximum score of five, suggesting the students already had a positive behavior intention towards the relevant topics.

Half (nine) questions in the behavior intention domain were in this category. These were one question on condom use, three questions on social norms, three questions on HIV prevention, and two questions on treatment-seeking behavior.

The question in the condom use topic that fell within the low change score was 'Based on what you know about HIV infection and AIDS, then you are not confident to use a condom or request that your partner use a condom'. Condom use in Papua is low, ranged from 2.8 percent among sexually active adult population (15-49 years) (BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007) to seven percent among sexually active junior high school (CHR-UI 2003). Further, as reported by Hewat (2008), there exists a gender stereotype in sexual practices, including condom use. Female indigenous Papuans are afraid to ask their partner to use a condom. Therefore, a positive behavior intention on this issue was hoped to be a good sign that it would be applied in the students' lives.

In the social norms topic, the three questions were 'If you are attending a party and some of your friends are drunk and use drugs, but you don't want to lose your friends, then you intend to get drunk and use drugs to be accepted by your peers'; 'If you live in a place where the majority of teenagers have sex before marriage, but you don't want to be thought of as being different, then you intend to have sex to be accepted by your peers'; 'If you have one permanent partner but you attend a traditional celebration or travel to other city, then you intend to have sex with other people'.

Drug use in Papua is low. Only around 0.8 percent of adult population in Papua reported having used drugs (BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007). My study found around one to two percent of students were currently using drugs. Further, as of March 2011, 95.5 percent of HIV cases were transmitted through heterosexual contact (Ministry of Health of the Republic of Indonesia 2011a), compared to injecting drug use as the main mode of HIV

transmission in West Java Province (Anintya 2010). Of HIV cases nationally, 53.1 percent were transmitted through heterosexual contact, whereas 37.9 percent were transmitted through injecting drug use (Ministry of Health of the Republic of Indonesia 2011a).

In the HIV prevention topic, the three questions were 'If you have received information that having multiple sexual partners increases your risk of getting HIV infection, then you intend to have sex with more than one sexual partners, anyway'; 'Based on what you know about HIV infection and AIDS, you are not confident that you can protect yourself from becoming infected'; and 'Based on what you know about HIV infection and AIDS, then you are not confident to get tested for HIV infection or other STIs'.

In the treatment-seeking behavior topic, the two questions were 'If your friend told you that he/she is having genital ulcer/discharge/sore (penis, anal, and/or vagina), then you are confident to recommend that your friend visit VCT clinic for an exam or to talk about protection'; and 'Based on what you know about HIV infection and STIs, then you are confident to visit a medical professional to get more information on prevention and treatment of HIV or STI'.

The high score achievement on these topics reflected positive behavior intention of students towards the related issues. As mentioned in Chapter 3, according to theory of Reasoned Action, intention was the most important determinant of behavior. Intention was a plan or a likelihood that someone would behave in a particular way in a specific situation, whether or not they actually did so. Further, behavior intention was influenced by two factors: a person's attitude and their beliefs (Ajzen and Fishbein 1980; UNAIDS 1999b; Lezin 2009b).

4.6.4.2 Medium score achievement in behavior intention test

The behavior intention of students on other issues in the behavior intention domain fell between 3.5 (70 percent) and 3.9 (79 percent) out of the maximum score of five. Their corresponding mean score at post-test was 3.7 (74 percent) to 4.1 (82 percent) of the maximum score of five (Table 4.13). Half (nine) questions in the behavior intention domain were in this category. These included two questions on condom use, two questions on social norms, four questions on HIV prevention, and one question on treatment-seeking behavior.

Two questions in the condom use topic in this category were 'If your partner wants to have sex with you without a condom, but you are afraid to lose your partner if you insist on using a condom, then you intend to have sex without a condom, anyway'; and 'Based on what you know about HIV infection and AIDS, if your partner wants to use a condom, then you intend to convince your partner that a condom is useless'. In the social norms topic, the two questions were 'If your partner wants to have sex with you, but you don't want to have sex before marriage, then you are confident to refuse your partner's request'; and 'If you have been dating for more than six months and you plan to marry your partner, then you intend to have sex with your partner before marriage'.

In the HIV prevention topic, the four questions were 'If you really love your partner and you don't want to lose your partner, then you intend not to tell your partner about your HIV/STI status'; 'Based on what you know about HIV infection and AIDS, you intend to engage in sexual activity with more than one partner'; 'If you really want to have sex with a person, then you intend not to ask about their sexual history before having sex with his/her'; and 'Based on what you know about HIV infection and AIDS, then you are not confident to postpone sexual activity'. In the treatment-seeking behavior topic, the question was 'If you had a genital ulcer/discharge/sore (penis, anal, and/or vagina), but you want to have sex, then the first place you intend to go for treatment is a pharmacy'.

4.6.4.3 Predictors of mean score difference in the overall behavior intention test

The results of linear mixed model suggest that school type, sex, sexual experience in the previous month before pre-test and post-test, and age were predictors of difference score of the overall behavior intention test from pre-test to post-test between intervention and control group.

Being in a private school, compared to being in a vocational school, lowered the mean score of the overall behavior intention test by 4.5 points (95% CI -8.8, -0.3) controlling for other variables in the model. Being male, compared to female, lowered the mean score of the overall attitude test by 4.6 points (95% CI -5.6, -3.4) controlling for other variables in the model. Students who did not have any sexual experience and those who had some sexual experience in the previous month before the pre-test and post-test, compared to those who had sexual intercourse, increased the mean score of the overall behavior intention test by 4.3 points (95% CI 3.3, 5.3) controlling for other

variables in the model. Each year increase in a students' age lowered the mean score of the overall behavior intention test by 1.3 points (95% CI -1.8, -0.8), controlling for other variables in the model.

The significance in the time-by-group interaction implied a difference mean score of the overall behavior intention test from pre-test to post-test between intervention and control group. Therefore, the '*Reducing the Risk of HIV Infection: Intervention trial for Young Papuans*' program showed an efficacy of 2.4 points (95% CI 0.5, 4.2), which was a better mean score for the overall behavior intention test different from pre-test to post-test between intervention and control group.

4.7 Intra-class correlation coefficient (ICC)

The main difficulty in calculating sample size for cluster randomized trial is obtaining an estimate of ICC. As discussed in Chapter 3, there has not been any cluster randomized trial on reproductive health intervention in Indonesia. Therefore, in calculating sample size I used the values of within cluster variance, minimal important difference to be detects and intra-class correlation coefficient based on the studies carried out in other countries.

In this section, I reported the ICC on knowledge, attitude, and behavior intention tests, so other researchers could use the values for their studies. The ICC, denoted by ρ , quantifies homogeneity or the degree of similarity among responses within a cluster, and may be interpreted as the standard Pearson correlation coefficient between any two responses in the same cluster (Kelder et al. 1993; Campbell et al. 2000; Wojdyla 2005).

The ICC estimates may vary by outcome variable and inclusion of covariates in the analytic model. The variation between groups in a cluster randomized trial may be due to either individual or cluster-level characteristics (Pals et al. 2009)

Table 4.16 Estimates of covariance parameters in knowledge test

Parameter	Estimate	SE
Residual (within school variance)	8.2	0.3
School (between school variance)	0.3	0.2

Notes: results were adjusted for sex, ethnicity, school type, sexual experience in the previous month before pre-test and post-test, and age.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

The ICC is the result of between-group variance divided by the total variance. The value of ICC is between zero and one. If the value of ICC approaches one, there is greater homogeneity within a cluster, and vice versa (Garson 2012).

Table 4.16 presents estimates of covariance parameters in knowledge test. The total of the variance components was 8.5. Between school component (0.3) was 3.5 percent of the total variance. Therefore, the ICC in knowledge test was 0.04, adjusted for variables in the linear mixed model. This result was similar with the ICC from other study that I used in calculating the sample size ($\rho = 0.04$) (Martiniuk, O'Connor, and King 2003).

Table 4.17 Estimates of covariance parameters in attitude test

Parameter	Estimate	SE
Residual (within school variance)	156.8	5.1
School (between school variance)	20.5	9.0

Notes: results were adjusted for sex, ethnicity, school type, sexual experience in the previous month before pre-test and post-test, and age.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

Table 4.17 presents estimates of covariance parameters in attitude test. The total of the variance components was 177.3. Therefore, the ICC in attitude test was 0.12, adjusted for variables in the linear mixed model.

Table 4.18 Estimates of covariance parameters in behavior intention test

Parameter	Estimate	SE
Residual (within school variance)	107.5	3.5
School (between school variance)	8.9	4.1

Notes: results were adjusted for sex, ethnicity, school type, sexual experience in the previous month before pre-test and post-test, and age.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

Table 4.18 presents estimates of covariance parameters in behavior intention test. The total of the variance components was 116.4. Therefore, the ICC in behavior intention test was 0.08, adjusted for variables in the linear mixed model.

The ICC is expected to be higher in a trial when the intervention is directed at the cluster level than individual level. The ICC has an impact on the design effect $1 + (m - 1)\rho$, where m is the average cluster size and ρ was the ICC. Design effect or variance inflation factor (VIF) is used to calculate sample size in cluster randomized trial. The higher the ICC, the more important the variation between cluster, the bigger

the design effect and the more subjects is needed to obtain the same power as an individual randomized study. However, a small ICC also has an impact if the cluster size is large (Kerry and Bland 1998; Donner, Birkett, and Buck 1981).

4.8 Conclusion

In sum, all educators interviewed agreed on the importance of comprehensive reproductive health education for students. Some teachers also reported enthusiasm of students when the teachers taught reproductive health topics. However, one educator criticized the hypocrisy of the education sector for not including the teaching of the ABC of HIV prevention to the students.

Teachers at senior high schools face some problems related with the teaching of reproductive health education. Teachers are expected to have HIV and reproductive health training, but there has not been enough training available for senior high school students and teachers. Three teachers in private senior high schools revealed the shortage of school textbooks. Moreover, there was an indication that some materials on reproductive health education were not taught to the students, as one teacher said she would explain the STI topic when she had the time.

The characteristics of the intervention and control groups in my study were balanced on all covariates, except on religion. The results indicate that randomization had worked well by achieving a good balance between intervention and control group at baseline. In a study with well-balanced baseline characteristics, any difference in outcome between the intervention and control groups is likely to be a real effect of the intervention.

There were 25 false/true questions in the knowledge domain. Seven questions were in the low change score but high understanding category. Three questions were in the medium achievement score category. Fifteen questions were in the low score achievement category.

Of the 30 questions in the attitude domain, 11 questions fell into the low change score but high positive attitude category. Eighteen questions were in the medium score achievement category, and one question was in the low score achievement category.

There were 18 questions in the behavior intention domain. Half (nine) questions were in the low change score but high positive behavior intention category, and nine questions were in the medium score achievement category.

This thesis found that sex, age, ethnicity, school type, and sexual experience in the previous month before pre-test and post-test were predictors of mean score difference in the overall knowledge, attitude, or behavior intention test. Of these eight variables, age and sexual experience in the previous month before pre-test and post-test were significant predictors in the overall knowledge, attitude, and behavior intention tests.

Each year increase in the students' age lowered the mean score of the overall knowledge, attitude, and behavior intention tests. Students who did not have any sexual experience and had some sexual experience in the previous month before pre-test and post-test, compared to students who had sexual intercourse, increased the mean score difference of the overall knowledge, attitude, and behavior intention tests. Being in the control group, compared to intervention group, significantly lowered the mean score difference of the overall knowledge test. Being male, compared to female, significantly lowered the mean score difference of the overall attitude and behavior intention tests. Being a Papuan student, compared to a mixed ethnicity student, significantly lowered the mean score difference of the overall attitude test. Being in a private school, compared to being in a vocational school, significantly lowered the mean score difference on the overall behavior intention test, controlling for other variables in the model.

Results of the linear mixed model indicate that the *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* program achieved an efficacy of 2.6 points, 95% CI 2.1, 3.1) for the overall knowledge test, 2.5 points (95% CI 0.3, 4.8) better mean score for the overall attitude test, and 2.4 points (95% CI 0.5, 4.2) better mean score for the overall behavior intention test different from pre-test to post-test between intervention and control group.

All the results indicated that *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* program showed an efficacy in increasing knowledge, positive attitude and behavior intention of students. As explained in the *'Reducing the Risk of HIV Infection Logic Model'*, knowledge, attitude, and behavior intention were determinants of students' behavior. When the positive results of these determinants

could be maintained over a long period, then it was likely they could influence safer sexual practices.

This study also reported the ICC in knowledge, attitude, and behavior intention tests. Therefore other researchers could use the ICC to plan their study.

Future studies will include an efficiency trial. In an efficiency trial, biology or sport and health education teachers should be trained to deliver the intervention program to the students. A future study will be improved if the students could receive the intervention program several times, and if the study could be carried out in rural and urban areas to capture the different characteristics of different students.

Any future study should be carried out in collaboration with VCT clinics. Longer follow-up time, repeated knowledge, attitude, behavior intention tests and self-reported sexual practices, in combination with the results of STI or HIV tests would be very useful in measuring any reduction in the HIV and STI cases.

The following Chapter 5 discusses the state of norms on sexuality among students, students' self-reported sexual practices in the previous month before pre-test and post-test, analysis method, study findings, and discussion on the related findings.

Chapter 5

Fitting safer sexual practices on Papuan students: a challenging intervention

First, people restricted their sexual activity by being less likely to have sex if single, being less likely to have extramarital affairs if married, and having fewer casual sexual partners. Then, those people still having casual sex increased their use of condoms with non-marital/non-cohabiting partners. Breaking up the sexual networks by having fewer sexual partners and then decreasing the risk of STD transmission through the use of condoms is a powerful combination that markedly reduced HIV transmission (Kirby 2008, :ii41).

5.1 Introduction

Increasing knowledge is only the first step to achieve the goal of a comprehensive reproductive health education intervention (Graham 2003a). As explained in the *'Reducing the Risk of HIV Infection Logic Model'*, the goal of *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* module was to reduce HIV infection.

The intervention module could not directly affect the goal, but it could affect individuals' determinants, including knowledge, attitudes, and behavior intention. Besides the module, there were some social determinants that also affected individuals' sexual practices. A positive change in individual determinants will affect sexual practices. The positive changes in sexual practices that were maintained would subsequently result in decreased HIV infection.

Chapter 4 describes the efficacy of *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* module in changing knowledge, attitude, and behavior intention of students based on the pre-test and post-test. The present chapter, Chapter 5, presents educators' and students' view on the norms of sexuality. This chapter also assesses the efficacy of the *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* module in changing the sexual practices of students based on the self-reported sexual practices at pre-test and post-test.

5.2 The state of norms of sexuality among students

Understanding the educators' perspectives about social norms on sexuality is increasingly important as they are expected to educate their students through comprehensive reproductive health education. In 2009 I conducted in-depth interviews on educators' views related to norms of sexuality. The interviews were carried out among staff in the education bureaus, senior high school principals and teachers in Papua and West Papua Provinces.

Samuel, a staff member in the Education, Youth and Sport Bureau of Papua Province, stated:

HIV in Papua is in the level of concern. The health bureau disseminated an HIV report that some HIV and AIDS cases are among students. I have often been to Jayawijaya. Young people in that area are very permissive. I think it is due to their lack of knowledge and the influence of culture. Young people are having sex in customary festivals and graduation parties. They are not aware of the HIV risk. They don't know about abstinence, being faithful or condom use.

It is a school regulation that pregnant students will be expelled from school. However, the males can continue schooling, because they are expected to be a breadwinner (Interview with Samuel, 50 years, male, Javanese, a staff member in the Education, Youth and Sport Bureau of Papua Province, 28 February 2009).

Samuel realized that HIV cases in Papua Province are at a level of concern. He knew that some HIV and AIDS cases were found among students. He gave an example of sexual permissiveness among students in the Jayawijaya district, who were unaware of HIV prevention measures. According to school rules, pregnant female students will be expelled from school, but males can continue schooling.

Joseph, a staff member in the Education, Youth and Sport Bureau of Papua Province, stated:

It is a fact that some HIV and AIDS cases occur among students. The main mode of HIV transmission in Papua is through sexual contact. Therefore, comprehensive reproductive health education is very important for students. It can prevent teen pregnancy, HIV, and other STIs. Reproductive health education should be started in the early years of life (Interview with Joseph, 57 years, male, Javanese, a staff member in the Education, Youth and Sport Bureau of Papua Province).

Joseph emphasized the importance of reproductive health education to prevent pregnancy, HIV, and other STI. He argued that reproductive health education should be started in the early years of life.

Chris, a staff member in the Education, Youth and Sport Bureau of Jayapura city stated:

We realized HIV and AIDS cases are high in Papua. I have received information from the health bureau that some students and university students are HIV or AIDS positive. It is the responsibility of many parties to overcome HIV transmission, including families and government (Interview with Chris, 47 years, male, Javanese, a staff member in the Education, Youth and Sport Bureau of Jayapura city, Papua Province, 1 March 2009).

Chris realized that HIV and AIDS cases are high in Papua Province, and that some students and university students are living with HIV.

Thomas, a school principal of a government public school in Jayapura city, stated:

There have been some incidents of pregnancies among our students. I think it happens in many senior high schools. Based on the school rule, we have to expel them from school. We don't want them to spread their negative influence to their friends.

Last year there was an incident of showing a pornographic movie. Students spread a pornographic movie via their cellular phones. One of our teacher reported it and he tracked down the first sender. Students told him that the persons seen in the movie were our students. Finally we found out that they had graduated from this school. After that incident we added one school rule. We ban students from spreading pornographic materials at school. The school will expel any student who breaks the rule.

Once a year, on the orientation day for new students, there is AIDS awareness delivered by local NGO. They talk about the cause of HIV, HIV prevention and treatment. I think they never talk about how to use a condom, since it is taboo to talk about it (An interview with Thomas, 55 years, male, Torajanese, a school principal at a government public school in Jayapura city, Papua Province, 14 March 2009).

Thomas explained that some pregnancies had occurred among students. A spread of a pornographic movie had been circulated via students' cellular phones. This incident prompted the school to add a new rule that ban any spread of pornographic materials at school. He confirmed that every year an AIDS awareness program for new students is delivered by a local NGO, but condom use has never been explained. It is taboo to talk about condom use.

Eva, a vice-principal and counseling teacher at a private school in Jayapura city, stated:

I don't know much about reproductive health, so I can only give superficial counseling related to reproductive health. No more than that.

Today's students are very different from my generation. They learn more negative things than older generation. They can get any information from the internet. My daughter told me that her friends often watch pornographic movies from an internet.

Pregnancies among students are not uncommon here. We feel reluctant to give advice to the students. Typically students engage in sexual relationships. I think they started when they were in junior high school. They often have new boy/girlfriends. I can't imagine what will happen when they get married.

I think students are closer to their friends than their parents. Maybe they don't get enough attention from their parents, or maybe they come from a broken home. Parents should get closer to their children, so they know if their children have any problems.

In my opinion, the most important thing for students is religion. If they are good believers than they will be strong. The center of education should be the family, not the school. Students spend only six hours at school, but they spend more time with their family. Therefore, parents should teach their children about religion, good behavior, and sex. They should not teach them about culture. There are many negative influences from culture (Interview with Eva, 48 years, female, Sentani tribe, a vice principal and counseling teacher at a private school in Jayapura city, Papua Province, 14 March 2009).

Eva criticized today's students as being more permissive than her generation. Students learn more negative things from the internet. Typically, students were engaged in sexual relationship. She suggested that parents should get closer to their children. The most influential factors are religion and family. Parents should teach their children about good behavior and sex.

Lydia, a teacher at a private senior high school in Jayapura city, stated:

I always emphasize the importance of being abstinent, so the students won't get HIV or other STIs. I have never discussed relationship and condom use with students, because it will make them want to try having sex (An interview with Lydia, 34 years, female, Sentani tribe, a biology teacher at a private senior high school, Jayapura city, Papua Province, 7 May 2009).

In the interview, Lydia suggested abstinence should be emphasized to the students, as a preventive measure. However, it was not necessary to provide information on

relationships and condom use to the students, as it would encourage students to have sex.

Gerry, a teacher at the same school as Lydia, stated:

I hope the government will give information and facilitate the HIV education here by giving visual education material. There are two to three cases of unintended pregnancies here every year. The students were expelled from school. I heard some of them had unsafe abortions.

I attended a workshop held by UNICEF Papua last year. They showed some pictures of AIDS patients. Students should see these pictures, so they become afraid of getting HIV.

They also showed a movie on unsafe abortions. I am sure many students do not know about this yet. The fetus was broken inside the tummy. It was horrible. So, this material has to be disseminated to the students. The students must know about abortion. Usually the students are unworried about abortion. Many of them do not know about this. Part by part was taken out. I was shocked to see it. (Interview with Gerry, 45 years, male, Torajanese, a sport and health education teacher at a private senior high school, Jayapura city, Papua Province, 7 May 2009).

Gerry suggested that the government should provide visual education material as part of HIV education. He had attended a workshop held by UNICEF Papua. He saw pictures of AIDS patients and a movie that showed the process of an abortion. He thought students should also see these pictures, so they are afraid of getting HIV. The students should also see the movie, so they become afraid of having abortion.

Anto, a teacher at the same school as Lydia and Gerry, stated:

Students don't respect their teachers now. If they want to smoke or do something impolite, then they will do it although there is a teacher present. They have very bad behavior.

There have been many bad incidents in this school. Some students have had sexual relationships and become pregnant, so they drop out of school.

In the class they are not polite at all. Some male students grab their female friends' breasts and vital organs in the class, in front of many people. Some are hugging in the school.

The junior high school students are worse than senior high school students. They are worse, because they are in a transition period, developing from children to teenagers. I have caught them. Sometimes I found female students smoking and drinking after school. I have found them bathing nude in public view. The females are very brave.

I think they are closer to their friends than to their parents. My wife is a teacher at a government school in Jayapura. Many students there were

dropped out of school because they were pregnant. Even before this national exam there was a pregnancy incident and the male student partner did not want to take responsibility.

In this school, around 2001-2003 there were a lot of unintended pregnancies among students. After that time, we restricted the rules on accepting new students, because many of our students were those who had dropped out from other schools. We set selection criteria for new students. We ask them whether they had a poor track record in their previous school (Interview with Anto, 48 years, male, Javanese, a biology teacher at a private senior high school in Jayapura city, Papua Province, 7 May 2009).

Anto highlighted the permissiveness among students at his school. There had been some unintended pregnancies among students. Male students grabbed their female friends' breast and vital organs in class. Female students at junior high school had smoked, drunk, and bathed nude in public.

Liz, a teacher at a private senior high school in Jayapura city, stated:

I don't think it is useful to explain about condom use to the students, as it will encourage them to have sex (An interview with Liz, 27 years, female, Batak ethnicity, a biology teacher at a private senior high school in Jayapura city, Papua Province, 6 May 2009)

Liz expressed that it was not useful to explain about condom use to the students, as it would encourage them to have sex.

Maria, a biology teacher at a private senior high school in Jayapura district, stated:

The majority of our students are from the mountain, and usually they have already had sex. I know about HIV prevention. However, I don't feel comfortable to explain about abstinence, being faithful or condom use to them. If I explain about abstinence or being faithful, I am afraid my students will be angry. If I explain about condom use, I am afraid they think that I agree to premarital sex.

I think students should know about condom use to prevent HIV, but it is not in the curriculum. It would be better if someone from outside the school taught the students about HIV prevention including condom use (An interview with Maria, 29 years, female, Dani tribe, a biology teacher at a private senior high school in Jayapura District, 16 March 2009).

Maria was not confident explaining about HIV and STI, and she did not feel comfortable explaining about abstinence, being faithful, and condom use to the students. She was afraid that students would be angry with her, if she explained about abstinence and being faithful. She was also afraid the students would think she

condoned premarital sex, if she explained about condom use. She argued that students should know about condom use, but it would be better if someone from outside the school taught students about condom use.

Nick, a biology teacher at a private senior high school in Jayapura district, stated:

Dating is common among students. It is common that they are hugging and kissing after school. One day I met some naked male and female students. They enjoyed the rain. I absolutely don't agree with premarital sex. That's why I always tell them to avoid premarital sex.

A staff member of a local NGO has ever told me that some students and university students are HIV positive. The NGO gives free condoms to the sex workers, transgender and university students. I think it is good that students know about HIV prevention and condom use. However, it is not covered in the textbooks or in the curriculum. I don't want their parents to blame the school for teaching about condom. Parents should teach their children about abstinence and about safe sex (An interview with Nick, 42 years, male, Makassar ethnicity, a biology teacher at a private senior high school in Jayapura district, Papua Province, 16 March 2009).

Nick stated that dating is common among students. A staff member of a local NGO told him that some students are HIV positive. He argued that students should know about HIV prevention and condom use, even though the topics were not covered in the textbooks and curriculum. Parents should teach their children about abstinence and safe sex. School should not teach about condom use, as parents might criticize the school for teaching about it.

Johan, a staff member in the education bureau in Manokwari district, stated:

I often attend meetings with the health bureau and AIDS Commission. The HIV and AIDS cases are increasing, and some of them are among students. We agree that we have to fight HIV and AIDS together. Fighting against HIV transmission is the responsibility of all sectors, including the community.

We cannot belie the facts. Some teachers are HIV positive. There was a school principal who proposed to write the draft of HIV curriculum but it turned out that he died from AIDS. There was a preacher who died from AIDS, too.

The health bureau believes in the ABC of HIV prevention, but we in the education sector always belie the fact. Some female students get pregnant, and they were expelled from school. Some students are HIV positive. This means that they have had sex. I always emphasize that abstinence is very important for students, until they get married. However, for students who have had sex, they have to be faithful to one partner. I think students should know how to use condoms correctly. It doesn't mean that I agree with premarital or extramarital sex. Using a condom can prevent the transmission of HIV and other sexually transmitted infections (Interview with Johan, 52

years, male, Mandacan tribe, a staff at the education bureau in Manokwari district, West Papua Province, 16 May 2009.

Johan understood that HIV and AIDS cases are increasing in West Papua Province, and know of cases among students. This fact means that some students have had sex. There has not been any specific program for senior high school students. Some teachers are HIV positive, one school principal and a preacher died from AIDS. Johan emphasized the importance of HIV prevention, and that students should know how to use condoms correctly.

Esther, a principal at a vocational school in Manokwari, stated:

If I compare the current situation with that in our era, nowadays the situation is much different. Maybe there were some bad incidents in our time, but not as much as in the current time.

Well, in our school, some students have sexual relationship, so unavoidably every year there are around two Year 12 students who have unintended pregnancies. Since we stick to the school rules, so they are sent home to their parents.

In general, I think many students in senior high schools have had sexual relationships. In my opinion, the media has a big influence on the youth. They can see movies with less education value, so they want to try what they see in the movie.

In my opinion, reproductive health education should be started from the early years of life in the family. Parents should teach their children about it, because formal education has limited hours.

We have a counseling teacher. Teachers often remind students about good behavior in the morning assembly. However everything is back to them. It is their decision and their life.

I think students are closer to their friends than to their parents, maybe because many parents feel sexuality is taboo to be discussed with their children. They want to try what their friends do. Children do not understand the consequences of having sex, and later on when pregnancy occurs then ... well ... they will see what their parents will do about it.

How the youth see the importance of religion or culture in life really depends on the education in their family and at school. If their family values religion as important, then they will value it as a sacred thing in their relationship. However students from broken homes can be out of control.

Of course I want them to have a brighter future. Where will the youth be in the development of our country? Students really need support from their parents and the educational institution (Interview with Esther, 48 years, female, Serui tribe, a principal at a vocational school, Manokwari district, West Papua Province, 24 March 2009).

Esther emphasized the negative influence of friends and media on students. She also emphasized the importance of early reproductive health education and religion in the family. The school has a counseling teacher. Teachers often remind students about good behavior in the morning assembly. However, every year, unavoidably, there are around two unintended pregnancies at her school, and the girls are sent home. She also emphasized the need of parental roles in their children education.

Martin, a teacher at a government senior high school in Manokwari, stated:

Sometimes parents think their teens go to school, but the fact is that some teens arrive late at school or they don't go to school. They go to other places to meet their partners for dating and wait until the school hour is over then they go home. I think this has happened in many schools. Basically every school faces similar problems.

I am a teacher and a class warden. Several times I have had to call parents to the school. I also ask the students to meet their parents and I ask why they arrived late at school. The parents often surprised to know about this matter, because the children had left home to go to school.

I think many factors influence students' behavior, but the dominant factors are media and friends. Students often watch pornographic movies. They also know their friends who have sexual relationship, so they follow their friends. Later on, when a bad incident occurs, then they will say that they just follow their friends.

Sometimes students have parties and some get drunk, but it is outside school hours. However pregnancy incidents have happened here. Usually we call their parents, and then we give an explanation. We ask them to meet the school principal and usually the student is sent home (Interview with Martin, 37 years, male, Biak tribe, a sport and health education teacher at a government school in Manokwari district, West Papua Province, 21 May 2009).

Yan, a private senior high school principal in Sorong city, stated:

Today's teenagers have more sophisticated technology, but they don't have a good learning motivation. Ethics are not respected as it was in my time. When I was schooling, I remembered none of my female friends got pregnant. However, nowadays many unintended pregnancies among students from Year 10, 11, and 12 have occurred here.

Every year I say I have grandchildren. A lot of unintended pregnancies have happened here. They were students from Years 10, 11 and 12. It needs time for teenagers to understand the impact of unprotected sexual relationships. We sent home female students who were pregnant. However, after they gave birth, they reported to me and asked whether they could go to school again. I feel pity for them. If we don't accept them, they have nowhere to continue their education. So, I told them the important thing was that they understood the mistake that has happened and they have to study seriously. I see some graduates change their behavior and become government employees.

I don't agree with the school rule of expelling pregnant students, but allowing male students to continue schooling. Female students also need to have a

better education. Some of our students change their behavior and become government employees.

I don't agree with premarital sex, but it is common among students. I tell them that avoiding premarital sex is the best decision, but if they cannot restrain themselves, then they should have one sexual partner. I also tell them it is better to use a condom, as it can prevent pregnancy and sexually transmitted infections. If male students want to know about condom use, then on an individual counseling I show them how to use a condom correctly. It is not covered in the textbook or in the curriculum. Who do you think can teach them about it? They are not close to their parents. They cannot expect their friends to teach them the right thing. They need our help (Interview with Yan, 48 years, male, Torajanese, a private senior high school principal who is also a sport and health education teacher in Sorong city, West Papua Province, 20 May 2009).

Yan explained that his school allows pregnant students to take leave and then continue schooling after giving birth. He emphasized the importance of abstinence, being faithful, and condom use as preventive measures for pregnancy and STIs. Condom use is not covered in the school textbooks or curriculum, but in individual counseling, he explains how to use a condom correctly to his students. His effort and breakthrough not only needs to be appreciated, but also needs to be adopted by other teachers.

Leo, a vice principal at the same school as Yan, stated:

Sexual relationships are very common among students here. Usually I am the first to come to school because I have the office key. When I go to the toilet, oh, it's ... you can see it yourself. We always lock the toilet door when school time is over, but the door is always broken. The students come here at night and use the toilet and the class. I often find underwear in the toilet. I also often find underwear in the class. When I show it to the students they only laugh.

When you come here on Saturday, you will see that many students get drunk. When they get drunk usually we close the office because they can hit anybody, even the teachers.

I don't know how to change their behavior (Interview with Leo, 47 years, male, Torajanese, a biology teacher and vice principal at a private senior high school in Sorong city, West Papua Province, 20 May 2009).

Leo explained about permissiveness among students. Students often used the school's classrooms and toilets for having sex at night. Male students often get drunk on Saturdays and they could hit anybody. This condition could be associated with characteristics of students who were reported as those who were not accepted at other schools and the school functioned as a 'mechanics garage' for students.

Cory, a teacher at a government senior high school in Sorong city, stated:

Now we can see much misbehavior. Yeah, there was an incident of pornographic movies being spread through cellular phones. This is why it is important to educate them in the family. The family has an important influence.

There have been some pregnancy incidents here. We ask their parents to come to school, we give explanation to their parents, and then we ask them to resign from school. Everywhere there are incidents like that, drunk and pregnancy. The incidents suddenly occur and we cannot prevent them, so we ask them to resign.

Teenagers watch sexual relationships from the media and they want to do the things they see in the movies. We only have limited hours at school, from 7 am until 1 pm. We don't know what happens outside school. (Interview with Cory, 44 years, female, Ambonese, a biology teacher at a government senior high school in Sorong city, West Papua Province, 24 May 2009).

Cory defended the schools and teachers' responsibility to control students' personal behaviors. She tried to put the blame on the media and the families as being responsible for unintended pregnancies and the spreading of pornographic movies through students' cellular phones at her school.

Paul, a staff member in a local NGO that works on HIV outreach program in Sorong city, stated:

On Sunday morning I often see young people sleeping on the road after they got drunk. Drinking and getting drunk are common here.

Having sex is also common among young people. You can see they have sex anywhere, even on the grass. They use cartons as a mat. They call it *alaska* (*alas karton*, carton mat). Usually on Saturday night Papuan students have dates behind Yohan shop. It is dark there. Non-Papuan students usually have dating across from Yohan shop.

On Saturday evening, you can see many young females wear tight shirts and short skirts or pants. They gather around *Tembok Berlin* (Berlin wall) in Sorong beach. They bring their cellular phones and wait for a sexual transaction. Many men with good cars and motorbikes bring them to some hotels. Sometimes the girls receive money or gifts in return (Interview with Paul, 32 years, male, Ayamaru tribe, a staff at a local NGO working on an HIV outreach program in Sorong city, West Papua Province, 27 May 2009).

Paul suggested that drinking, getting drunk, and having sex are common among young people. He knew several places that were used by young people for dating, having sex, and waiting for a sexual transaction. The sexual practices of young people in Sorong

city, especially young females were in line with a report by Djoht et al. (2005). Djoht (2005) referred this phenomenon as 'secret sex', an embryo of a sex industry, and therefore, it needs a serious attention in relation to the prevention of transmission of HIV and other sexually transmitted infections.

In summary, interviews with 16 educators (10 males and six females) and one staff member of a local NGO indicated a high level of sexual permissiveness among today's senior high school students from different school types. The sexual permissiveness included dating, hugging and kissing after school, the spreading of pornographic movies through students' cellular phones, grabbing female friend's breasts and vital organ during class, bathing nude in public, sex in exchange for money or gifts, having sex in customary festivals and graduation parties, and having sex in the school's classrooms and toilets at night.

The spreading of pornographic movies through students' cellular phones with students who had graduated from a school become the persons seen in the movie was a shocking phenomenon. After the incident, the school ban students from spreading pornographic materials at school, and any student who breaks the rule would be expelled from the school.

Unintended pregnancies had occurred in every school. When facing the problem related to unintended pregnancy, teachers asked parents of pregnant students to come to school. After giving explanation to pregnant students and their parents, then teachers asked pregnant students to resign from school. However, there is one school in Sorong city that allows pregnant students to take leave and return to school after they give birth.

The majority of educators agreed with the importance of reproductive health education for students. They were aware of the increase of HIV and AIDS cases, and some cases were among students, teachers, and preacher. Some teachers have reminded their students about the importance of being abstinent. However, some teachers were reluctant to discuss about abstinence, being faithful and condom use for several reasons. One reason was that the material was not covered in the school curriculum and the topic would encourage students to have sex. Another reasons included lack of knowledge on reproductive health, being afraid if the students would get angry and parents should teach such matters to their children. Some educators believe the negative influence of media and friends is responsible for students' sexual permissiveness. Interviews with educators in Chapter 4 suggested that some topics of reproductive health education,

such as STIs might not be taught to the students for several reasons. One reason was lack of time. Another reason was lack of knowledge.

Parents seemed to give all the responsibility for teaching their children to teachers. In contrast, teachers expected that parents would play a role in educating their children related to sexuality and religion. Further, teachers did not want to be blamed for students' misbehavior.

The majority of educators confirmed that students were exposed to an AIDS awareness program only once in a year, during the school orientation week, which was very unfortunate. The high level of sexual permissiveness among students implied the need for a comprehensive reproductive health education program. The program should be implemented in the school and there has to be an administrative sanction for school that does not teach the program to their students.

Expelling pregnant students from school, but allowing males to continue schooling reflected gender discrimination, which is against the 1945 Constitution of Indonesia (*Undang-Undang Dasar 1945*) and the 1979 Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) (United Nations General Assembly 1979). Schools, parents and governments play an important role in the prevention efforts for unintended pregnancy. However, if incident of unintended pregnancy had occurred, schools should allow pregnant students to continue schooling. In 2000, the former Minister of Women Empowerment and Child Protection declared that pregnant students should be given a chance to finish their schooling. However, her declaration was not legitimated by the law, therefore, many schools did not comply with her statement (Toro and Nindyas 2001). In 2012, the Minister of Education and the Minister of Women Empowerment and Child Protection stated that pregnant students are eligible to take a national exam. However, their statements were also not legitimated by the law, therefore many pregnant students could not take the national exam (Dhara 2012; Winarso 2012).

While this section explores the educators' perspectives on the state of norms of sexuality among students, the following sections discuss students' self-reported sexual practices in the previous month before pre-test and post-test.

5.3 Analyses

My study aimed to evaluate the changes in sexual practices based on the self-reported sexual practices in the previous month before pre-test and the previous month before post-test. Evaluation included overall patterns of sexual practices, number of sexual partners, and condom use.

Patterns of sexual practices included having had no sexual experience, having had some sexual experience, and having had sexual intercourse. Some sexual practices included sexual experiences above the waist (e.g. intense hugging, cheek kissing, lip kissing, and breast fondling), below the waist (e.g. genital fondling), and oral sex. Oral sex included stimulation of genital or anus using mouth, tongue, teeth, or throat. Sexual intercourse included vaginal and/or anal intercourse.

Those who reported not having had any sexual experiences were classified as 'none'. Those who reported having had sexual experiences above the waist, below the waist, and oral sex were classified as 'some'. Those who reported having had sexual intercourse were classified as 'having sexual intercourse'.

The questionnaire also asked about the number of sexual partners in the previous month, frequency of condom use in the previous month, and condom use during the last sexual intercourse. Those who reported not using a condom in the last sexual intercourse were further asked about the reason for not using a condom.

5.3.1 Crude analysis

A crude analysis was carried out using Pearson Chi-square test adjusted for clustering (Donner and Donald 1988; Donner and Klar 2000; Kaczorowski 2011).

5.3.2 Adjusted analysis

Adjusted analysis was carried out using generalized linear mixed model (GLMM). GLMM was an extension of generalized linear model that contains random effects in its linear predictor. It has been used for modeling binary, count, clustered, and longitudinal data (Kachman 2007; Garson 2011; Garrido and Zhou 2006; Murray 1998; Lee, Schell, and Roetzheim 2009). It enabled researcher to evaluate whether there was an evidence of difference in behavior from pre- to post-test in different intervention group.

GLMM has been applied in clustered randomized controlled trials of a reproductive health program in some rural areas in South Africa (Jewkes et al. 2008; Jewkes et al. 2006). It has also been applied in behavioral intervention trial on substance use among people living with HIV in four cities in the U.S (Wong et al. 2008).

There are three components in the GLMM: random effect with exponential family distribution, linear mixed effect, and a link function. For cluster data with a binary response variable, Y_{ij} , $I = 1, \dots, n$ and $j = 1, \dots, n_i$, assumes conditionally independent, given the random effect U_1, \dots, U_n , the exponential family distribution is

$$f(y_{ij}|u_i, \theta, \phi) = \exp\left\{\frac{[y_{ij}\theta_{ij} - b(\theta_{ij})]}{\phi} + c(y_{ij}, \phi)\right\}$$

$u_i = (u_{i1}, \dots, u_{ik})$ are variates from normally distributed k -dimensional random vectors $U_i \sim N(0, \mathbf{D})$, where \mathbf{D} is the variance-covariance matrix and $u_{ij} = E[Y_{ij}|U_i]$ (Garrido and Zhou 2006, :5).

The linear mixed effects model in this thesis uses group, time, time-by-group interaction, and other covariates:

$$\eta_{ij} = \beta_1 \text{Group} + \beta_2 \text{Time} + \beta_3 \text{Group} * \text{Time} + \dots + \beta_p X'_{ij} \} \text{ fixed,} \\ + u_i Z'_{ij} + \dots + \varepsilon_{ij} \} \text{ random}$$

$i = 1, \dots, n$, $j = 1, \dots, n_i$, for the fixed effects parameter vector $\underline{\beta} = (\beta_1, \dots, \beta_p)'$ and random effects vector $u_i = (u_{i1}, \dots, u_{ik})'$. $X'_{ij} = (x_{ij1}, \dots, x_{ijp})'$ and $Z'_{ij} = (z_{ij1}, \dots, z_{ijk})'$ are both covariates (Garrido and Zhou 2006, :5; West, Welch, and Gatecki 2007, :15).

Related to binary response variable, therefore, the link function is a binary logistic regression. The logit link is:

$$g(\mu_{ij}) = \text{logit}(\mu_{ij}) = \log\left[\frac{\mu_{ij}}{1 - \mu_{ij}}\right] = \eta_{ij}$$

$$i = 1, \dots, n, j = 1, \dots, n_i \text{ (Hedeker 2005, :230).}$$

In the multivariate analysis, I compared the effect of the intervention on sexual practices between the intervention and control group, based on the self-reported sexual experience and condom use at last sexual intercourse. I collapsed the sexual experiences in the previous month before pre-test and post-test from three into two categories. The reference category was having had 'none' and 'some' sexual experience. Condom use at last sexual intercourse was a binary variable, contained yes or no answers with no as the reference category.

The fixed effects in the adjusted model for sexual experience included group (intervention and control group), time, time-by-group interaction, sex, ethnicity, age, school type, currently drink alcohol, religiosity, number of friends having sex, and living arrangement. The random effect was students nested within school.

The analysis for condom use in the last sexual intercourse was carried out only among students who reported having had sexual intercourse. The fixed effects in the adjusted model for condom use in the last sexual intercourse included group (intervention and control group), time, time-by-group interaction, sex, ethnicity, age, school type, and number of friends having sex. The random effect was students' ID within school ID.

Data preparation for mixed model in my analysis included restructuring data from 'one subject with multiple variables in a row' to 'one subject in multiple rows dependent upon the number of variable groups'. A variable group was a group of related variables that has been created to represent repeated measurement on one variable (West, Welch, and Gatecki 2007; UCLA Academic Technology Services 2009; SPSS Inc 2005). In my study each variable was measured twice in the pre-test and post-test, therefore, each subject had two rows in the restructured data.

5.4 Findings

5.4.1 Patterns of sexual practices among students

I had written an article on the patterns of sexual practices among Papuan students, using all students participated in the pre-test (N=1,082). This article had been published in 2011. The ANU Gender Institute awarded the article as the best published article in gender in 2011 by ANU students. The article is attached in the appendices.

The analyses in this thesis are based on students participating in both pre-test and post-test (N=988). Table 5.1 presents the results of self-reported sexual experience

in the previous month before pre-test and post-test. There was no significant difference in self-reported sexual experience in the previous month before pre-test between the intervention and the control groups. However, the proportion of sexual experience was significantly different between intervention and control group in the previous month before post-test ($p < 0.005$).

In the control group, the proportion of students reporting having had no sexual experience was 33.4 percent (161) at pre-test; this decreased to 32.4 percent (156) at post-test. The proportion of students reporting having some sexual experience also decreased, from 24.9 percent (120) at pre-test to 17.4 percent (84) at post-test. However, the proportion of students reporting having had sexual intercourse increased from 41.1 percent (198) at pre-test to 47.3 percent (228) at post-test.

In contrast, in the intervention group, the proportion of students reporting having had no sexual experience increased from 33.6 percent (170) at pre-test to 47.6 percent (241) at post-test. The proportion of students reporting having had some sexual experience and sexual intercourse decreased from 30.2 percent (153) and 34.8 percent (176), respectively, at pre-test to 21.5 percent (109) and 29.1 percent (147), respectively, at post-test.

Table 5.1. Sexual experiences in the previous month before pre-test and post-test

Sexual experience	Control (N= 482)	Intervention (N=506)
Sexual experience in the previous month before pre-test		
None	161 (33.4%)	170 (33.6%)
Some	120 (24.9%)	153 (30.2%)
Sexual intercourse	198 (41.1%)	176 (34.8%)
Missing information	3 (0.6%)	7 (1.4%)
Sexual experience in the previous month before post-test*		
None	156 (32.4%)	241 (47.6%)
Some	84 (17.4%)	109 (21.5%)
Sexual intercourse	228 (47.3%)	147 (29.1%)
Missing information	14 (2.9%)	9 (1.8%)
Total	482 (100.0%)	506 (100.0%)

Note: Column percentage. *Pearson Chi-square test adjusted for clustering was significant at $p < 0.05$

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

Table 5.2 presents parameter estimates on sexual experience from adjusted analysis with GLMM. The analysis was carried out among 955 students (91.6 percent) of the total 988 students. Thirty-three students (8.4 percent) were automatically excluded from the analysis by the software due to missing information in one or more variables. The response variable in the model was sexual experience in the previous

month before pre-test and post-test, with having none or some sexual experience as the reference category.

Time-by-group interaction was statistically significant in the model, implied the difference of sexual experience in the previous month before pre-test and post-test between intervention and control group. Therefore, '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' module showed an efficacy of 0.8 times (95% CI -1.3, -0.3) in reducing the risk of having sexual intercourse.

Table 5.2. Parameter estimates on sexual experiences from adjusted analysis with GLMM

Parameter	Coefficient	SE	t	p-value	95% CI	
					Lower	Upper
Intercept	0.0	1.7	-1.9	0.053	0.0	1
Group: Control [#]	3.3	0.2	5.6	<0.001	2.2	5.0
Time: Pre-test [#]	1.5	0.2	2.4	0.018	1.1	2.2
Group(control)*time(pre-test) interaction [#]	0.4	0.3	-3.3	0.001	0.3	0.7
School type (reference category: vocational school)						
Government	1.2	0.2	0.9	0.386	0.8	1.8
Private [#]	2.0	0.2	3.1	0.002	1.3	3.0
Sex: male [#]	1.8	0.2	3.8	<0.001	1.3	2.5
Ethnicity (reference category: mixed ethnicity)						
Papuan	0.9	0.3	-0.3	0.730	0.4	1.8
Non-Papuan [#]	0.4	0.3	-2.5	0.014	0.2	0.8
Religiosity (reference category: very religious)						
Not religious [#]	4.5	0.3	5.9	<0.001	2.7	7.4
Ordinary [#]	2.5	0.2	5.0	<0.001	1.8	3.7
Currently drank alcohol: No [#]	0.2	0.2	-7.1	<0.001	0.1	0.3
Number of friends having sex (reference category: all friends)						
No one [#]	0.1	0.6	-3.4	0.001	0.0	0.4
Some [#]	0.3	0.6	-2.2	0.028	0.1	0.9
Many	0.7	0.6	-0.5	0.592	0.2	2.5
Living arrangement (reference category: lived without parents or relatives)						
Lived with parents	0.8	0.3	-0.8	0.420	0.5	1.3
Lived with relatives	0.7	0.3	-1.4	0.156	0.4	1.2
Age (in years) [#]	1.2	0.1	2.6	0.008	1.1	1.5

Note : [#]Statistically significant at 0.05 level. The estimate is the difference relative to the reference category.

Source : *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

Being in the control group, in private school, male, older, not religious or ordinary, increased the risk of having sexual intercourse. Being in the control group, compared to intervention group, increased the probability of having sexual intercourse 3.3 times (95% CI 2.2, 5.0). Being in the private school, compared to vocational school, increased the risk of having sexual intercourse 2.0 times (95% CI 1.3, 3.0). Being male, compared to female, increased the risk of having sexual intercourse 1.8 times (95% CI 1.3, 2.5). Each year increasing age increased the risk of having sexual intercourse 1.2 times (95% CI 1.1, 1.5). Being not religious and ordinary, compared to very religious,

increased the risk of having sexual intercourse 4.5 times (95% CI 2.7, 7.4) and 2.5 times (95% CI 1.8, 3.7), respectively.

Being non-Papuan, currently did not drink alcohol, did not have any friends or have some friends who have sex, reduced the risk of having sexual intercourse. Being non-Papuan, compared to mixed ethnicity, reduced the risk of having sexual intercourse 0.4 times (95% CI 0.2, 0.8). Currently did not drink alcohol, compared to currently drink alcohol, reduced the risk of having sexual intercourse 0.2 times (95% CI 0.1, 0.3). Did not have any friends and have some friends who have sex, compared to have all friends who have sex, reduced the risk of having sexual intercourse 0.1 times (95% CI 0.0, 0.4) and 0.3 times (95% CI 0.1, 0.9), respectively.

Some students told their experiences on drinking and sexual practices. Ferry, a student at a private school in Sorong, West Papua Province, stated:

It is a custom to drink since we are in junior high school. Many of my male friends have already had sexual intercourse. We talk a lot about our girlfriends. Usually girls like boys who have motorbikes and who can buy them drinks or gifts. We can have sex anywhere. Sometimes we have sex at home when we are left alone, sometimes in the back of a shop at night (Interview with Ferry, 19 years, male, Ayamaru tribe, a student at a private senior high school in Sorong city, West Papua Province, 25 May 2009).

Interviews that had been carried out on several young female street sex workers in Jayapura, Papua Province, revealed about strong peer influence on them. Vera stated:

When I was in junior high school, I learned to smoke and drink from my friends. I drink vodka and *wiro* (whisky). I also learn to smoke marijuana.

Many of my friends in junior high school had sex, and some of them worked on the street. I had a boyfriend and we had been together from Year 10 until Year 12. The first time I had sex when I was 14 years old.

I graduated from a vocational high school in Sentani. I was majoring in automotive. I was often absent from school, cause I worked on the street. I had good school reports and I was often in the best ten in the class. However, I am closer to my friends than to my parents. I prefer to be on the street cause I like to get money, gifts, and travel to many cities (Interview with Vera, 19 years, female, Biak tribe, a street sex worker in Jayapura city, Papua Province, 12 May 2009).

Ruth stated:

I started smoking and drinking when I was in junior high school. I had many friends who are on the street. They get clients who can buy them cigarettes drink, gifts, and give them a ride with their motorbikes or cars. They have cellular phones and good clothes. Finally, I dropped out from school

(Interview with Ruth, 14 years, female, Serui tribe, a street sex worker in Jayapura city, Papua Province, 12 May 2009).

Even though the cases of Ferry, Vera, and Ruth cannot be generalized to all students, interviews indicated some students started drinking since they were in junior high schools. Table 4.5 in Chapter 4 showed that around 16 percent of students reported currently drinking alcohol, while around 31 to 33 percent of students reported they had ever drunk alcohol.

5.4.2 Students who reported having had some sexual experiences

In the previous month before pre-test, the proportion of type of some sexual experiences was not significantly different between students in the intervention and control group (Table 5.3). Of 273 students who reported having had some sexual experiences in the previous month before pre-test, almost all reported having had some sexual experiences from the waist up, while 10.8 percent (13) and 21.6 percent (33) of students in the control and intervention groups reported having had some sexual experiences from the waist down.

Table 5.3 Type of some sexual experiences by intervention group in the previous month before pre-test

Type of some sexual experiences	Control (N= 120)	Intervention (N=153)
Waist up		
Yes	120 (100.0%)	152 (99.3%)
No	0 (0.0%)	1 (0.7%)
Missing information	0 (0.0%)	0 (0.0%)
Waist down		
Yes	13 (10.8%)	33 (21.6%)
No	107 (89.2%)	118 (77.1%)
Missing information	0 (0.0%)	2 (1.3%)
Oral sex		
Yes	7 (5.8%)	6 (3.9%)
No	113 (94.2%)	147 (96.1%)
Missing information	0 (0.0%)	0 (0.0%)
Total	120 (100.0%)	153 (100.0%)

Note: Column percentage.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

Around 5.8 percent (7) of students in the control group and 3.9 percent (6) of students in the intervention group who reported having some sexual experiences reported having experienced oral sex.

Table 5.4 Type of some sexual experiences by intervention group in the previous month before post-test

Type of some sexual experiences	Control (N= 84)	Intervention (N=109)
Waist up		
Yes	83 (98.8%)	107 (98.2%)
No	0 (0.0%)	2 (1.8%)
Missing information	1 (1.2%)	0 (0.0%)
Waist down		
Yes	10 (11.9%)	25 (22.9%)
No	61 (72.6%)	72 (66.1%)
Missing information	13 (15.5%)	12 (11.0%)
Oral sex		
Yes	9 (10.7%)	16 (14.7%)
No	67 (79.8%)	78 (71.6%)
Missing information	8 (9.5%)	15 (13.8%)
Total	84 (100.0%)	109 (100.0%)

Note: Column percentage.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

Fewer students (193) from both the intervention and the control groups reported having had some sexual experiences in the previous month before post-test (Table 5.4) compared to pre-test. However, of the students who reported having had some sexual experiences in the previous month before the post-test, 10.7 percent (nine) of students in the control group and 14.7 percent (16) students in the intervention group reported having had oral sex in the previous month before post-test compared to pre-test.

5.4.3 Students who reported having had sexual intercourse

5.4.3.1.1 First sexual experience

A large proportion of sexually active students in the intervention and control groups (59.1 percent) reported having had their first sexual intercourse when they were 15 years old or older. Thirty percent of students in both groups reported initiating sex when they were between 13-14 years old. Eight percent (16) of students in the control group and 4.5 percent (eight) students in the intervention group had their first sexual intercourse by 12 years old (Table 5.5).

Sixty-eight percent (134) of students in the control group and 73.3 percent (129) of students in the intervention group reported having had their first sexual intercourse with a friend. Eight to nine percent of students in both groups had had their first sexual intercourse with sex workers. Around 11.6 percent (23) of students in the control group

and 12.5 percent (22) of students in the intervention group had their first sexual intercourse with others (including relatives).

Table 5.5. Age and sexual partners at first sexual intercourse by intervention group

Characteristics	Control (N= 198)	Intervention (N=176)
Age at first sexual intercourse		
≤ 12 years	16 (8.1%)	8 (4.5%)
13-14 years	58 (29.3%)	53 (30.1%)
≥ 15 years	117 (59.1%)	104 (59.1%)
Missing information	7 (3.5%)	11 (6.2%)
Sexual partner at first sexual intercourse		
Friend	134 (67.7%)	129 (73.3%)
Sex worker	16 (8.1%)	16 (9.1%)
Others	23 (11.6%)	22 (12.5%)
Missing information	25 (12.6%)	9 (5.1%)
Total	198 (100.0%)	176 (100.0%)

Table 5.4 presented column percentage

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

5.4.3.1.2 Type of sexual intercourse

In the previous month before pre-test, a majority (94 percent) of sexually active students in both groups reported having had vaginal intercourse and 33-39 percent of students in both groups having had anal intercourse (Table 5.6).

Table 5.6 Type of sexual intercourse by intervention group in the previous month before pre-test

	Control (N= 198)	Intervention (N=176)
Sexual intercourse in the previous month before pre-test		
Vaginal intercourse		
Yes	187 (94.4%)	166 (94.3%)
No	6 (3.0%)	7 (4.0%)
Missing information	5 (2.5%)	3 (1.7%)
Anal intercourse		
Yes	77 (38.9%)	58 (33.0%)
No	77 (38.9%)	96 (54.5%)
Missing information	44 (22.2%)	22 (12.5%)
Total	198 (100.0%)	176 (100.0%)

Note: Column percentage.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

Thirty-three percent (66) and 27.3 percent (48) of students in the control and intervention group, respectively, reported having both vaginal and anal intercourse.

In the previous month before post-test (Table 5.7), a lower proportion (89-90 percent) of students in both groups reported having had vaginal intercourse (Table 5.6) compared to pre-test. However, a higher proportion of students in the control group (64

percent) and intervention group (43.5 percent) reported having had anal intercourse. The proportion of students reporting having had both vaginal and anal intercourse was 53.1 percent (121) in the control group and 33.3 percent (49) in the intervention group, which was higher compared to pre-test.

Table 5.7 Type of sexual intercourse by intervention group in the previous month before post-test

	Control (N= 228)	Intervention (N=147)
Sexual intercourse in the previous month before post-test		
Vaginal intercourse		
Yes	203 (89.0%)	132 (89.8%)
No	11 (4.8%)	9 (6.1%)
Missing information	14 (6.1%)	6 (4.1%)
Anal intercourse		
Yes	146 (64.0%)	64 (43.5%)
No	43 (18.9%)	48 (32.7%)
Missing information	39 (17.1%)	35 (23.8%)
Total	228 (100.0%)	147 (100.0%)

Note: Column percentage.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

5.4.3.1.3 Number of sexual partners

In the previous month before pre-test, 64.6 percent (128) of students in the control group and 71 percent (125) of students in the intervention group reported having had one sexual partner (Table 5.8). These proportions increased to 87.7 percent (200) in the control group and 83 percent (122) in the intervention group, in the previous month before post-test (Table 5.9).

Table 5.8 Number of sexual partners by intervention group in the previous month before pre-test

	Control (N= 198)	Intervention (N=176)
Number of sexual partners in the previous month before pre-test		
1	128 (64.6%)	125 (71.0%)
≥ 2	30 (15.2%)	34 (19.3%)
Missing information	40 (20.2%)	17 (9.7%)
Total	198 (100.0%)	176 (100.0%)

Note: Column percentage.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

The proportion of students reporting having had multiple sexual partners in the previous month before pre-test was 15.2 percent (30) in the control group and 19.3 percent (34) in the intervention group (Table 5.8). These proportion decreased to 8.8 percent (20)

and 6.8 percent (10) in the control and intervention group, respectively, in the previous month before post-test (Table 5.9).

Table 5.9 Number of sexual partners by intervention group in the previous month before post-test

	Control (N= 228)	Intervention (N=147)
Number of sexual partners in the previous month before post-test		
1	200 (87.7%)	122 (83.0%)
≥ 2	20 (8.8%)	10 (6.8%)
Missing information	8 (3.5%)	15 (10.2%)
Total	228 (100.0%)	147 (100.0%)

Note: Column percentage.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

5.4.3.1.4 Condom use

A high proportion of sexually active students in both groups reported never using a condom in the previous month and in the last sexual intercourse before pre-test (Table 5.10). Fifty-one percent (101) of students in the control group and 68.8 percent (121) of students in the intervention group reported never having used a condom in the previous month before pre-test. Overall, the proportion of students always using a condom was very low, only 1.6 percent (1.5 percent in the control group and 1.7 percent in the intervention group).

Table 5.10 Condom use by intervention group at pre-test

	Control (N= 198)	Intervention (N=176)
Frequency of use of condom in the previous month before pre-test		
Never used a condom	101 (51.0%)	121 (68.8%)
Sometimes	77 (38.9%)	44 (25.0%)
Always	3 (1.5%)	3 (1.7%)
Missing information	17 (8.6%)	8 (4.5%)
Condom use in the last sexual intercourse before pre-test		
No	181 (91.4%)	163 (92.6%)
Yes	10 (5.1%)	6 (3.4%)
Missing information	7 (3.5%)	7 (4.0%)
Total	198 (100.0%)	176 (100.0%)

Note: Column percentage.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

In the previous month before post-test (Table 5.11), the proportion of students reporting never having used a condom in the control group was 56.1 percent (128). There was an increase of those reporting always using a condom, from 1.5 percent (3) in

the previous month before pre-test to 4.8 percent (11) in the previous month before post-test.

Table 5.11 Condom use by intervention group at post-test

	Control (N=228)	Intervention (N=147)
Frequency of use of condom in the previous month before post-test*		
Never used a condom	128 (56.1%)	57 (38.8%)
Sometimes	88 (38.6%)	52 (35.4%)
Always	11 (4.8%)	35 (23.8%)
Missing information	1 (0.4%)	3 (2.0%)
Condom use in the last sexual intercourse before post-test*		
No	210 (92.1%)	107 (72.8%)
Yes	16 (7.0%)	36 (24.5%)
Missing information	2 (0.9%)	4 (2.7%)
Total	228 (100.0%)	147 (100.0%)

Note: Column percentage. *Pearson Chi-square test adjusted for clustering was significant at $p < 0.05$

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

Condom use in the last sexual intercourse before pre-test was also low. Overall, only 4.3 percent of students reported using a condom in the last sexual intercourse.

Level of condom use in the last sexual intercourse before post-test (Table 5.11) was seven percent (16) in the control group, whereas it was 24.5 percent (36) in the intervention group. Condom use in the last sexual intercourse before post-test was significantly different between intervention and control group at $p < 0.02$.

Table 5.12 presented parameter estimates of condom use in the last sexual intercourse before pre-test and post-test from adjusted analysis with GLMM. The analysis was carried out among 309 students (82.4 percent) of the total 325 students who reported having had sexual intercourse both in the previous month before pre-test and in the previous month before post-test. Overall 132 students (17.6 percent) were automatically excluded from the analysis by the software, due to missing values in one or more variables. Condom use in the last sexual intercourse was a binary response variable with no as the reference category.

Time-by-group interaction in the model was significant, implied there was significant different of condom use in the last sexual intercourse before pre-test and post-test between intervention and control group. Therefore, *Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans* module showed efficacy of five times (95% CI 1.5, 14.9) in increasing condom use in the last sexual intercourse.

Table 5.12 Parameter estimates of condom use in the last sexual intercourse with GLMM

Parameter	Coefficient	SE	t	p-value	95% CI	
					Lower	Upper
Intercept	20.1	2.8	1.1	0.283	0.1	44.47.1
Group: Control [#]	0.2	0.4	-4.0	<0.001	0.1	0.5
Time: Pre-test [#]	0.1	0.4	-4.9	<0.001	0.1	0.3
Group(control)*time(pre-test) interaction [#]	5.0	0.6	2.7	0.008	1.5	14.9
School type (reference category: vocational school)						
Government	1.1	0.4	0.2	0.854	0.5	2.5
Private	1.5	0.4	0.9	0.377	0.7	3.3
Sex: male [#]	2.2	0.3	2.4	0.019	1.1	4.1
Ethnicity (reference category: mixed ethnicity)						
Papuan [#]	0.3	0.5	-2.8	0.005	0.1	0.7
Non-Papuan	1	0.4	0.0	0.981	0.4	2.5
Currently drank alcohol: No	0.8	0.3	-0.8	0.403	0.4	1.3
Number of friends having sex (reference category: all friends)						
No one	0.7	0.8	-0.4	0.702	0.1	3.7
Some	0.7	0.7	-0.5	0.632	0.2	3.0
Many	0.6	0.7	-0.7	0.459	0.1	2.5
Age at first sexual intercourse (reference category: < 12 years old)						
>= 15 years old	0.7	0.6	-0.7	0.490	0.2	2.0
13-14 years old	0.7	0.6	-0.4	0.654	0.2	2.5
Age (in years)	0.8	0.1	-1.1	0.266	0.7	1.1

Note : [#]Statistically significant at 0.05 level. The estimate is the difference relative to the reference category.

Source : *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

Being in the control group and being Papuan reduced condom use in the last sexual intercourse. Being in the control group, compared to intervention group, reduced condom use in the last sexual intercourse by 0.2 times (95% CI 0.1, 0.5). Being Papuan, compared to mixed ethnicity students, reduced condom use in the last sexual intercourse by 0.3 times (95% CI 0.1, 0.7).

Being male, compared to female, increased condom use in the last sexual intercourse by 2.2 times (95% CI 1.1, 4.1).

5.4.4 Unintended pregnancy and unsafe abortion

Female students who had ever had sexual intercourse were asked whether they had ever been pregnant. If they answered yes, then they were asked whether they had experienced an abortion. If they had ever had an abortion, they were asked where they sought treatment for abortion (myself, medical practitioner or paramedics, traditional birth attendant, other).

Overall, 30.5 percent of sexually active female students in the control and intervention groups reported having had an unintended pregnancy (Table 5.13). Eighty-five percent of those reported having had an unintended pregnancy also reported having had unsafe abortion (Table 5.14).

Table 5.13 Unintended pregnancy among female students by intervention group at pre-test

Unintended pregnancy	Control (N=81)	Intervention (N=71)
Yes	24 (29.6%)	22 (31.4%)
No	52 (64.2%)	43 (61.4%)
Missing information	5 (6.2%)	5 (7.1%)
Total	81 (100.0%)	70 (100.0%)

Note: Column percentage.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

Table 5.14 Terminating pregnancy among female students who had ever been pregnant by intervention group at pre-test

Terminating pregnancy	Control (N=24)	Intervention (N=22)
Yes	20 (83.3%)	19 (86.4%)
No	4 (16.7%)	3 (13.6%)
Missing information	0 (0.0%)	0 (0.0%)
Total	24 (100.0%)	22 (100.0%)

Note: Column percentage.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

Fourteen of female students said that they had tried to terminate their pregnancy themselves. Four of female students reported they sought treatment from medical or paramedical staff. Three of female students reported they sought treatment from a traditional healer.

5.4.5 Symptoms of STIs and treatment-seeking behavior

Students reporting having had sexual intercourse in the previous month before pre-test were asked whether they experienced symptoms of STIs (e.g. painful discharge when urinating and/or ulcers on the genitals). Those who reported experiencing symptoms of STIs were further asked from whom they sought treatment.

Around 15.7 percent of students in the control group and 15.3 percent of students in the intervention group who reported having had sexual intercourse in the previous month before pre-test also reported having experienced painful discharge when urinating. Around two percent of students in the control group and 1.7 percent of

students in the intervention group who reported having had sexual intercourse also reported having ulcers in their genitals (Table 5.15).

Table 5.15 Symptoms of STI by intervention group at pre-test

Symptoms	Control (N= 198)	Intervention (N=176)
Painful discharge when urinating		
Yes	31 (15.7%)	27 (15.3%)
No	159 (80.3%)	143 (81.2%)
Missing information	8 (4.0%)	6 (3.4%)
Ulcer in the genitals		
Yes	4 (2.0%)	3 (1.7%)
No	186 (93.9%)	167 (94.9%)
Missing information	8 (4.0%)	6 (3.4%)
Total	198 (100.0%)	176 (100.0%)

Note: Column percentage.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

The four most-cited sources of treatment for those who reported experiencing symptoms of STIs in the control group were buying over-the-counter medicine (30.3 percent), private nurse (24.2 percent), private midwife (24.2 percent), and private doctor (15.2 percent).

The four most-cited sources of treatment in the intervention group were the same as in the control group, but the proportion was different. Students cited buying over-the-counter medicine (66.7 percent), private nurse (14.8 percent), private midwife (11.1 percent), and private doctor (3.7 percent).

Some students told about their experiences and their friends' experiences on having sex with their boy/girlfriend, with sex workers, and symptoms of sexually transmitted infections. Yan, a student at a private senior high school in Jayapura city, Papua Province, stated:

I have some male friends with genital ulcers. They are about twenty years old now, but they began to have sexual activity before they were 16 years old. They have sex with sexual workers many times, but they regretted after they suffered from the disease. They tried to seek treatment, but they were ashamed to go to the doctor (Interview with Yan, 17 years old, male, Makassar ethnicity, a student at a private senior high school in Jayapura city, Papua Province, 23 February 2009).

Clara, a student at a private school in Sorong, West Papua Province, stated:

Most of my friends, male and female, have already had sexual intercourse. Some of my female friends told me they did it at home when their parents

were gone, some did it at school at night. One of my close friends told me there was no blood the first time she had sex with her boyfriend. Usually there is blood, which is called the virgin blood. Other friend told me she experienced leucorrhoea and itchy in her vagina after she had sexual intercourse several times (Interview with Clara, 19 years old, female, Makassar, a student at a private senior high school in Sorong, West Papua Province, 4 March 2009).

Ivon, a student at a private school in Jayapura district, stated:

A nurse diagnosed me with *kencing nanah* (gonorrhoea). I have ever had sexual intercourse many times, when I was in my village. I didn't know anything at that time. The first time I had it when I was 12 years old, with my older relative. He forced me to do it. After that I had it several times with him and my boy friend. Now when I am in senior high school, I read science book, and I am afraid about it (Interview with Ivon, 20 years old, female, Dani tribe, a student at a private senior high school in Jayapura district, Papua Province, 18 February 2009).

Yan, Clara, and Ivon's cases indicated that some students were sexually active at a relatively young age, they had engaged in unprotected sexual intercourse, and some of them had had sex with sexual workers. Their insufficient knowledge on HIV and STI prevention had led them to developing symptoms of STIs. However, some of them were ashamed to seek medical help.

5.5 Discussion

5.5.1 Self-reported sexual practices

Research on sexuality typically relies on respondents' reports of their sexual practices. Therefore, any evaluation of changes in sexual practice is dependent upon the reliability of the respondents' reports.

Researchers scrutinize the ability of respondents to provide reliable and honest self-reported sexual practices (Schrimshaw et al. 2006; Schroder, Carey, and Vanable 2003b; Siegel, Aten, and Roghmann 1998). Some factors that influence the accuracy of self-reported sexual practices include recall task and memory fallacy (Schroder, Carey, and Vanable 2003b; Graham 2003b), length of assessment interval (Carey et al. 2001), number of events that should be reported (Downey et al. 1995), literacy skills and task demands (Turner et al. 1998), social desirability and privacy (Tourangeau and Smith 1996), motivational bias and method (Weinhardt et al. 1998; Durant and Carey 2000). Despite some apprehensions, numerous studies indicated reliability and honesty of

respondents' self-reported sexual practices using self-administered questionnaires (SAQ) (Nyitray et al. 2010; Schrimshaw et al. 2006; Siegel, Aten, and Roghmann 1998; Hearn, O'Sullivan, and Dudley 2003).

Schrimshaw, Rosario et al. (2006) claimed high reliability of self-reported lifetime sexual behaviors, sexual orientation, sexual identity, and psychosexual development using face-to-face interviews. Their study was conducted on 64 gay, lesbian, and bisexual youths in New York indicated that Cohen's kappa for the items in the questionnaire ranged from 0.68 to 0.96 for both female and male respondents.

A study of 3,144 Year 7-12 students in New York indicated 78 to 94 percent of male and female high school respondents reporting honestly in completing SAQ. Fourteen percent of middle school males reported they had overstated their actual behavior. Eight percent of middle school females reported they understated their behavior. Overall, the study suggested high self-reported honesty in completing self-administered sexual practices questionnaires (Siegel, Aten, and Roghmann 1998).

Some researchers evaluated different methods of assessment of sexual practices. Paperny et al. (1990) found that 559 adolescents gave more positive responses to sensitive health problems using computer-assisted self-interviewing (CASI) compared to their matched 251 adolescents that used SAQ. O'Reilly et al. (1994) found that respondents preferred audio- and video-CASI to SAQ. Turner et al. (1998) indicated that audio-CASI enhanced self-reporting of sensitive same-sex sexual practices. However, for heterosexual contacts, there were only few differences found between SAQ and ACASI. This finding was essential to my study, since CASI was not feasible to be implemented in my study.

Despite its reliability, researchers often question the validity of SAQ. Fenton, Johnson et al. (2001) suggested the use of indirect measures including biological method and survey to check the validity of SAQ. Orr, Fortenberry et al. (1997) carried out a study on 255 female adolescents aged 15-19 years to determine the validity between SAQ and genitourinary cultures of STIs at two to four weeks and at three months after enrollment. Respondents who reported not having had interim sexual intercourse were free of infection at three months, whereas 32 percent of those who reported sexual intercourse acquired an interim infection. The study indicated the high accuracy of SAQ.

My study used SAQ to evaluate respondents' sexual practices in the previous month before pre-test and post-test. This time did not exceed three months, as a longer period might decrease the reliability of a retrospective SAQ (Carey et al. 2001; Kauth, St. Lawrence, and Kelly 1991; Napper et al. 2010; Graham 2003b).

As mentioned in Chapter 3, my study maintained ethical standards for conducting research on human sexuality including privacy and masking. Therefore, these matters were not likely to influence students' honesty in self-reported sexual practices.

5.5.2 Patterns of sexual practices among students

The findings showed there was a positive intervention effect on the patterns of sexual practices among students. The patterns of sexual practices were significantly different between intervention and control groups in the previous month before post-test. A larger proportion (47.6 percent) of students in the intervention group reported having had no sexual experience compared to the control group (32.4 percent). Further, a smaller proportion of students in the intervention group (29.1 percent) reported having had sexual intercourse compared to the control group (47.3 percent) ($p < 0.005$).

Adjusted analysis with GLMM indicated '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' module showed an efficacy of 0.8 times (95% CI -1.3, -0.3) in reducing the risk of having sexual intercourse.

Factors that increased the risk of having sexual intercourse were being in the control group (1.2 times; 95% CI 0.8, 1.6), in private school (0.7 times; 95% CI 0.3, 1.1), male (0.6 times; 95% CI 0.3, 0.9), older (0.2 times; 95% CI 0.1, 0.4), and being not religious and ordinary (1.5 times; 95% CI 1.0, 2.0) and (0.9 times; 95% CI 0.6, 1.3).

Factors that decreased the risk of having sexual intercourse were being non-Papuan (0.8 times; 95% CI -1.5, -0.2), currently did not drink alcohol (1.6 times; 95% CI -2.0, -1.1), and did not have any friends (2.1 times; 95% CI -3.3, -0.9) or have some friends who have sex (1.3 times; 95% CI -2.5, -0.2), respectively.

In my study, males were more sexually active compared to females. Around 47.8 percent (223) of male students, compared to 29 percent (151) of female students reported having had sexual intercourse ($p < 0.001$). Several studies also found that males were more sexually active compared to females. Being male and older were found to increase 2.1 times (95% CI 1.3, 3.5) the likelihood of having premarital sexual

intercourse among high school students in Nekemte Town, Ethiopia (Seme and Wirtu 2008), also among senior high school students in Korea (Ryu, Kim, and Kwon 2007).

Sexual practices are mediated by gender role ideologies that determine expected codes of conduct within relationship (Varga 2003), in which masculinity conceptualization is associated with sexual prowess (Buve, Bishikwabo-Nsarhaza, and Mutangadura 2002). It is possible that males over report their sexual practices while females underreport their sexual practices due to societal expectations of female virginity at marriage and acceptance of sexual mobility among males prior to and during marriage (Akwaru, Madise, and Hinde 2003). Further, young males typically have sex as a way to impress and gain stature among their peers and enjoy being the aggressor in sexual activity (Gayle 2002).

Studies found that religiosity influence young people's sexual practices (Hardy and Raffaelli 2003). A study on 3,556 Year 9 to Year 12 students in Nairobi, Kenya, indicated that religiousness influenced students' sexual practices. Male students who reported having low religiosity had 1.03 times (95% CI 1.0, 1.9) greater odds of engaging in sexual activity compared to those reported having high religiosity (Kabiru and Orpinas 2009). A study among 572 young females aged 13 to 21 years in Pittsburgh revealed those with high religiosity, compared to low religiosity, were less likely to have sexual intercourse (OR=0.2, 95% CI 0.1, 0.4). Among sexually active females, those with high religiosity were less likely to be pregnant (OR=0.5, 95% CI 0.2, 0.9), to have STI (OR=0.4, 95% CI 0.2, 0.8) and have multiple sexual partners (OR=0.4, 95% CI 0.2, 0.7) (Gold et al. 2010).

School type, including national, provincial, general, private, and boarding schools influences students' sexual practices (Kabiru and Orpinas 2009; Valois et al. 1997). Schools represent the most important socialization setting outside the family (Mensch et al. 2001). Schools may introduce societal norms, gender roles, and safer sexual practices to the students. It was also found that academic success or valuing academic achievement is associated with lower likelihood of having sexual intercourse at a young age (Aras et al. 2007).

This thesis did not find significant association between living arrangements and sexual practices, in contrast to several previous study findings. Living with parents, compared to living with non-relatives, was associated with decreased risk of having sexual intercourse (OR=0.5, 95% CI 0.4-0.8) (Kabiru and Orpinas 2009). Conversely,

living with friends, compared to living with parents, was associated with increased risk of having sexual intercourse (OR=2.8, 95% CI 1.5, 5.2) (Shiferaw 2004).

Ethnicity was associated with young people's sexual practices, contraceptive use, pregnancy, and treatment-seeking behavior (Sturgeon 2008; Ompad et al. 2006; Auslander et al. 2009). Within ethnicity, the sharing of cultural norms by community residents, social capital, intergenerational networks of support, may strengthen messages about normative sexual practices (Denner et al. 2001; Resnick et al. 1997).

According to Social Cognitive Theory, people learn not only from their own experiences, but also by observing the actions of others (Bandura 1977, 1986). Sociocultural norms play an important role in influencing sexual practices (Eaton, Fisher, and Aarø 2003; Kabiru and Orpinas 2009). Young people who reported that their friends engaged in fewer risky behaviors also reported engaging in fewer risky behaviors than young people who reported that their friends were engaging in more risky behaviors (Bachanas et al. 2002). For each additional sexual practice an adolescent perceived his/her friends to be engaging in, the hazard of having sex at a younger age increased by 1.2 for young males and females ($p=0.002$) (Upadhyay 2006).

Several studies found association between alcohol drinkers and higher likelihood of engaging in premarital and extramarital sexual intercourse (Lee et al. 2006; Caminis et al. 2007), multiple sexual partners and unprotected sex (Santelli et al. 1998; NYC Health 2008; Ramisetty-Mikler et al. 2004). A study on 4,500 students aged 12 to 19 years in Malaysia indicated those who sometimes drank alcohol were 2.7 times (95% CI 2.0, 3.7) more likely to engage in sexual intercourse. Those who identified themselves as heavy drinkers were 6.9 times (95% CI 4.6, 10.6) more likely to have sexual intercourse (Lee et al. 2006).

According to *alcohol myopia model*, alcohol reduces cognitive capacity and causes people to focus on the practices that do not need more cognitive resources to process. In sexual encounters, alcohol makes people think about immediate pleasure of sexual contact. Alcohol impairs judgment and inhibits the ability to consider about safer sexual practices (Steele and Josephs 1990).

Drinking alcohol was a custom among young people in Papua. Young people consumed local alcoholic beverages called *Saguer* and *Cap Tikus*, or a branded one such as vodka. Young Papuans often had alcoholic beverages before they had sex (Djoht et al. 2005). The 2003 Behavioral Surveillance Survey in Merauke, Papua

Province, indicated both male and female teenagers aged 15-19 years who drank alcohol were far more likely to report having had unprotected sex than those who did not drink alcohol (Pisani 2006).

5.5.3 Students who reported having had some sexual experiences

Fewer students (193) from both the intervention and the control groups reported having had some sexual experiences in the previous month before post-test, compared to previous month before pre-test (273). There was a slight increase in the proportion of students who reported having had oral sex in the previous month before post-test compared to previous month before pre-test. My study had a limitation that the questionnaire did not ask the number of oral sex partners and whether students had used a condom during oral sex.

There was not any published report on oral sex among students in both Papua and West Papua Provinces. Previous studies revealed oral sex was experienced by some out-of-school young men having sex with other men in Manokwari and Sorong (Djoht 2005; Djoht et al. 2005) and by Papuan transgender persons (Djoht 2008).

In some countries, oral sex was found to be quite common among students. A study conducted in 2002 on 212 Year 10 students in the US revealed around 40 percent of students had engaged in oral sex, 46 percent of them had multiple oral sex partners, and 70 percent of them had not used any protection (Prinstein, Meade, and Cohen 2003). A survey conducted in 2008 on 2,926 Year 10 and Year 12 students in Australia revealed around 44 percent of students had engaged in oral sex and 49 percent of them had multiple oral sex partners (Smith et al. 2009). However, some young people considered oral sex as safer sex (The Henry J. Kaiser Family Foundation et al. 2003), and those who performed oral sex declared themselves to be virgins (The Henry J. Kaiser Family Foundation 2003; Schuster, Bell, and Kanous 1996). This was especially a controversial for abstinence only reproductive health program (Santelli, Ott, and Lyon 2006).

Moreover, reviews suggest that unprotected oral sex is a viable mode of transmission for non-viral and viral STIs, including HIV (CDC 2009a; Robinson and Evans 1999; Baron 2001; Page-Shafer et al. 2002; Prinstein, Meade, and Cohen 2003; Edwards and Carne 1998b, 1998a; Keet et al. 1992; Saini, Saini, and Sharma 2010).

5.5.4 Students who reported having had sexual intercourse

First sexual experience

A large proportion of sexually active students in the intervention and control groups (59.1 percent) reported having had their first sexual intercourse when they were 15 years old or older. However, this study also found an early age of sexual initiation: 30 percent of students in both groups reported initiating sex when they were between 13-14 years old. Eight percent (16) of students in the control group and 4.5 percent (eight) students in the intervention group had their first sexual intercourse by 12 years old.

Majority of students (around 70 percent) in both intervention and control groups reported having their first sexual experience with friends. However, around 12 percent and eight to nine percent of students in both groups reported having their first sexual experience with others (including relatives), and sex workers, respectively. The limitation of this study was the study did not ask respondents whether they used a condom when they had their first sexual experience.

Having sexual intercourse with sex workers is a high-risk sexual practice. Indonesian sex workers have a high prevalence of STIs (Magnani et al. 2010; Majid et al. 2010), including HIV (Ministry of Health of the Republic of Indonesia 2008a). The highest HIV prevalence among female sex workers (15.9 percent) is found in Papua (Ministry of Health of the Republic of Indonesia 2008a).

Having sexual intercourse with someone without knowing his/her HIV status is also a high-risk sexual practice. Around 40 to 50 percent of patients with HIV infections around the world were late diagnosed with HIV infection and they were diagnosed with AIDS within one year of their first testing for HIV infection (Greenwald et al. 2006; Lee et al. 2010; Sobrino-Vegas et al. 2009; Valdiserri 2007; Schwarcz et al. 2006; Riyarto et al. 2011).

Type of sexual intercourse

Type of sexual intercourse was not significantly different between the intervention and the control groups in the previous month before the post-test. Around 80.1 per cent of students in the intervention group and 73.8 percent of students in the control group who had sexual intercourse in the previous month before the post-test

reported having vaginal intercourse. In addition, around 32.3 percent of students in the intervention group and 36.8 percent of students in the control group who had sexual intercourse in the previous month before the post-test reported having anal intercourse.

Those reporting having had anal intercourse were not merely homosexual. Sixty-two percent of heterosexual students and 68.8 percent of bisexual students had experienced vaginal sex only (Table 5.16). A higher percentage of female students (70 percent) had experienced vaginal sex only, compared to males (57.3 percent). More male students had experienced anal sex only (5.9 percent) and both vaginal and anal sex (36.8 percent), compared to females (3.6 percent and 26.4 percent, respectively). Anal sex only was reported by 50 percent (1) of homosexual students. Fifty percent (1) of homosexual students, 33.2 percent of heterosexual students and 25 percent of bisexual students had experienced both vaginal and anal sex.

Table 5.16 Type of sexual intercourse in the previous month before post-test by characteristics of students

Characteristics	Type of sexual intercourse			Total
	Vaginal	Anal	Both	
Sex				
Male	106 (57.3%)	11 (5.9%)	68 (36.8%)	185 (100.0%)
Female	77 (70.0%)	4 (3.6%)	29 (26.4%)	110 (100.0%)
Sexual orientation				
Homosexual	0 (0.0%)	1 (50.0%)	1 (50.0%)	2 (100.0%)
Heterosexual	172 (62.1%)	13 (4.7%)	92 (33.2%)	277 (100.0%)
Bisexual	11 (68.8%)	1 (6.2%)	4 (25.0%)	16 (100.0%)
Ethnicity				
Papuan	115 (57.8%)	10 (5.0%)	74 (37.2%)	199 (100.0%)
Non-Papuan	51 (70.8%)	5 (6.9%)	16 (22.2%)	72 (100.0%)
Mixed ethnicity	17 (70.8%)	0 (0.0%)	7 (29.2%)	24 (100.0%)

Note: Row percentage.

Source: *The 2009 Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*

A lower proportion of Papuan students (57.8 percent) compared to non-Papuan and mixed ethnicity students (70.8 percent) reported having had vaginal sex only. Conversely, a higher proportion of Papuan students (37.2 percent) compared to non-Papuan (22.2 percent) and mixed ethnicity students (29.2 percent) reported having had both vaginal and anal intercourse. Students who reported having vaginal and/or anal intercourse, especially without condom use with someone without knowing his/her HIV status, were putting themselves at high risk of acquiring HIV and other STIs (CDC 2010c).

The questionnaire in this study did not ask about the reason why students engaged in vaginal or anal intercourse. Studies have reported heterosexual anal intercourse is on the rise among teens in the US and Ethiopia. Some teens reported having had anal intercourse because they wanted to try a new method of sexual intercourse. Some reported they were scared by the idea of getting pregnant, so they assumed anal intercourse was safer compared to vaginal intercourse (James 2008; Cherie and Berhane 2012; Baldwin and Baldwin 2000).

In this thesis, students with different sexual orientations experienced anal sex. None of the students experiencing anal sex had experienced coercive sex on their first sexual encounter. Previous studies revealed anal sex and oral sex were experienced by some out-of-school young men having sex with other men in Manokwari and Sorong (Djoht 2005; Djoht et al. 2005) and by Papuan transgender persons (Morin 2008). Anal sex was also experienced by indigenous Papuan women who had been subject to coercive sex (Butt, Numbery, and Morin 2002) and by out-of-school children who had experienced sexual violence in Jayapura City (Djoht 2004).

5.5.4.1.1 Number of sexual partners

In the intervention group, there was an increase of 12 percent of students reported being monogamous in the previous month before post-test compared to previous month before pre-test. The proportion of respondents who reported being monogamous was one of several predictors of the success of HIV intervention program (UNAIDS 2010a).

5.5.4.1.2 Condom use

'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans' module showed efficacy of 1.6 times (95% CI 0.4, 2.7) in increasing condom use in the last sexual intercourse. Factors that reduced condom use in the last sexual intercourse were being in the control group and being Papuan. Being male, compared to female, increased condom use in the last sexual intercourse by 0.8 times (95% CI 0.1, 1.4). These findings point to an expectation that women should comply with men's decisions, as in other parts of the world, including the fear that demanding condoms would be to invite allegations of being a 'slut' (Hewat 2008). This condition led to females having insufficient control over their sexual health (Liguori and Lamas 2003; Hewat 2008).

In Indonesia, the free contraception provided by the government through family planning clinics has been aimed at married couples and poor people, as stated in Articles 23 and 29, paragraph two of *Indonesia Law No. 52/2009*. Papua Province AIDS Commission and some NGOs have also distributed free female and male condoms, but nowadays sexually active secondary school students are not the target group for their activities (interview with the head of Papua Province AIDS Commission and several staff of NGOs). Despite the government policy, the availability and accessibility of condoms in urban areas in both Papua and West Papua Provinces should not be the main reason for not using condom. In a personal communication with a medical doctor stationed in Jayapura, it was revealed that condoms are available in any pharmacy in Papua and West Papua Provinces and the price is quite cheap, around Rp 3,500 (around US\$ 0.4) a box, containing three latex condoms (Personal communication, 20 March 2009).

Although condoms are available in any pharmacy and supermarket, this thesis found a low percentage of condom use and the most cited reason among male students for not using a condom was that they 'did not have a condom'. This thesis revealed that there was a lack of communication about condom availability; lack of knowledge about how to use a condom properly, about the function of using a condom, as well as a false belief that the withdrawal method and using traditional medicine could prevent pregnancy.

Around 23 percent and 22 percent of sexually active male and female students, respectively, reported they were not sure how to use a condom, while around 44 percent of them currently did not use any contraception. Around 35 percent had used the withdrawal method and eight percent had used traditional medicine to prevent pregnancy. Thus, respondents were more worried about getting pregnant rather than acquiring or transmitting STIs or HIV. Two other studies carried out in Papua found sexually active males were not accustomed to using a condom (Djoht et al. 2005), while Butt, Numbery et al. (2002) found that only around 29 percent of their respondents could identify a condom when shown one. Further, knowledge about their proper use, disposal and benefits was even lower.

In 2003, the local government of Papua Province legitimized *Regulation No. 20/2003 on HIV Prevention and Reduction*. This document requires every sex worker to use a condom for every sexual encounter, and if the regulation is violated, then both the

sex worker and the pimp will not be permitted to work for five days. Further, if the regulation is violated again, then the sex worker would be subject to imprisonment for a maximum of six months or be fined five million rupiahs (Catholic Diocese of Jayapura 2008). Despite this regulation, Butt, Numbery et al. (2002b) found that condom use was as low as two to five percent among unregulated open-air sex workers, and up to 30 to 80 percent among hostess bar or hotel bar and brothel workers in Papua. Furthermore, the 2007 integrated biological-behavioral surveillance among most-at-risk groups in Indonesia found a higher prevalence of HIV and the three most common STIs among brothel-and street-based sex workers compared to women working in karaoke bars, or massage parlors, etc. The prevalence of HIV, chlamydia, gonorrhea and active syphilis among all female sex workers in Indonesia was around 2-16 percent, 20-55 percent, 8-44 percent and 1-13 percent, respectively, and the highest HIV prevalence was found among sex workers in Papua Province (Ministry of Health of the Republic of Indonesia, National AIDS Commission, and Family Health International 2007).

Condom use among the general population was also low. Djoht et al. (2005) found that fewer than 40 percent of sexually active young people in Papua Province had used condoms, while BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia (2007) found a much lower percentage (2.8%). In an integrated bi-behavioral surveillance survey among the population aged 15-49 years in Papua and West Papua Provinces, it was found that the age of initial sexual intercourse was associated with HIV infection: of those who had their first sexual intercourse between the ages of 10 to 14 years, 15 to 24 years and 25 years or more, 3.3 percent, 2.3 percent and 1.9 percent, respectively, were HIV positive. HIV prevalence was higher among those who engaged in paid sex, had contracted a sexually transmitted disease in the previous year, and had not used a condom at last sexual encounter, or had had more than one sexual partner (BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007).

There was a good sign on HIV prevention in Indonesia. In June 2012, the newly appointed Health Minister of Indonesia pressed ahead the ministry's plan to promote condom use among key population at higher risk of HIV infection including young people who are at risk of HIV infection, despite non-supporting law (Sagita 2012). Religious communities and members of the House of Representatives concerned about the plan, as it would support sexual permissiveness among young people (Aritonang and

Faisal 2012). The Islamic Defenders Front (*FPI*) weighed in on the controversy, stating that HIV was smaller than the condom's pores and the Health Minister's plan would only support adultery (Sagita 2012).

The Health Minister argued that some Indonesian young people, including sexually active high school and college students, are likely to already have unprotected sex, but she has never promoted school-based condom distribution program. Condom use could prevent unintended pregnancies and STIs including HIV. (Aritonang and Faisal 2012; Gatra and Candra 2012). Related to the Health Minister's plan, the National Population and Family Planning Agency (*BKKBN*) will distribute free condoms to cities across the country (Aritonang and Faisal 2012).

Condoms are only effective when they are used consistently and correctly. Condoms can reduce the risk of HIV and other STIs, although they do not eliminate the risk (CDC 2011c). Condoms are designed to block spermatozoa, about 0.003 millimetres (mm) or 3000 nanometres (nm), and pathogens that cause STIs, including *Neisseria gonorrhoea* (800 nm), *Chlamydia trachomatis* (200 nm), HIV (125 nm) and hepatitis B virus (40 nm) (McNeill et al. 2012).

Scanning electron microscopy of latex condoms revealed pits and imperfections but no pores that penetrate the entire membrane (Kish et al. 1983). Laboratory study found that *Herpes simplex* virus with diameter 180 nm did not pass through intact latex condoms, even when condoms are stretched and stressed (Conant, Spicer, and Smith 1984). Other study used fluorescing plastic micro-spheres with diameter 110 nm, approximately equal to the size of HIV and controlled the degree of acidity, surface tension, viscosity, temperature, pressure, geometry and time on 89 condoms. The study indicated that 29 condoms showed evidence of leakage. The estimated amount of fluid crossing the membrane was 0.1 microliter or less, corresponding to 0.01 percent of typical ejaculate, an amount that would be expected to be virus-free in an HIV-infected man. The authors estimated that condom use would decrease exposure to HIV 10,000-fold. Therefore, latex condom offers extremely reliable protection against HIV but does not totally eliminate the risk (Carey et al. 1992).

A number of studies on condom breakage reported rates that varied from less than one percent to more than ten percent. The breakage rates are related to the characteristics of condoms, such as quality and expired date. The rates are also dependent on the type of sexual intercourse and user characteristics, such as less

experienced users and how to use a condom. Condom slippage was also reported, and this is related to the choice of size of condoms (WHO, UNFPA, and FHI 2010).

5.5.5 Unintended pregnancy and unsafe abortion

Around 29.6 percent (24) and 31.4 percent (22) of sexually active female students in the control and intervention groups, respectively, reported having had an unintended pregnancy. Around 83.3 percent (20) and 86.4 percent (19) of those reporting having had an unintended pregnancy in the control and intervention groups, respectively, also reported having tried to terminate their pregnancy.

The change to more open sexual practices in many Indonesian cities has led to increasing numbers of young, unmarried women who become pregnant choosing abortion (Hull, Sarwono, and Widiantoro 1993; Utomo et al. 2001). It has been estimated there are around two million abortion cases per year in Indonesia and that approximately 30 percent of these are among adolescents (Utomo et al. 2001).

Premarital pregnancy and abortion are still stigmatized and restricted in the community (Bennett 2001; Utomo 2003; Sedgh and Ball 2008). Butt and Munro (2007) found a trend of intra-family adoption among the Dani tribe in highland Papua, where the parents of an unmarried pregnant girl take the infant in as their own.

Indonesia Law No. 36/2009, section six, article 75 defines abortion as illegal, except for life-threatening pregnancy, severe genetic disorder or congenital anomaly and pregnancy due to rape, which can cause psychological trauma to the victim. Further, it is stated in article 76 that abortion as indicated in article 75 can only be done by the sixth week of pregnancy based on the first day of the last menstrual period, except for a medical emergency case, it must be carried out by a certified medical professional and approved by the pregnant woman, with permission from the husband, except for a rape victim. In addition, a survey on 105 Muslim, Catholic, and other Christian religious leaders in Yogyakarta indicated majority (82 percent) of religious leaders agreed that abortion is acceptable if a woman's life is in danger (Andari, B., et al., as cited in Sedgh and Ball 2008)

In this thesis, of all female students who reported terminating their pregnancy, 70 to 74 percent said they tried to terminate their pregnancy themselves. Eleven to 20 percent of them reported they sought treatment from medical or paramedical staff,

whereas ten to 16 percent of them reported they sought treatment from a traditional healer to terminate their pregnancy.

In Indonesia, young females often use herbals and over-the-counter medicines of menstrual regulation for abortion. When they cannot terminate their pregnancy or they experience bleeding, then they seek medical help (Pramudiarja and Wahyuningsih 2012). There are many advertisements including websites that offer pill for abortion (Telatbulan 2012), and there are informal clandestine providers for abortion (Arifin 2012; Pattymahu 2011).

WHO defines unsafe abortion as a procedure for terminating an unintended pregnancy carried out either by persons lacking the necessary skills or in an environment that does not conform to minimal medical standards, or both (WHO Department of Reproductive Health and Research 2011). It is estimated between 10 to 50 percent of women who undergo unsafe abortions need medical care for complications. The morbidity and mortality risks associated with unsafe abortion depend on the facilities and skill of the abortion provider, the intervention method used, the general health of the woman, and the stage of her pregnancy. Unsafe abortion are a threat to women's health and survival, including death, infection, hemorrhage, injury to reproductive and internal organs, and infertility (Johnson et al. 2002; Haddad and Nour 2009). Around 13 percent of all maternal death worldwide is due to unsafe abortion (WHO Department of Reproductive Health and Research 2011).

Unsafe abortion brings stigma, psychological effect, and significant financial cost on women who undergo abortion (Johnson et al. 2002; Haddad and Nour 2009). Unsafe abortion also places substantial burden on health care systems. Women with abortion complication required several days of hospital stay, staff time, operating rooms, antibiotics, blood products, and anesthesia (Singh 2006; Grimes et al. 2006). A study indicated the cost of management of abortion is lower in a legal setting that allowed elective abortion than in the restrictive legal setting (Adewole et al. 2002).

A study on 48 states in the U.S. with information on sexuality education indicated that increasing emphasis on abstinence-only education is positively correlated with teenage pregnancy and birth rates. Therefore, abstinence-only education is ineffective in preventing teenage pregnancy (Stanger-Hall and Hall 2011).

5.5.6 Symptoms of STIs and treatment-seeking behavior

There was an alarming condition that 15.5 percent of all students who reported having had sexual intercourse in the previous month before pre-test also reported having experienced painful discharge when urinating. Around 1.9 percent of all students who reported having sexual intercourse also reported having ulcers in their genitals. This condition was associated with low proportion of condom use. The proportion of those experiencing symptoms of sexually transmitted infections was only 'the tip of the iceberg', as most STIs were asymptomatic. The asymptomatic nature of STIs could contribute to under diagnosis, estimated at 50 percent or more cases (Nusbaum et al. 2004).

STIs that caused ulcers or inflammation greatly increase the risk of acquiring and transmitting HIV infection (Galvin and Cohen 2004) by two- to fivefold (Nusbaum et al. 2004). Therefore, STI prevention and treatment should be provided (WHO 2006d) for young people to reduce the transmission of HIV infection.

In this thesis, the four most-cited sources of treatment for those reporting experiencing symptoms of STIs in the control group were buying over-the-counter medicine (30.3 percent), a private nurse (24.2 percent), a private midwife (24.2 percent), and a private doctor (15.2 percent).

The four most-cited sources of treatment in the intervention group were the same as in the control group, but the proportion was different. Students cited buying over-the-counter medicine (66.7 percent), private nurse (14.8 percent), private midwife (11.1 percent), and private doctor (3.7 percent).

It was unfortunate that a high proportion of students (66.7 percent) in the intervention group and 30.3 percent in the control group reported buying over-the-counter medicine to treat symptoms of STIs. Painful discharge when urinating was a very general symptom of STIs and therefore, students should go to medical practitioner to prevent wrong diagnosis and wrong treatment.

Interview with two medical doctors in Jayapura city, one nurse in Jayapura district, Papua Province, as well as one medical doctor in Sorong city suggested around 10-15 percent of their patients are young people with STIs. Typically, their patients have tried to cure themselves with over-the-counter medicine, and they have often bought antibiotics before they sought medical help.

In Indonesia, antibiotics are less regulated and can be obtained almost in all pharmacies and drug stores. Awareness of the effects of overusing and misusing antibiotics are needed in order to prevent bacterial resistance to antibiotics.

5.5.7 Circumcision

In 2009, AIDS Commission of Papua Province started to promote circumcision for men in Papua to prevent HIV infection (National AIDS Commission 2009a). The circumcision campaign was based on WHO recommendation that circumcision could reduce HIV transmission by 60 percent (WHO 2007c).

Male circumcision is the removal of some or all of the foreskin (prepuce) from the penis (Alanis and Lucidi 2004). Some biological plausibility may explain the benefit of male circumcision. Compared to dry external skin surface, the inner mucosa of the foreskin has less keratinization (Patterson et al. 2002), so it has greater susceptibility to traumatic epithelial disruption during intercourse, providing portal entry for pathogens, including HIV (Szabo and Short 2000). The inner mucosa of the foreskin also has higher density of Langerhans cell, target cells for HIV infection (Patterson et al. 2002). Moreover, the microenvironment in the preputial sac between foreskin and the glans penis is conducive for viral survival and other pathogen bacteria (Alanis and Lucidi 2004; Price et al. 2010). Therefore, removing the foreskin may reduce the risk of HIV infection.

Observational studies (Weiss, Quigley, and Hayes 2000; Gray et al. 2000) and clinical trials (Avert et al. 2005; Bailey et al. 2007; Gray et al. 2007) indicated male circumcision reduces the risk of HIV acquisition by men during heterosexual vaginal contact. The protection from HIV infection was partly because of a protective effect of circumcision on other STIs, especially syphilis and chancroid that cause genital ulcers (Weiss, Quigley, and Hayes 2000; Weiss et al. 2006). The protection from HIV infection was also dependent on the HIV viral load (Gray et al. 2000). In contrast, a U.S. study suggested male circumcision did not give protection on anal intercourse against HIV (Millett et al. 2007).

Despite recommendation and promotion of circumcision, unfavorable conditions arise related to growing belief among circumcised men in Swaziland (Integrated Regional Information Networks (IRIN) 2008), South Africa (Carter 2010), and Papua (Harahap 2012a) that circumcision would provide an alternative to consistent condom

use. Accordingly, many circumcised men misunderstood that they do not have to use a condom during sexual intercourse.

5.5.8 AIDS regulation

The responses of the local governments to the increase of HIV epidemic in Indonesia included developing several AIDS regulations on condom use in commercial sex establishments. Up to September 2011, 16 out of 33 provinces had provincial AIDS regulation, and 34 districts and cities in the 16 provinces had AIDS regulation. In Papua Province there were one AIDS regulation (*No. 8/2010*) in the provincial level and six AIDS regulations in the district and city level (AIDS regulation *No.20/2003* of Jayapura district; AIDS regulation *No.7/2006* of Jayapura city; AIDS regulation *No. 2/2006* of Biak Numfor district; AIDS regulation *No. 18/2003* of Nabire district; AIDS regulation *No. 5/2003* of Merauke district; and AIDS regulation *No. 11/2007* of Mimika district). In West Papua Province there was no AIDS regulation at the provincial level, but there were three AIDS regulations in the district and city level (AIDS regulation *No. 6/2006* of Manokwari district; AIDS regulation *No. 21/2006* of Teluk Bintuni district; and AIDS regulation *No. 41/2006* of Sorong city) (Sistem Informasi Kesra Nasional 2011).

The existing AIDS regulation in Papua and West Papua Provinces are not effective in preventing the spread of HIV infection in both provinces. Reviews suggest that the regulations were too normative and lack clear messages, objectives, targets, concrete step to prevent HIV infection, sanctions, synchronization with other regulation, and coordination with related institutions (Asa et al. 2009). For example, the article 3 of AIDS regulation of Papua Province states that HIV prevention is intended for (a) those who are at high risk, (b) those who are not at high risk, and (c) the location of activities that could potentially facilitate the spread of HIV. This article is not reasonable, because it is person, not a location, who can transmit HIV. The article 5 states that any person who is not at risk of contracting and transmitting HIV must have sex with one regular and legitimate partner. The article 5 is also not reasonable, because someone may acquire HIV infection from HIV-infected partners, regular and/or casual, within and outside marriage (Harahap 2011b). The article 18 of AIDS regulation of Manokwari district states that HIV can be transmitted to others by having unprotected sex with multiple sexual partners (Harahap 2012b). This article does not have clear message. The problem arises because many sexually active people at risk of HIV did not perceive

themselves to be at risk, and around 20-80 percent of people with HIV around the world did not know they were infected (Marks et al. 2005; Samet et al. 2001; UNICEF, UNAIDS, and WHO 2002). A man may have one permanent partner and only one sexual worker as his casual partner, but he does not think of himself as having multiple sexual partners. There is possibility that the sexual worker may have many sexual partners and one of them may be HIV positive. Further, it is difficult to halt the spread of HIV without the implementation of 100-percent condom use nationally (Rojanapithayakorn 2006).

5.6 Conclusion

In summary, interviews with 16 educators (10 males and six females) and one staff member of a local NGO indicated a high level of sexual permissiveness among today's senior high school students from different school types. The sexual permissiveness included dating, hugging and kissing after school, the spreading of pornographic movies through students' cellular phones, grabbing female friend's breasts and vital organ during class, bathing nude in public, sex in exchange for money or gifts, having sex in customary festivals and graduation parties, and having sex in the school's classrooms and toilets at night.

The school responses to the sexual permissiveness among students included reminding students about the importance of being abstinent, banning students from spreading pornographic materials at school, and expelling pregnant students from school. Some teachers were reluctant to discuss about abstinence, being faithful and condom use for several reasons. One reason was that the material was not covered in the school curriculum and the topic would encourage students to have sex. Other reasons included lacking of knowledge on reproductive health, being afraid if the students would get angry and parents should teach such matters to their children.

The increase of sexual permissiveness among students should be offset by the implementation of some preventive measures, including a comprehensive reproductive health education program with an administrative sanction for school that does not teach the program to their students. The preventive measures would achieve a favorable outcome when parents played a role in the education of their children. There should be a law that allows pregnant students to finish their schooling and take the national exam.

This thesis used self-administered questionnaire to assess students' sexual practices, which is found to be reliable. This thesis found high-risk sexual practices among senior high school students, including starting sexual intercourse at an early age, having multiple sexual partners including sex workers, having unprotected sexual intercourse, and having unsafe abortion.

Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans module showed an efficacy of 0.8 times (95% CI -1.3, -0.3) in reducing the risk of having sexual intercourse. Factors that increased the risk of having sexual intercourse were being in the control group, in private school, male, older, and being not or ordinary religious. Factors that decreased the risk of having sexual intercourse were being non-Papuan, currently did not drink alcohol, and did not have any friends or have some friends who have sex. These finding implied that sexual practices are mediated by gender role ideologies that determine expected codes of conduct within relationship, ethnicity, religiosity, and social norms. Therefore, these matters should be emphasized in any reproductive health education for students.

In the previous month before the post-test, the type of sexual intercourse reported by students was not significantly different between intervention and control groups. Around 73.8 to 80.1 percent of students in the intervention and control groups, respectively reported having vaginal intercourse. In addition, around 32.3 to 36.8 percent of students in the intervention and control groups who had sexual intercourse in the previous month before the post-test reported having anal intercourse.

Low condom use among students contributed to unintended pregnancy, unsafe abortion, and experiencing STI symptoms. Addressing unintended pregnancy, unsafe abortion, and STIs requires comprehensive approach including reproductive health education, women's sexual rights, access to condoms, and policy to ensure access to medical services.

Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans module showed efficacy of 1.6 times (95% CI 0.4, 2.7) in increasing condom use in the last sexual intercourse. Factors that reduced condom use in the last sexual intercourse were being in the control group and being Papuan. Being male, compared to female, increased condom use in the last sexual intercourse by 0.8 times (95% CI 0.1, 1.4). These findings point to an expectation that women should comply with men's decisions, thus females have insufficient control over their sexual health.

In 2009, AIDS Commission of Papua Province started to socialize circumcision for men in Papua to prevent HIV infection. Circumcised men are less likely to become HIV infected than uncircumcised men, but circumcision is not a substitute for condom use. The more men have circumcision, fewer men will acquire HIV infection, and fewer women will acquire HIV infection. However, male circumcision provides only partial protection. Therefore, consistent and correct condom use as well as other HIV prevention method should also be socialized.

The existing AIDS regulation in Papua and West Papua Provinces are not effective in preventing the spread of HIV infection in both provinces. Reviews suggest that the regulations were too normative and lack of clear messages, objectives, targets, concrete step to prevent HIV infection, sanctions, synchronization with other regulation, and coordination with related institutions.

There was a good sign on HIV prevention in Indonesia related to the Health Minister's plan to promote condom use on key population at higher risk of HIV infection, including sexually active high school and college students. Correct and consistent condom use is effective to prevent unintended pregnancies and STIs including HIV.

The limitation of this thesis is the questionnaire did not ask about number of sexual partners on oral sex and condom use during oral sex, whereas unprotected oral sex could transmit HIV and other STIs. The questionnaire also did not ask about circumcision that is important for HIV prevention. Further, the questionnaire did not ask some measures on religiosity, such as performing prayer and attending sermon or congregation. Future research should ask about these matters.

The final chapter, Chapter 6, presents summary of findings, policy implications, study limitations, contribution of the study, and suggestions for future research.

Chapter 6

Reversing the progression of HIV epidemic in Papua and West Papua Provinces

According special priority to young people will change the future course of the epidemic. Changing behaviors and expectations early results in a lifetime of benefit – both in HIV prevention and in overcoming HIV-related stigma. The challenge is to promote effective programs that engage young people in all aspects of the response to HIV/AIDS ... In every country where HIV transmission has been reduced, it has been among young people that the most spectacular reduction have occurred (Peter Piot in UNICEF, UNAIDS, and WHO 2002, :7).

6.1 Summary of findings

As of 2010, Indonesia is among the five HIV high-burden countries in the South-East Asia region. Even though the prevalence of people living with HIV among population aged 15-49 years in Indonesia is the lowest (0.2 percent) compared to the other four countries, Thailand (1.4 percent), Myanmar (0.6 percent), Nepal (0.4 percent), and India (0.3 percent), however, Indonesia is the only country in the region with a rapid increase of new HIV infections (WHO SEARO 2010). Without adequate efforts of prevention and treatment, the new HIV infection is estimated to reach 648,322 cases in 2015, which is 28 times higher than the new HIV infections in 2011 (23,383 cases). If the strategy of the national action plan on HIV and AIDS can be implemented effectively, the progression of the new HIV infections in 2015 will be slowed to 244,103 cases, which is 10 times higher of the new HIV infections in 2011 (National AIDS Commission 2011). However, the effective implementation of the national action plan is likely to have major barriers due to persistent high-risk sexual practices among key populations at higher risk of HIV infections, low coverage of antiretroviral therapy, program's priority that focus on key population at higher risk of HIV infection, funding constraint, inadequate support and commitment in policy, sexual and reproductive

rights, education, health services and other sectors (National AIDS Eradication Commission 2011; National AIDS Commission 2010b; The Jakarta Post 2010a; WHO SEARO 2010).

Young people aged 15-24 years constituted around 17 percent of 237,641,326 population in Indonesia in 2010 (BPS-Statistics Indonesia 2010b), yet they accounted for 49.5 percent of the national HIV and AIDS cases (Ministry of Health of the Republic of Indonesia 2011b). A substantial proportion of young people were key population of higher risk of HIV infections. Around 38 percent, 34 percent, 32 percent, and 29 percent of young people were PWID, FSW, MSM, and transgender (National AIDS Eradication Commission 2011). Their high-risk sexual practices made substantial contribution to HIV transmission to the general population (Pisani et al. 2003; National AIDS Commission 2009b; Ministry of Health of the Republic of Indonesia 2008b).

The highest HIV prevalence among population aged 15-49 years in Indonesia is in Papua and West Papua Provinces, at 2.4 percent (WHO SEARO 2010). The prevalence in both provinces was the result of the 2006 integrated bio-behavioral HIV surveillance survey with rapid blood test of 6,223 population aged 15-49 years conducted on site in 29 districts in Papua and West Papua Provinces (BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007). The HIV prevalence in both provinces have exceeded the 2009 prevalence estimates in many regions including East Asia (0.1 percent), South and South East Asia (0.3 percent), Oceania (0.3 percent), Eastern Europe and Central Asia (0.8 percent), Western and Central Europe (0.2 percent), and 16 countries in sub-Saharan Africa (0.2 to 2.3 percent), although it is lower than the prevalence estimates in 24 other countries (2.5 to 25.9 percent) in sub-Saharan Africa (UNAIDS 2010a).

HIV prevalence of more than one percent in both Papua and West Papua Provinces indicated that HIV epidemic has reached the general population (Mboi and Smith 2006; BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007). In Papua Province, the HIV and AIDS prevalence among housewives was higher than among sex workers. The HIV and AIDS prevalence among housewives increased from 19 percent in 2004 to 28 percent in 2007; whereas among female sex workers, the prevalence was 21 percent in 2004 and decreased to 12 percent in 2007 (Karma 2009). The HIV and AIDS prevalence among young people, was high, at 53.8 percent in March 2009 (Papua Province Health Department 2009) and 54.0 percent in

June 2011 (Harahap 2011a). In contrast, the proportion of vertical transmission from mother to children was very low in Papua Province, at 1.7 percent in 2009 (Papua Province Health Department 2009), implied that young people who had been diagnosed with AIDS were likely to get the HIV infection around ten years earlier (Schoub 1994) during their childhood or adolescents through sexual transmission (Papua Province Health Department 2009).

The HIV and AIDS cases reported quarterly by the Ministry of Health of the Republic of Indonesia only show 'the tip of the iceberg', because they are based on the people who have attended the VCT clinics, whereas only small proportion of people have used VCT clinics. Moreover, some provinces and many districts within the province do not report their new HIV and AIDS cases (Ministry of Health of the Republic of Indonesia 2011b, 2011a). As of June 2011, Papua's AIDS case rate was the highest among all 33 provinces in Indonesia, at 180.7/100,000 population, which was 16.3 times higher than the national rate at 11.1/100,000 population. The second highest rate was in West Papua at 51.5/100,000 population (Ministry of Health of the Republic of Indonesia 2011b). In 2010, young people aged 15-29 years make up 29.8 percent of Papua population (BPS-Statistics Indonesia 2010b), yet they accounted for 55 percent of all AIDS cases in the province. Furthermore, up to March 2011, 95.5 percent of the cumulative HIV cases in Papua (compared to 53.1 percent of cumulative HIV cases in Indonesia) were transmitted through heterosexual contacts (Harahap 2011a; Ministry of Health of the Republic of Indonesia 2011a). The very high proportion of heterosexual transmission implied the urgent need for safer sexual practices, not only among key population at higher risk of HIV infection, but also among sexually active people in the general population.

There has been an increase of high-risk sexual practices among young people in Papua and West Papua Provinces. The history and practices of sexuality in both provinces are unique that may not be found in other parts of Indonesia. High-risk sexual practices among young Papuans are suggested to be derived from the Papuan culture. Young people involved in the ritualized homosexuality (Knauff 1993, 1999, 1996, 2003; Herdt 1984). They also involve in partner exchange, sexual relationship in ritual ceremonies (Djoht 2005; Djoht et al. 2005; Warwer and Setiadi 2001), penile modification practices (Ap 2008; Oktavian, Diarsvitri, and Utomo 2011; Djoht 2005), secret sex and sex industries (Djoht 2008; Butt, Numbery, and Morin 2002b; UNDP

2005). Therefore, it is important for HIV infection prevention efforts to provide a proper understanding of risky, culturally-based sexual practices.

Many young Papuans are at the centre of HIV epidemic because of their high-risk sexual practices (Djoht 2005; Djoht et al. 2005; Warwer and Setiadi 2001; Butt, Numbery, and Morin 2002), they have insufficient knowledge of reproductive health (BPS-Statistics Indonesia and Macro International 2008; BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007; National Institute of Health Research and Development 2010b, 2007), and they are unaware that HIV is a threat to them (Bennett 2001; Bennett 2005; Singarimbun 1991; Situmorang 2001; Utomo 1997, 2003; Diarsvitri et al. 2011; Butt, Numbery, and Morin 2002; Hull, Sarwono, and Widyantoro 1993).

The change of high-risk sexual practices into more positive can be expected from reproductive health educations (Global HIV Prevention Working Group 2008). However, current provision for equipping young Indonesians with comprehensive knowledge and skills on reproductive health education is scant. The existing reproductive health materials in the primary to senior high school textbooks fail to acknowledge such early sexual activity among young people and consequently, they do not provide materials on safer sex practices (Utomo and Diarsvitri: Forthcoming). The reluctance of parents to talk about important sexual topics to their children exacerbates the inadequacy of HIV prevention efforts. They feel embarrassed, insufficiently informed, fear that their children know too much about sex, and are unsure of what to say or how to begin (Schuster et al. 2008; Eastman, Corona, and Schuster 2006; Beckett et al. 2010; Eastman et al. 2005; Jaccard, Dittus, and Gordon 2000; Raffaeli and Green 2003; Chen, Dunne, and Han 2007; Utomo 2003). These conditions, combined with unavailability of vaccine and treatment (WHO 2011e, 2011c) strengthen the objective need to educate young Papuans on HIV prevention.

Schools are in a specific position to reach majority of young people with age-appropriate HIV education to learn how they can prevent themselves from the onward transmission of HIV, how to take care of their reproductive health, and how to contribute to their society by introducing more youth sensitive HIV prevention programs. In general, there are two types of school-based reproductive health education: abstinence-only and a comprehensive education program. The implementation of abstinence-only programs reaped controversies since the term

'abstinence' is not discernibly defined (Goodson et al. 2003; Berer 2006; Dailard 2003), it is difficult for many young people to refrain from having an intimate relationship (Berer 2006; Råssjö and Darj 2002; Santelli, Ott, and Lyon 2006), the programs are ineffective in delaying the initiation of sexual intercourse (Kirby 2002a; Manlove, Romano-Papillo, and Ikramullah 2004; Santelli, Ott, and Lyon 2006; Dailard 2003), and in preventing teenage pregnancy (Stanger-Hall and Hall 2011).

This thesis strongly argues that young people should be equipped with comprehensive knowledge and skills to implement safer sexual practices in their lives. Even when HIV vaccine and other biomedical prevention become available, safer sexual practices are always critical to halt the HIV transmission, because there is no vaccine or biomedical strategy that will be 100 percent effective for HIV (Global HIV Prevention Working Group 2008). Comprehensive reproductive health education encompasses the full range of information, skills and values to enable young people to exercise their sexual and reproductive health and rights and to make decisions about their health and sexuality (IPPF 2009a). Compared to abstinence-only and extracurricular programs, school-based comprehensive reproductive health education programs are cost-effective and have a positive impact on young people's reproductive health by improving preventive behavior and thereby reducing the risks of HIV, other STIs, and unintended pregnancies (UNESCO 2009). Moreover, school-based comprehensive reproductive health education programs can be developed to incorporate cultural issues. Therefore, the programs will be more appropriate to be implemented in Papua and West Papua Provinces.

Further, UNESCO's review on 87 published studies of comprehensive reproductive health education programs (UNESCO 2009), a review on 83 published studies of comprehensive reproductive health education programs (Kirby, Laris, and Roller 2007), studies in Sub-Saharan African countries (UNAIDS 2010b) and Thailand (Rojanapithayakorn 2006) have showed that safer sexual practices are possible to be achieved among students, young people in general and even among key population at higher risk of HIV infection such as sex workers.

There have been positive impacts of comprehensive reproductive health education worldwide towards more positive health behavior and safer sexual practices of young people. Effective comprehensive reproductive health education programs have the same characteristics that the objective is to achieve a health goal by changing specific risks

and strengthening protective factors. The programs also emphasized a clear message that abstinence is the best choice, however, being faithful to one uninfected partner and using protection are a must if young people do choose to engage in sexual activity (Kirby, Laris, and Roller 2006; Kirby 2002b; Kirby, Laris, and Roller 2007; Senderowitz and Kirby 2006a; Kirby and Laris 2009; UNESCO 2009; Kirby et al. 2010).

The emerging problem of high HIV and AIDS case rate among young people in both Papua and West Papua Provinces, high-risk sexual practices, lack of comprehensive knowledge on HIV and unavailability of comprehensive reproductive health education in the school textbooks were the reasons for developing a school-based comprehensive reproductive health module, called '*Reducing the risk of HIV infection: Intervention trial for young Papuans*'. The module is adapted from '*Reducing the Risk: Building Skills to prevent Pregnancy, STD and HIV*' (Barth 2004).

The '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' module is the answer for the first objective of this thesis, which is to develop a comprehensive reproductive health module. Prevention efforts that are directed only to young people who are at the upper part of the pyramid of HIV infection (van Wijngaarden 2007), those who are already engaging in high-risk sexual practices, is not an appropriate strategic approach. Young Papuans are also composed of those who are more likely to start engaging in high-risk sexual practices, and those who are at low risk to HIV infection. Ignoring the middle and the lower parts of the pyramid of HIV infection will fuel the pace of HIV infection. Therefore, the module strongly argues to target all types of young Papuans by delaying the onset of sexual activity and protects sexually active young Papuans from HIV infection, other STIs and pregnancy. These are a prudent endeavor to reduce new HIV infections in both provinces.

The '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' module consists of a handbook and a PowerPoint presentation that has several benefits. It provides unbiased information about abstinence, HIV and AIDS and other STIs, risk of unprotected sexual intercourse, revealing the truth about sexual myths related to Papuan cultures, teenage pregnancy, unsafe abortion, sexual and reproductive rights, how to use condoms and lubricants correctly, available health services, treatment seeking behavior, interpersonal and communication skills on refusals and delaying tactics, and motivation to reach a better future. It provides a framework for decision-

making and communication about safer sexual practices and helps young people explore their own values, goals, and options. It is delivered through interesting methods that enable active participation of the students, including PowerPoint presentations, dialogues, role-plays, quizzes, games, and discussions. It helps students develop positive feelings about their changes during puberty: physical changes, sexual maturation, cognitive development, emotional development, social development and how to deal with the changes. Therefore, the program helps students perceive whether they might be at risk for HIV, increases the motivation and intentions to reduce risk, and builds the skills required to protect themselves from acquiring HIV infection or other STIs, as well as unintended pregnancies in the real world.

'*Reducing the Risk of HIV Infection Logic Model*' has been developed as a conceptual framework to show mechanisms that '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' can affect certain determinants (risk and protective factors) that affect sexual practices. The safer sexual practices are needed to achieve the health goal (reducing HIV infection). The model recognizes the importance of social determinants of health and based on four behavioral theories: Health Belief Model (Rosenstock 1966; Rosenstock, Derryberry, and Crriger 1959), Social Cognitive Theories (Bandura 1977, 1986), Theory of Reasoned Action (Lezin 2009b; UNAIDS 1999b; Ajzen and Fishbein 1980), and Stages of Change (National Cancer Institute 2005; Prochaska and DiClemente 1983; UNAIDS 1999b; Lezin 2009a).

My study was an efficacy trial, therefore the study was carried out in an optimum condition (Flay 1986; Godwin et al. 2003). Medical doctors, the most knowledgeable people in reproductive health, delivered the module to the students.

Related to the nature of my study, the use of quantitative and qualitative approaches in combination (Creswell and Clark 2011) provides a better understanding of research problems and more meaningful findings than either approach alone. The use of mixed methods research is also the best choice to achieve the study objectives of this thesis.

The in-depth interview as a qualitative method is a valuable and necessary component that other methods cannot reach (Pope and Mays 2006). It is also appropriate to achieve the second objective of my thesis, which is to explore perspectives related to social norms on sexuality and reproductive health education.

The interviews with 16 educators in both Papua and West Papua Provinces revealed two different perspectives among educators related to the need for a comprehensive reproductive health education. The first perspective proposed the need for a comprehensive reproductive health education to prevent HIV, other STIs and unintended pregnancies among students. Twelve out of 16 educators supported the first perspective. Teachers also indicated students' enthusiasm on the learning of reproductive health topics. However, there was an indication that some materials of the existing reproductive health education were not taught to the students for several reasons, including lack of time and lack of knowledge on the related topics. The interviews also specified the need for training on reproductive health education to increase teachers' understanding on related matters and teaching ability, and suggested the need for more school textbooks supply, especially for private senior high schools.

The second perspective suggested that 'normative' education, without teaching about condom use, should be given to the students. The latter argued that students received negative influence from their peers, the media, and cultures. To counter the influence, students need to improve their religiosity, early education in the family and the close relationship among family members. Therefore, the family plays a more important role in educating children compared to the school. One teacher criticized the latter, because it shows the 'hypocrisy' of the education sector in the fact that some students are sexually active and suffering from HIV, AIDS, and other STIs, and experiencing unintended pregnancies. Accordingly, schools should teach safer sexual practices to the students, and not merely emphasize the importance of abstinence.

Despite the need, in 2010 the government of Papua Province has regulated an inclusion of HIV and AIDS in the elementary to senior high school curricula through Education Regulation No. 26/2010 (e-mail from Mr. Yusuf, a staff member at The Education, Youth and Sport Bureau of Papua Province on April 4, 2012). Even though the education team of Papua Province had carried out several comparative studies by visiting Uganda, Thailand, Australia, and Bali before developing the curriculum, however, they were challenged by religious, moral, and cultural issues (Interview with a staff member at the Education, Youth and Sport Bureau of Papua Province, Jayapura, 12 February 2009). Finally, the curricula is a 'normative' one that highlights the importance of being abstinent, without teaching about condom use, skills on negotiating

safer sexual practices, sexual and reproductive rights, and unbiased information on HIV and other STIs.

In contrast, the *ondoafi* (tribal leader) of Abun-Sausapor tribe and the *ondoafi* of Moi-Klasaman tribe in Sorong city support the efforts to provide a school-based comprehensive reproductive health education. The *ondoafi* of Abun-Sausapor tribe has an undergraduate education and the *ondoafi* of Moi-Klasaman tribe has a doctoral degree education. For them, the most important thing was how to save young Papuans from HIV and AIDS. Both schools and families should teach and openly discuss about human body, menstruation, reproduction, sexually transmitted infection (*penyakit kelamin*), and condom use with teenagers. However, the teaching and discussion must be equipped with teaching on religions. Churches and other religious institutions should participate in the HIV prevention by including ways to avoid HIV infections in the sermons and their activities. When the schools and families teach the right thing to teenagers, they believe that teenagers will avoid having sex before marriage.

The 16 educators (10 males and six females) and one staff member of a local NGO stated that today's young people across different school types are more demonstrative in their sexual expression. These included dating, hugging and kissing in the school areas, the spreading of pornographic movies through students' cellular phones, grabbing female friend's breasts and vital organ during class, bathing nude in public, sex in exchange for money or gifts, having sex in customary festivals and graduation parties, having sex in the school's classrooms and toilets at night, and every year there have been cases of unintended pregnancies among students from different schools. The school responses to the sexual expression among students included reminding students about the importance of being abstinent, banning students from spreading pornographic materials at school, restricting the rules on accepting new students based on their previous record, and expelling pregnant students from school. However, expelling pregnant students from school, but allowing males to continue schooling reflected gender discrimination, which is against the 1945 Constitution of Indonesia (*Undang-Undang Dasar 1945*) and the 1979 Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) (United Nations General Assembly 1979). Schools, parents and governments play an important role in the prevention efforts on unintended pregnancy. However, if incident of unintended pregnancy had occurred, schools should allow pregnant students to continue schooling.

The high incidents of high-risk sexual practices among students implied insufficient efforts in the prevention. Parents seemed to give all the responsibility for educating their children to teachers. On the contrary, teachers expected that parents would play a role in educating their children related to sexuality and religion. Teachers did not want to be blamed for students' misbehavior. Moreover, some teachers were reluctant to discuss about abstinence, being faithful and condom use for several reasons. One reason was that the material was not covered in the school curriculum and the topic would encourage students to have sex. Other reasons included lacking of knowledge on reproductive health, being afraid if the students would get angry and parents should teach such matters to their children.

In the context of the HIV epidemic, educators should view sexuality not only within the normative structure related to marriage or family, but also within more permissive circumstances, without relation to love or courtship (Libby and Carlson 1973). The increase of high-risk sexual practices among students should be offset by the implementation of some preventive measures, including a comprehensive reproductive health education program that is supported with an administrative sanction for school that does not teach the program to their students. The preventive measures would achieve a favorable outcome when parents played a role in the education of their children.

'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans' is a school-based comprehensive reproductive health education. It is intended to tailor the need of young people that is not covered in the school textbooks. Therefore, I used cluster randomized trial as the quantitative method (Donner, Birkett, and Buck 1981; Wojdyla 2005; Donner and Klar 2000). Randomized trial provides the 'gold standard' for obtaining evidence in biomedical and behavioral interventions that exceed observational and quasi-experimental designs (Gray 2006; Auerbach and Smith 2008; Aral, Blanchard, and Lipshutz 2008; Gartlehner et al. 2006; Schulz and Grimes 2002b).

Sixteen out of 89 senior high schools (1,082 Year 11 students) were randomized to intervention or control group (Donner and Klar 2000). The analyses were carried out on 988 students who participated in both pre-test and post-test. The effect of clustering was taken into account on unadjusted bivariate and adjusted multivariate analyses using linear and generalized linear mixed model to achieve the third, fourth and fifth objectives of my thesis. The third objective is to evaluate the efficacy of *'Reducing the Risk of HIV*

Infection: Intervention Trial for Young Papuans' module in changing knowledge, attitude and behavior intention based on the results of pre-test and post-test. The fourth objective is to evaluate the efficacy of '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* program in changing sexual practices based on the self-reported sexual practices in the previous month before pre-test and post-test. The fifth objective is to analyze determinants of students' sexual practices.

Linear mixed model analysis indicated that the '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* module achieved an efficacy of 2.6 points better result (95% CI 2.1, 3.1) for the overall knowledge test difference from pre-test to post-test between intervention and control group, controlling for intervention group, time, time by group interaction, sex, age, ethnicity, school type, and sexual experience in the previous month before pre-test and post-test.

Predictors of mean score difference on the overall knowledge test from pre-test to post-test between intervention and control group were control group, sexual experience in the previous month before pre-test and post-test, and age. Students who did not have any sexual experience and had some sexual experience in the previous month before pre-test and post-test, compared to students who had sexual intercourse, increased the mean score of the overall knowledge test by 0.6 points (95% CI 0.3, 0.9), controlling for other variables in the model. Each year increase in the students' age lowered the mean score of the overall knowledge test by 0.3 points (95% CI -0.5, -0.2), controlling for other variables in the model.

Results of linear mixed model analyses also indicated that the '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'* module achieved an efficacy of 2.9 points (95% CI 0.7, 5.2) better mean score for the overall attitude test, and 2.7 points (95% CI 0.9, 4.6) better mean score for the overall behavior intention test different from pre-test to post-test between intervention and control group, controlling for intervention group, time, time by group interaction, sex, age, ethnicity, school type, and sexual experience in the previous month before pre-test and post-test.

Sex, ethnicity, sexual experience in the previous month before pre-test and post-test, and age were predictors of difference score on the overall attitude test from pre-test to post-test between intervention and control group. Being male, compared to female, lowered the mean score of the overall attitude test by 5.7 points (95% CI -6.9, -4.5),

controlling for other variables in the model. Being a Papuan student, compared to a mixed ethnicity student, lowered the mean score of the overall attitude test by 3.4 points (95% CI -5.9, -0.9). Students who did not have any sexual experience and those who had some sexual experience in the previous month before pre-test and post-test, compared to those who had sexual intercourse, increased the mean score of the overall attitude test by 5.2 points (95% CI 4.0, 6.5) controlling for other variables in the model. Each year increase in a students' age lowered the mean score of the overall attitude test by 2.2 points (95% CI -2.8, -1.6), controlling for other variables in the model.

School type, sex, sexual experience in the previous month before pre-test and post-test, and age were predictors of difference score of the overall behavior intention test from pre-test to post-test between intervention and control group. Being in a private school, compared to being in a vocational school, lowered the mean score of the overall behavior intention test by 4.5 points (95% CI -8.8, -0.3) controlling for other variables in the model. Being male, compared to female, lowered the mean score of the overall attitude test by 4.6 points (95% CI -5.6, -3.4) controlling for other variables in the model. Students who did not have any sexual experience and those who had some sexual experience in the previous month before the pre-test and post-test, compared to those who had sexual intercourse, increased the mean score of the overall behavior intention test by 4.3 points (95% CI 3.3, 5.3) controlling for other variables in the model. Each year increase in a students' age lowered the mean score of the overall behavior intention test by 1.3 points (95% CI -1.8, -0.8), controlling for other variables in the model.

This thesis used self-administered questionnaire to assess students' sexual practices; which is found to be reliable. Several studies suggested high self-reported honesty among respondents in completing self-administered sexual practices questionnaire (Nyitray et al. 2010; Schrimshaw et al. 2006; Siegel, Aten, and Roghmann 1998; Hearn, O'Sullivan, and Dudley 2003).

In the previous month before pre-test, 33.5 percent of students reported having had no sexual experience, 27.6 percent of students reported having had some sexual experiences, and 37.9 percent of students reported having had sexual intercourse. In the previous month before post-test, 40.2 percent, 19.5 percent, and 38 percent of students reported having had no sexual experiences, some sexual experiences, and sexual intercourse, respectively.

Results of generalized linear mixed model indicated that the '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' module showed an efficacy in reducing the risk of having sexual intercourse in the intervention group compared to control group from pre-test to post-test with the odds ratio of 0.4 (95% CI 0.3, 0.7), controlling for school type, sex, ethnicity, age, religiosity, currently drank alcohol, number of friends having sex, and living arrangement.

Being in the control group, in private school, male, older, not religious or ordinary, increased the probability of having sexual intercourse. The probability of having sexual intercourse among students in the control group, compared to intervention group is 3.3 times greater (95% CI 2.2, 5.0). Being in the private school, compared to vocational school, increased the probability of having sexual intercourse 2.0 times higher (95% CI 1.3, 3.0). Being male, compared to female, increased the probability of having sexual intercourse 1.8 times higher (95% CI 1.3, 2.5). Each year increasing age increased the probability of having sexual intercourse 1.2 times higher (95% CI 1.1, 1.5). Being not religious and ordinary religious, compared to very religious, increased the probability of having sexual intercourse 4.5 times higher (95% CI 2.7, 7.4) and 2.5 times higher (95% CI 1.8, 3.7), respectively.

Being non-Papuan, currently did not drink alcohol, did not have any friends or have some friends who have sex, reduced the risk of having sexual intercourse. The probability of having sexual intercourse among non-Papuan students, compared to mixed ethnicity students is 0.4 times lower (95% CI 0.2, 0.8). Currently did not drink alcohol, compared to currently drink alcohol, reduced the probability of having sexual intercourse 0.2 times (95% CI 0.1, 0.2). Did not have any friends and have some friends who have sex, compared to have all friends who have sex, reduced the probability of having sexual intercourse 0.1 times (95% CI 0.0, 0.4) and 0.3 times (95% CI 0.1, 0.9), respectively.

Drinking alcohol was a custom among young people in Papua. Young people consumed local alcoholic beverages called *Saguer* and *Cap Tikus*, or a branded one such as vodka. Young Papuans often had alcoholic beverages before they had sex (Djoht et al. 2005). The 2003 Behavioral Surveillance Survey in Merauke, Papua Province, indicated both male and female teenagers aged 15-19 years who drank alcohol were far more likely to report having had unprotected sex than those who did not drink alcohol (Pisani 2006). Alcohol reduces cognitive capacity and causes people to focus on

the practices that do not need more cognitive resources to process. In sexual encounters, alcohol makes people think about immediate pleasure of sexual contact. Alcohol impairs judgment and inhibits the ability to consider about safer sexual practices (Steele and Josephs 1990).

A large proportion of sexually active students in the intervention and control groups (59.1 percent) reported having had their first sexual intercourse when they were 15 years old or older. Thirty percent of students in both groups reported initiating sex when they were between 13-14 years old. Eight percent (16) of students in the control group and 4.5 percent (eight) students in the intervention group had their first sexual intercourse by 12 years old.

Sixty-eight percent (134) of sexually active students in the control group and 73.3 percent (129) of sexually active students in the intervention group reported having had their first sexual intercourse with a friend. Eight to nine percent of sexually active students in both groups had had their first sexual intercourse with sex workers. Around 11.6 percent (23) of sexually active students in the control group and 12.5 percent (22) of sexually active students in the intervention group had their first sexual intercourse with others (including relatives). Students who reported having vaginal and/or anal intercourse, especially without condom use with sex workers or someone without knowing his/her HIV status, were putting themselves at high risk of acquiring HIV and other STIs (Marks et al. 2005; Samet et al. 2001; UNICEF, UNAIDS, and WHO 2002).

Type of sexual intercourse was not significantly different between the intervention and the control groups in the previous month before pre-test and before post-test. Majority (around 90 percent) of sexually active students in both groups reported having had vaginal intercourse.

The proportion of sexually active students reported having had multiple sexual partners in the previous month before pre-test was 15.2 percent (30) in the control group and 19.3 percent (34) in the intervention group. These proportion decreased to 8.8 percent (20) and 6.8 percent (10) in the control and intervention group, respectively, in the previous month before post-test.

Condom use in the last sexual intercourse before pre-test was low, at 5.1 percent in the control group and 3.4 percent in the intervention group. Level of condom use in the last sexual intercourse before post-test increased 1.4 times, reaching seven percent in the control group; and increased 7.2 times, reaching 24.5 percent in the intervention

group. Condom use in the last sexual intercourse before post-test was significantly different between intervention and control group at $p < 0.02$. Compared to condom use in the general population in both provinces that was only 2.8 percent (BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007), the significant increase of condom use among students in the intervention group was a remarkable achievement, especially because the students exposed only once to the module, and the government does not provide condom for sexually active young people.

Results of generalized linear mixed model indicated that the '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' module showed efficacy with the odds of 5.0 times (95% CI 1.5, 14.9) in the probability of increasing condom use in the last sexual intercourse among students in the intervention group, compared to students in the control group, before pre-test and post-test, controlling intervention group, time, time by group interaction, sex, age, ethnicity, school type, currently drank alcohol, number of friends having sex, and age at first sexual intercourse.

Being in the control group and being Papuan reduced condom use in the last sexual intercourse. Being in the control group, compared to intervention group, reduced the probability of using a condom in the last sexual intercourse by 0.2 times (95% CI -0.1, 0.5). Being Papuan, compared to mixed ethnicity students, reduced the probability of using a condom in the last sexual intercourse by 0.3 times (95% CI 0.1, 0.7), controlling for other variables in the model. Being male, compared to female, increased the probability of using a condom in the last sexual intercourse by 2.2 times higher (95% CI 1.1, 4.1), controlling for other variables in the model.

As emphasized in the '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' module and in a study carried out by de Irala and Alonso (2006), using a condom correctly should be regarded as 'safer sex', but not as 'safe sex'. STIs such as gonorrhoea, Chlamydia, Trichomoniasis and HIV are transmitted by genital fluids (Nasronudin 2007; Schoub 1994; CDC 2010c; Murtiastutik 2008; CDC 2011b, 2011d). However, genital herpes, human papilloma virus, syphilis and chancroid are transmitted by skin-to-skin contact (CDC 2012b; Murtiastutik 2008; CDC 2010b, 2010d, 2010a). If the infected skin was in the area that is not covered by a condom, then using a condom could not give protection against the disease. Therefore, consistent and correct condom use was likely to provide greater protection against STIs that were transmitted by genital fluids than against infections that were transmitted primarily by skin-to-skin

contact. Overall, using a condom was still the best way of preventing most STIs (Department of Health Government of Western Australia 2007; CDC 2011c).

Overall, 30.5 percent of sexually active female students in the control and intervention groups reported having had an unintended pregnancy. Eighty-five percent of those reported having had an unintended pregnancy also reported having had unsafe abortion. Fourteen of female students said that they had tried to terminate their pregnancy themselves. Four of female students reported they sought treatment from medical or paramedical staff. Three of female students reported they sought treatment from a traditional healer.

In Indonesia, young females often use herbals and over-the-counter medicines of menstrual regulation for abortion. When they cannot terminate their pregnancy or they experience bleeding, then they seek medical help (Pramudiarja and Wahyuningsih 2012). The high proportion of unsafe abortion among pregnant students might be related to their fear of being expelled from school, stigmatization and restriction in the community (Bennett 2001; Utomo 2003; Sedgh and Ball 2008).

Around 15.7 percent of students in the control group and 15.3 percent of students in the intervention group who reported having had sexual intercourse in the previous month before pre-test also reported having experienced painful discharge when urinating. Around two percent of students in the control group and 1.7 percent of students in the intervention group who reported having had sexual intercourse also reported having ulcers in their genital. The four most-cited sources of treatment for those who reported experiencing symptoms of STIs were buying over-the-counter medicine, private nurse, private midwife, and private doctor.

The proportion of those experiencing symptoms of sexually transmitted infections was only 'the tip of the iceberg', as most STIs were asymptomatic. The asymptomatic nature of STIs could contribute to under diagnosis, estimated at 50 percent or more cases (Nusbaum et al. 2004). Further, STIs that caused ulcers or inflammation greatly increase the risk of acquiring and transmitting HIV infection (Galvin and Cohen 2004) by two- to fivefold (Nusbaum et al. 2004). Therefore, STI prevention and treatment should be provided (WHO 2006d) for young people to reduce the transmission of HIV infection.

All of the findings confirm the hypothesis of this thesis that the '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuan's* module was able to

achieve an efficacy in changing towards more positive knowledge, attitudes, behavior intention and sexual practices of students in the intervention group, compared to students in the control group.

The intervention module could not directly affect the goal, but it could affect individuals' determinants, including knowledge, attitudes, and behavior intention. Besides the module, there were some social determinants that also affected individuals' sexual practices. A positive change in individual determinants will affect sexual practices. The positive changes in sexual practices that were maintained would subsequently result in decreased HIV infection.

6.2 Policy implications

HIV infection and AIDS primarily affect people in their most productive and reproductive years. Mortality has been increasing and life expectancy has fallen in many countries highly affected by HIV infection and AIDS (UNAIDS 2010a; United Nations Department of Economic and Social Affairs 2007). However, the needs of affected young people are often disregarded in many countries' HIV and AIDS strategies, policies and budget allocation (UNICEF, UNAIDS, and WHO 2002).

Accordingly, focusing research and policy on young people becomes more important, not only because they make up a significant proportion of each country's population (WHO, UNFPA, and UNICEF 2006; UNFPA 2003), but also because sexually active young people who engage in high-risk behavior and sexual practices are at the forefront of the HIV epidemic (Lloyd 2005; UNAIDS 2010a).

Up to June 2011, young people aged 15-29 years made up 49.5 percent of the national cumulative AIDS cases, whereas the same age group made up 55 percent of the cumulative AIDS cases in Papua Province. Students or university students were ranked sixth (5.6 percent) of all PLHIV reported from 1987-2011 in Indonesia (Ministry of Health of the Republic of Indonesia 2011c, 2011b). However, due to under-reporting, mis-diagnosis and delays in reporting, the recorded cases represented only the 'tip of the iceberg' (Mboi and Smith 2006; Gordis 2009; Summers, Kates, and Murphy 2002). These figures are likely to be associated with young people's involvement in high-risk sexual practices (Pisani et al. 2003; Judarwanto 2011; Nugroho 2008b; Setyorakhmadi 2010b; Farid 2011; Simon and Paxton 2004; Purdy 2006; Situmorang 2003; Utomo

2003). Moreover, only 18.5 percent of Indonesian young people had comprehensive knowledge on HIV and AIDS (National Institute of Health Research and Development 2010b), and there is insufficient number of youth-friendly health services (Lubis 2006).

There was a shift in the mode of HIV transmission in Indonesia. In 2006, 54.4 percent of new HIV infections in Indonesia were transmitted by injecting drugs and 38.5 percent were transmitted by heterosexual contact. In contrast, in 2011, transmission by injecting drugs reduced to 16.3 percent, while transmission by heterosexual contact increased to 76.3 percent (National AIDS Eradication Commission 2011). The rapid climb of the new HIV infections through heterosexual transmission implied the need for implementation of safer sexual practices, not only among key population at higher risk of HIV infection, but also among the general population, including young people.

The responses of the local governments to the increase of HIV epidemic in Indonesia included developing several AIDS regulations on condom use in commercial sex establishments. Up to September 2011, 16 out of 33 provinces had provincial AIDS regulation, and 34 districts and cities in the 16 provinces had AIDS regulation. In Papua Province, there were one AIDS regulation (*No. 8/2010*) in the provincial level and six out of 29 districts and cities had AIDS regulations. In West Papua Province, there was no AIDS regulation at the provincial level, but three out of 11 districts and cities had AIDS regulations (Sistem Informasi Kesra Nasional 2011).

The existing AIDS regulation in Papua and West Papua Provinces are not effective in preventing the spread of HIV infection in both provinces. Reviews suggest that the regulations were too normative and lack of clear messages, objectives, targets, concrete step to prevent HIV infection, sanctions, synchronization with other regulation, and coordination with related institutions (Asa et al. 2009). Further, it is difficult to halt the spread of HIV without the implementation of 100-percent condom use nationally (Rojanapithayakorn 2006).

In response to the increase in HIV infection and AIDS cases, in 1994 a presidential decree (*Keppres No. 36/1994*) legalized the birth of the National AIDS Commission (Mboi and Smith 2006). The subsequent presidential (*Perpres No. 75/2006*) decree provided the basis for restructuring and functioning the commission that was finally chaired by the Coordinating Minister for People's Welfare, which comprised cabinet ministers, government ministries and agencies, and non-governmental organizations (NGOs).

Starting in 2003, a number of commitments and activities to halt the spread of AIDS, such as provincial VCT clinics, as well as specific prevention and treatment for key populations at higher risk of HIV infection in all provinces were also established. At that time, the expenditure on all activities still relied heavily on international sources (67.8 percent from bilateral partnerships, and 32.3 percent from multilateral partnerships), compared to public sector (central and local governments, 26.6 percent) (National AIDS Commission 2007). As of 2010, the funding sources were shifted to 51 percent from international support and 49 percent from public support.

Further, the government had provided 388 VCT clinics available at hospitals, public health centers, and NGO clinics; and 196 hospitals provided care, support and treatment (National AIDS Commission 2010a). However, the number of VCT clinics in many provinces outside Java was disproportionate to the size of the population (Ministry of Health of the Republic of Indonesia 2011b; BPS-Statistics Indonesia 2011c). In addition, many young people were reluctant to have an HIV or other STI test in a VCT clinic, due to the stigma and discrimination that would result if they were HIV positive (Purworejo District Government 2011; Suara Merdeka 2011).

Regardless of the high rates of high-risk sexual practices, HIV and other STIs among young people in Indonesia, unmarried Indonesians lack of access to sexual and reproductive health services. This condition is against several international resolutions and declarations supporting reproductive and sexual rights that Indonesia has ratified (Wardhani 2009), including the 1948 Universal Declaration of Human Rights (United Nations General Assembly 1948), the 1979 Convention on the Elimination of All Forms of Discrimination against Women (CEDAW Convention) (United Nations General Assembly 1979), the 1994 International Conference on Population and Development (ICPD) in 1994, the 1995 Beijing Declaration and Platform for Action, the Fourth World Conference on Women, 1995 (United Nations General Assembly 1995), the 2000 Millennium Declaration (United Nations General Assembly 2000), and the 2001 United Nations Special Session on HIV/AIDS (United Nations General Assembly 2001).

In Indonesia, free contraception provided by the government through family planning clinics has been aimed at married couples and poor people, as stated in the Articles 23 and 29, paragraph two of *Indonesia Law No. 52/2009*. Papua Province AIDS Commission and some NGOs have also distributed free female and male condoms, but

nowadays sexually active secondary school students are not the target group for their activities (Interview with the head of Papua Province AIDS Commission and several staff members of local NGOs, Jayapura city, Papua Province, 28 February 2009). In June 2012, the new appointed Health Minister of Indonesia pressed ahead the ministry's plan to promote condom use among key population at higher risk of HIV infection including young people who are at risk of HIV infection, despite non-supporting law (Sagita 2012). The Health Minister argued that some Indonesian young people, including sexually active high school and college students, are likely to already have unprotected sex, therefore, condom use could prevent unintended pregnancies and STIs including HIV among students (Aritonang and Faisal 2012; Gatra and Candra 2012). Condoms are only effective when they are used consistently and correctly. Condoms can reduce the risk of HIV and other STIs, although they do not eliminate the risk (CDC 2011c). However, the call for condom use should be regulated by law and it should have a sanction for not obeying the law, so it can force people to obey the law.

In 2009, AIDS Commission of Papua Province started to promote circumcision for men in Papua to prevent HIV infection (National AIDS Commission 2009a). The circumcision campaign was based on WHO recommendation that circumcision could reduce HIV transmission by 60 percent (WHO 2007c). However, it must be emphasized that circumcision is not a substitute for condom use. Consistent and correct condom use as well as other HIV prevention methods should be maintained as a comprehensive HIV prevention program.

The Indonesian education sector response to HIV epidemic was formulated in 1994 in the National Strategic Plan, in which the education sector was identified as the strategic element in prevention of HIV infection. Facilitated by two Ministry of National Education decrees: (i) No. 9/U/1997 on HIV prevention through education that instructed all levels of education to improve knowledge on HIV, to improve awareness of healthy and responsible behavior, and to engage in activities to prevent the disease; (ii) No. 303/U/1997 on guidelines to prevent HIV through education, indicating that HIV prevention should be integrated into relevant subject matter in the curriculum of elementary to secondary education and through extracurricular activities (Irwanto et al. 2010).

The education sector efforts to halt the spread of HIV infection were not effective, because the existing curricula and school textbooks are too normative. The

existing reproductive health materials in the primary to senior high school textbooks do not provide materials on safer sex practices (Utomo et al. 2010; Utomo, McDonald, Hull, et al. 2011). Further, there are some incomplete and inaccurate information on STIs explained in the science and sport and health education (*Penjaskes*) textbooks. The materials do not provide sexual and reproductive rights that young people, especially females, have to understand. Further, information on safer sexual practices such as how to use condom was not available. Skills on negotiating with sexual partner on abstaining and safer sexual practices were also not available (Utomo and Diarsvitri: Forthcoming).

The 'Reducing the risk of HIV infection: Intervention Trial for Young Papuans' module had been introduced in an optimum condition of an efficacy trial, in which medical doctors had delivered the module to the senior high school students. After the trial, it is expected that the module can be implemented in a 'real world' setting, in which school teachers or an adult will deliver the module.

In terms of practicality, the module can be integrated into related subjects, local content curricula or in the extracurricular activities. Therefore, it will be in line with the Governor of Papua's Regulation No. 26/2010 on the mainstreaming of HIV and AIDS education in the school curricula, and the strategic plan of the Education, Youth and Sport Bureau of Papua Province 2007-2012 (e-mail from Mr. Yusuf, a staff member at The Education, Youth and Sport Bureau of Papua Province on April 4, 2012).

The integration of the module into related subjects or into local content of the senior high school curricula is more suitable than creating a new independent subject. An official from the Centre of Curriculum and Books of the Ministry of Education and Culture has explained the rationale for the module integration. In the launch of policy briefs on reproductive health that was held in the Indonesian National Planning Board (*BAPPENAS*) office in Jakarta on 11 January 2012, the official stated that senior high school curricula in Indonesia has been very full with loads of content and competency standards. Accordingly, it is impossible to add a new independent subject on HIV and AIDS prevention.

Some subjects that can accommodate the module include the Sports and Health Education (*PENJASKES*) subject within the topic of healthy life style, in the first semester of Year 10, which has eight-hour lessons. Subsequently, the module can be integrated into the 'HIV and AIDS prevention education' subject, as part of a local content curriculum in the first semester of Year 11, which has eight-hour lessons. The

module can also be integrated into Biology subject within the topic of human reproductive system. In senior high schools, one hour lesson equal to 45 minutes.

Further, the module can be integrated into some extracurricular activities, including the self-development program, the Indonesia scout movement (*Pramuka*), and the youth red cross (*PMR-Palang Merah Remaja*). The school health unit program (*UKS-Usaha Kesehatan Sekolah*), an integral part of every school, can also accommodate the module, since the module is in line with its program: health education, health services, and promoting the development of a healthy school environment. However, it is important to note that students can only choose one extracurricular activity. Accordingly, only some students may learn the module.

For those who drop out of senior high school, the Center for Information and Counseling on Adolescents/University Students (*PIK-R/M-Pusat Informasi dan Konseling Remaja/Mahasiswa*) can provide the module as part of its program. The Center for Information and Counseling on Adolescents/University Students is available in almost each sub district, therefore, young people can access the program.

In both Papua and West Papua Provinces, where HIV has become a generalized epidemic, the estimated budget for the proposed care, support, and treatment program has a substantial proportion besides prevention program. The funding comes from the central, provincial and district governments, and also from the international donors (National AIDS Commission 2010b). In education sector, the Education, Youth and Sport Bureau of Papua Province obtain financial and technical supports from the World Bank and UNICEF (Interview with a staff at the Education, Youth and Sport Bureau of Papua Province, February 28, 2009).

At the early stage, the Education, Youth and Sport Bureau of Papua Province will provide training on HIV and AIDS prevention for two teachers from each school. It is a good start, although training is needed for every teacher associated with the HIV and AIDS prevention program. The training is also in line with the expectation of teachers involved in my study.

Furthermore, in dealing with human capacity and cost, the Education, Youth and Sport Bureau of Papua Province may collaborate with other government institutions, since all government institutions as well as civil society should take part in the HIV and AIDS prevention efforts in accordance with their potency (National AIDS Commission 2010b). Based on the paragraph 13 and 14 of the *Local Government Law No. 32/2004*,

the education and health sectors are the responsibility of the provincial and district governments; therefore, their programs are financed by provincial and district government budget. Moreover, both sectors constitute a concurrent task; thus depending on their strategic plan, their programs can be financed by de-concentration and the central government budget (Nonci 2012). The school health unit (*UKS-Usaha Kesehatan Sekolah*), for example, was established under a joint decision between Indonesia's Minister of Education, Minister of Health, Minister of Religious Affairs, and Minister of Internal Affairs in 1984 that was updated in July 2003. Every school health unit is fostered by medical doctor and paramedics from the local public health center (*Puskesmas*). Accordingly, the school may collaborate with the local public health center or health department to participate in the teachers' training on HIV and AIDS prevention.

I presented the preliminary findings of my study in the workshop of mainstreaming HIV in the school curriculum in Jayapura, 10-13 October 2009. UNICEF Papua, the Education, Youth and Sport Bureau of Papua Province, AIDS Commissions of Papua and West Papua Provinces, and some educators from twenty districts in Papua and West Papua Provinces attended the workshop. They agreed that today's young Papuans were more sexually permissive, therefore the school curriculum had to include more specific HIV prevention education.

A published article on the preliminary results of my study (Diarsvitri et al. 2011) was reviewed by eight leaders from Papua and West Papua Provinces who had attended the HIV workshop in the Nossal Institute for Global Health, University of Melbourne, in September 2011. They were from UNICEF Papua; Health bureaus of Papua and West Papua Provinces; the Education, Youth and Sport Bureau of Papua Province; the Education bureau of West Papua Province; and AIDS Commissions of Papua and West Papua Provinces (Email communication from Emma Brathwaite, 26 September 2011).

Dr. Oyewale, a HIV/AIDS specialist from Education and Adolescent Development Cluster, UNICEF Papua, commented that our findings were similar to the findings of a knowledge, attitude and practice survey that had just been conducted among high school students in Papua. He also stated that HIV intervention for senior high school students was just emerging in both Papua and West Papua Provinces. Past

efforts had been largely concentrated on junior high schools (Email communication from Tajudeen Oyewale, 28 September 2011).

When the leaders returned to Indonesia, Dr. Nugraha, the head of health services of West Papua Province Health Department issued a press release related to HIV prevention in the province. He translated my published article into Indonesian language. The summary of the translation was published in a local newspaper to remind the government and community about the impact of sexual permissiveness on the risk of HIV infection (Cahaya Papua 2011b). He highlighted that HIV prevention program had to be supported by all elements including the government, NGOs, schools, and community (Cahaya Papua 2011a).

Prevention is much better than treatment, especially for HIV infection and AIDS. AIDS is a preventable disease. Instilling knowledge and believe in safer sexual practices through a comprehensive reproductive health education is the best way to prevent HIV infection.

Policy makers, program managers and teachers should be aware that young people's high-risk behavior and sexual practices could be modified through education (Grunseit et al. 1997; UNESCO 2009; Global HIV Prevention Working Group 2008). Accordingly, I strongly suggest that advocacy efforts based on this thesis should target policy makers and gatekeepers to ensure that available policies on young people reproductive health are reviewed to support comprehensive reproductive health education in senior high schools. Comprehensive reproductive health education is urgently needed, since failing to provide appropriate and timely information for young people will only elevate the spread of HIV infection (Grunseit et al. 1997). The Global HIV Prevention Working Group (2007) concluded that comprehensive HIV prevention on young people could halt half of the HIV infections projected to occur by 2015. Young people can serve as an agent of change to halt the spread of HIV infection through improving their self-confidence and ability to adopt safer behavior and sexual practices, which can be obtained from an effective comprehensive reproductive health education.

We cannot deny the fact that Indonesian young people are sexual being, and some of them are sexually active. Some of the sexually active students acquired HIV or other STIs. Without a comprehensive knowledge of reproductive health, it cannot be

ensured that young people will be able to negotiate safer sex practices with their partner and understand the consequences of their decision (Berer 2006).

In an interview, the Health Minister of the Republic of Indonesia stated that high-risk sexual practices had occurred in all levels in the community that can be shown by more than two million cases of abortion in Indonesia. Fetuses right to life must be protected. To prevent this from happening among teens, the religious and family education for avoiding premarital sex or being abstinent should be strengthened. In addition, young people need a reproductive health education, so they understand what is good and not good for their bodies and others. Being today's young people that are in the reproductive age but with increasing age of marriage are difficult, because there are negative influences from the media, pornography materials and drugs. To prevent HIV infection that is mainly transmitted by sexual contact, the triangle of safety should be implemented. These are harm reduction (including condom use), demand reduction (ethical and religious teaching), and supply reduction (combating the poverty to prevent the increase numbers of sexual workers and commercial sex establishment or to close commercial sex establishment) (Julianto 2012).

In accordance with the opinion of the Health Minister of the Republic of Indonesia, the findings of this thesis clearly show that young people face many sexual and reproductive health risks, arising from early, unprotected, or unwanted sexual activity. The level and context of sexual activity vary by sex, age, school type, ethnicity, and drinking alcohol. As young people are becoming sexually active at younger ages, sexually active unmarried young people also have a need for contraceptives, which is likely to be unmet and often goes unmeasured and unacknowledged. Therefore, young people should have access to contraceptives as well as other quality and youth friendly reproductive health services.

Moreover, I suggest that the senior high school curricula and school textbooks should not only emphasize the cognitive aspects of learning but also boost young people' confidence and improve their skills on issues relating to the adoption of safer sexual practices. The curricula and school textbooks should include comprehensive knowledge and prevention strategies on HIV and STIs, sexual and reproductive rights, gender equality, misconception on sexual intercourse, abstinence, risks associated with different type of sexual practices, and practical skills such as refusal and delaying tactics, how to use a condom correctly, and how to say no to unprotected sex. These

materials should be accompanied with pictures on how to use a condom correctly, and the effects of HIV and other STIs on the reproductive organs.

The comprehensive school curricula and textbooks should be supported by diverse intervention strategies that could create young people's positive attitude and behavior. These include but are not limited to strengthen religious education and practice, empowering girls to resist coerced sex, increasing positive interpersonal communications, intensifying parent-child communication, employing positive adult-role modeling, encouraging peer-education, as well as improving positive role of electronic and print media. The finding of this thesis emphasizes the need to ameliorate the role of educators, parents, health care providers, policy, and media in the prevention of HIV and AIDS programs. This is important, because educating school children about safer sexual practices is one of the most ways of postponing the onset of sexual activity among them. In addition, religious leaders, professionals, scientists, fame actors, athletes, or musicians can be used as positive role models. All of these have the potentials of intensifying young people's confidence and passing on the required abstinence skills.

Moreover, I strongly urge the Papua and West Papua Provinces' government to implement the *'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuan's* module in the senior high school curriculum with administrative sanctions for school that did not apply the module. If the module could be implemented in both Papua and West Papua Provinces or even nationally, then young people would be given huge power to reverse the progression of the HIV epidemic.

6.3 Study limitations

This study only covered senior high schools in four urban areas of Papua and West Papua Provinces. The study could also be carried out in both urban and rural area to capture the different characteristics of students. Students with different characteristics might have different responses to the module I have developed.

Self-reported assessments of sexual practices are prone to a number of biases. This thesis focused on a sensitive issue considering the fact that stigma is normatively attached to sexual practices of unmarried young people. However, efforts were made to alleviate the impact of this effect by guaranteeing respondents of full confidentiality and by constructing the questionnaire a guided self-administered process. However, the

questionnaire used in the thesis did not ask about number of sexual partners on oral sex and condom use during oral sex, whereas unprotected oral sex could transmit HIV and other STIs. The questionnaire also did not ask about circumcision that is important for HIV prevention. Further, the questionnaire did not ask some measures on religiosity, such as performing prayer and attending sermon or congregation. Future research should ask about these matters.

The follow-up time of this study was also limited to two months. Even though some HIV intervention trials have had shorter follow-up time, however, it would be better to have a longer follow-up time. A longer follow-up time would enable students to adopt the knowledge they have obtained from the module to their everyday lives. It would also enable the researcher to observe the maintenance of changes in knowledge, attitudes, behavior intention, and safer sexual practices over a longer period, and thus test whether the lessons learned will endure. This study would be more powerful in reducing the risk of HIV infection if the module could be given repeatedly several times to the students.

6.4 Contribution of the study

This thesis contributed to the relevant literatures on HIV, AIDS and other STIs; global concern on young people's high high-risk sexual practices and the risk of HIV infection; young Indonesian's high-risk sexual practices and the risk of HIV infection; Indonesian school textbooks on reproductive health; and reproductive health education. The contribution to the relevant literature also emerged in the cultural aspects of sexual practices in Indonesia, especially in Papua and West Papua Provinces; government policy on HIV prevention; behavioral theory; methodology and analyses.

This study was the first HIV education intervention on senior high school students in Papua and West Papua Provinces. This study provided understanding of the educators' perspective on the need for comprehensive reproductive health education for young Papuans. This study also provided understanding of senior high school students' knowledge, attitudes behavior intention, and sexual practices before and after the intervention.

This study was also the first HIV education intervention to use an experimental design in Indonesia, which was the 'gold standard' to evaluate an intervention program.

The methods used in the study could add a new way of implementing, analyzing and evaluating intervention program on similar or other issues.

Many important materials for young people that are provided in the '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' module are not available in the senior high school curricula and textbooks. Accurate information on HIV and other STIs, misperceptions on sexual intercourse, how to use a condom correctly, delaying and refusal technique, and sexual rights are not available in the school textbooks. Therefore, school textbooks should provide complete and accurate information related to these matters and schools would gain particular advantages when implementing the module.

This thesis also provides relevant policy implications that are needed to prevent the progression of HIV epidemic in Papua and West Papua Provinces. This study demonstrated that knowledge, attitudes, behavior intention, and sexual practices can be changed through education. Therefore, the government's political commitment to HIV prevention for young people is needed. The serious commitment will be critical to reverse the HIV epidemic in Indonesia.

6.5 Suggestions for future research

The *Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans* module can be adapted to be used in senior high schools in urban and rural areas, as well as other parts of Indonesia.

The difficulty in planning for a cluster randomized trial is obtaining the ICC. This thesis reported the ICC in knowledge (0.04), attitude (0.12), and behavior intention (0.08) tests. Therefore other researchers could use the ICC reported in this thesis to plan their study.

Future research should focus on efficiency trials. In an efficiency trial, biology or sport and health education teachers should teach the module to the students. Therefore, the impact of the intervention would be able to be observed in a real world setting. The future study would be better if the students could receive the intervention program several times, and the study could be carried out in rural and urban areas to capture different characteristics of students.

Questionnaire used in the future study should address some items that are not available in this study, including perceived risk on HIV and other STI, number of sexual partners on oral sex and condom use during oral sex, circumcision, and some measures on religiousness. Future research could also use a different method of qualitative study, such as focus group discussion among female and male students to gain better understanding on their perspectives of safer sexual practices.

Appendices

Appendix 1. Ethical approval from the ANU Human Research Ethics Committee



THE AUSTRALIAN NATIONAL UNIVERSITY

OFFICE OF RESEARCH INTEGRITY
RESEARCH OFFICE

Ms Yolanda Shave
Secretary, Human Research Ethics Committee

CANBERRA ACT 0200 AUSTRALIA
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EMAIL: Yolanda.Shave@anu.edu.au

3 February 2009

Ms Wienta Diarsvitri
Australian Demographic and Social Research Institute
The Australian National University
ACT 0200

Dear Ms Diarsvitri,

Protocol 2008/567

Carving the future: Prevent today's youth from becoming tomorrow's HIV/AIDS victims

On behalf of the Human Research Ethics Committee I am pleased to advise that the above-noted protocol was approved on 30 January 2009.

For your information:

1. Under the NHMRC/AVCC National Statement on Ethical Conduct in Human Research we are required to follow up research that we have approved. Once a year (or sooner for short projects) we shall request a brief report on any ethical issues which may have arisen during your research or whether it proceeded according to the plan outlined in the above protocol.
2. Please notify the committee of any changes to your protocol in the course of your research, and when you complete or cease working on the project.
3. Please notify the Committee immediately if any unforeseen events occur that might affect continued ethical acceptability of the research work.
4. The validity of the current approval is five years' maximum from the date shown approved. For longer projects you are required to seek renewed approval from the Committee.

Yours sincerely,

Ms Yolanda Shave
Secretary, Human Research Ethics Committee

Appendix 2. Questionnaire in English

Information

Your participation in the pre-test, post-test and self administered questionnaire are voluntary, so you may leave the classroom if you do not want to participate without any consequences. You may also withdraw at any time without any consequences, and you may leave any question if you do not want to answer it.

If you decide to participate, I really appreciate your participation. Your participation will be fundamental in determining the impact of the *Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans* study. Please take the time to answer the questions as honestly and seriously as you can.

You will need around one hour to complete this self-administered questionnaire. This is not a school test and there is no negative consequence or adverse effect related to your answers or participation in the research.

For the purpose of the questionnaire, sexual intercourse means vaginal or anal intercourse. The questions apply to all sexual relationships: male-female, female-female and male-male.

Each of you has been given a coded number. Please write the number in your answer sheet. Your name will not be disclosed in any published report.

Part 1.

Please read the following statements and indicate whether each statement is true or false by circling one symbol beside each statement.

Key :

T = True
F = False

1.	Washing genitals after having sex will wash out the sperm and protect against HIV infection, sexually transmitted infections, and pregnancy.	T F
2.	Most sexual assaults are committed by strangers.	T F
3.	AIDS and other sexually transmitted infections are preventable diseases.	T F
4.	Someone can be infected with HIV for more than ten years without showing any symptoms.	T F
5.	If a guy pulls his penis out of a girl in time (before he ejaculates), he can be sure to prevent HIV infection, sexually transmitted infections and pregnancy.	T F
6.	Many people with sexually transmitted infections have no signs of illness.	T F
7.	Abstinence is the most effective method of avoiding HIV infection, sexually transmitted infections and unintended pregnancy.	T F
8.	Teenagers can get pill contraception and condoms from a pharmacy without permission from a parent.	T F
9.	A person can get the same sexually transmitted infections more than once.	T F
10.	You can be infected with HIV for up to nine months before the virus is detected.	T F
11.	STIs are rare among teenagers.	T F
12.	Pill contraception can protect a woman from sexually transmitted infections, especially gonorrhoea.	T F
13.	A woman is protected from pregnancy the day she begins taking the pill.	T F
14.	HIV infection can be cured if diagnosed and treated early.	T F

15.	Condoms can give 100 percent protection against HIV and all sexually transmitted infections if they are put on correctly.	T	F
16.	A person who is suffering from sexually transmitted infections will increase his/her risk to get HIV infection.	T	F
17.	Untreated sexually transmitted infections can lead to both men and women being unable to have children.	T	F
18.	Someone can get HIV infection from vaginal, anal, or oral sexual contact.	T	F
19.	The correct way to use a condom is to pull it on tight so there is no space between the condom and the end of the penis.	T	F
20.	Girls can get pregnant even if the penis doesn't actually enter the vagina.	T	F
21.	Urinating after sex will wash out the sperm and protect against HIV infection, sexually transmitted infections, and pregnancy.	T	F
22.	An HIV infected person can transmit the virus through toilet seat, water and door handle.	T	F
23.	You can tell a person is infected with HIV by the way he or she looks.	T	F
24.	Sharing needles to inject drugs is one way to get HIV.	T	F
25.	You can get a test for HIV and sexually transmitted infections at Indonesian Red Cross (PMI), hospitals, public health centers (<i>Puskemas</i>), Non-Governmental Organization (<i>LSM</i>), and private laboratory.	T	F

PART 2.

Please read the following situations and try to picture yourself in each scenario. Indicate the extent to which you agree or disagree by choosing an answer from the KEY and circling the appropriate answer beside each statement.

KEY

- SA = Strongly Agree
A = Agree
O = Neutral
D = Disagree
SD = Strongly Disagree

26.	Condom use creates doubt between sexual partner.	SD	D	O	A	SA
		1	2	3	4	5
27.	You should tell your partner if you are infected with HIV or other sexually transmitted infections.	SD	D	O	A	SA
		1	2	3	4	5
28.	The school and community should be told when someone has HIV infection.	SD	D	O	A	SA
		1	2	3	4	5
29.	If someone spends a lot of money on a date, you owe him/her at least a kiss.	SD	D	O	A	SA
		1	2	3	4	5
30.	Avoiding sex with a person other than your sexual partner makes you seem sexually weak.	SD	D	O	A	SA
		1	2	3	4	5
31.	Using a condom spoils the enjoyment of sexual intercourse.	SD	D	O	A	SA
		1	2	3	4	5
32.	If someone is wearing body-revealing clothes, you expect to have sex with him/her.	SD	D	O	A	SA
		1	2	3	4	5
33.	You may lose your partner if you refuse having sex with him/her.	SD	D	O	A	SA
		1	2	3	4	5

34.	Having sex is the best way to show affection to someone you love.	SD 1	D 2	O 3	A 4	SA 5
35.	You know how to protect yourself from HIV, other sexually transmitted infections and unintended pregnancy.	SD 1	D 2	O 3	A 4	SA 5
36.	To get a better partner you must have sexual intercourse with several partners.	SD 1	D 2	O 3	A 4	SA 5
37.	Having sex in the traditional celebration or ritual ceremony should be preserved as a cultural tradition.	SD 1	D 2	O 3	A 4	SA 5
38.	You should have sex after six months of dating.	SD 1	D 2	O 3	A 4	SA 5
39.	Limiting your sexual desire to only one partner will reduce your sexual pleasure.	SD 1	D 2	O 3	A 4	SA 5
40.	You should talk about sexuality, pregnancy, alcohol or drugs with your parents.	SD 1	D 2	O 3	A 4	SA 5
41.	If you talk about sexuality with your partner, it means that you want to have sex with him/her.	SD 1	D 2	O 3	A 4	SA 5
42.	A man can have premarital or extramarital sex, but a woman cannot.	SD 1	D 2	O 3	A 4	SA 5
43.	You are confident to see a medical professional if you have a symptom of sexually transmitted infections.	SD 1	D 2	O 3	A 4	SA 5
44.	Buying over the counter medicine is the best choice if you have ulcers and/or pus in the genitals or pain when urinating.	SD 1	D 2	O 3	A 4	SA 5
45.	Abstinence is the best HIV prevention measure that you should follow.	SD 1	D 2	O 3	A 4	SA 5
46.	Staying faithful to one uninfected sexual partner can reduce a person's chance of getting HIV infection.	SD 1	D 2	O 3	A 4	SA 5
47.	Young people should be taught how to use a condom correctly.	SD 1	D 2	O 3	A 4	SA 5
48.	Someone who carries a condom means that he/she is going to have sex.	SD 1	D 2	O 3	A 4	SA 5
49.	You are confident to tell your friends that being abstinence is a sign of emotional and moral maturity.	SD 1	D 2	O 3	A 4	SA 5
50.	Reproductive health education should not be taught at school as it encourages students to have sex.	SD 1	D 2	O 3	A 4	SA 5
51.	Women have the rights to decide how far to go in a relationship.	SD 1	D 2	O 3	A 4	SA 5
52.	Women have the rights to have a safe and pleasurable sexual life.	SD 1	D 2	O 3	A 4	SA 5
53.	Using a condom correctly every time people have sex will reduce their chance of getting HIV infection.	SD 1	D 2	O 3	A 4	SA 5
54.	HIV infected patient should not be allowed to go to school or work.	SD 1	D 2	O 3	A 4	SA 5
55.	You would persuade your partner to use alcohol to increase your chances of having sexual intercourse.	SD 1	D 2	O 3	A 4	SA 5

PART 3.

Please read the following situations and try to picture yourself in each scenario. Indicate the extent to which you agree or disagree by choosing an answer from the KEY and circling the appropriate answer beside each statement.

KEY

- SA = Strongly Agree
- A = Agree
- 0 = Neutral
- D = Disagree
- SD = Strongly Disagree

56.	If your partner wants to have sex with you without a condom, but you are afraid to lose your partner if you insist on using a condom, then you intend to have sex without a condom, anyway.	SD 1	D 2	O 3	A 4	SA 5
57.	If your partner wants to have sex with you, but you don't want to have sex before marriage, then you are confident to refuse your partner's request.	SD 1	D 2	O 3	A 4	SA 5
58.	Based on what you know about HIV infection and AIDS, if your partner wants to use a condom, then you intend to convince your partner that a condom is useless.	SD 1	D 2	O 3	A 4	SA 5
59.	If you are attending a party and some of your friends are drunk and use drug, but you don't want to lose your friends, then you intend to get drunk and use drug to be accepted by your peers.	SD 1	D 2	O 3	A 4	SA 5
60.	If you live in a place where majority of teenagers have sex before marriage, but you don't want to be thought of as being different, then you intend to have sex to be accepted by your peers.	SD 1	D 2	O 3	A 4	SA 5
61.	If you have received information that having multiple sexual partners increases your risk of getting HIV infection, then you intend to have sex with more than one sexual partner, anyway.	SD 1	D 2	O 3	A 4	SA 5
62.	If you really love your partner and you don't want to lose your partner, then you intend not to tell your partner about your HIV or other sexually transmitted infection status.	SD 1	D 2	O 3	A 4	SA 5
63.	If your friend told you that he/she is having genital ulcer/discharge/sore (penis, anal, and/or vagina), then you are confident to recommend that your friend visit VCT clinic for an exam or to talk about protection.	SD 1	D 2	O 3	A 4	SA 5
64.	Based on what you know about HIV infection and AIDS, you intend to engage in sexual activity with more than one partner.	SD 1	D 2	O 3	A 4	SA 5
65.	If you really want to have sex with a person, then you intend not to ask about their sexual history before having sex with his/her.	SD 1	D 2	O 3	A 4	SA 5
66.	If you have been dating for more than six months and you plan to marry your partner, then you intend to have sex with your partner before marriage.	SD 1	D 2	O 3	A 4	SA 5
67.	If you had a genital ulcer/discharge/sore (penis, anal, and/or vagina), but you want to have sex, then the first place you intend to go for treatment is pharmacy.	SD 1	D 2	O 3	A 4	SA 5
68.	If you have one permanent partner but you attend a traditional celebration or travel to other city, then you intend to have sex with other people.	SD 1	D 2	O 3	A 4	SA 5
69.	Based on what you know about HIV infection and AIDS, you are not confident that you can protect yourself from becoming infected.	SD 1	D 2	O 3	A 4	SA 5

70.	Based on what you know about HIV infection and AIDS, then you are not confident to get tested for HIV infection or other sexually transmitted infections	SD 1	D 2	O 3	A 4	SA 5
71.	Based on what you know about HIV infection and AIDS, then you are not confident of using a condom or request that your partner use a condom.	SD 1	D 2	O 3	A 4	SA 5
72.	Based on what you know about HIV infection and AIDS, then you are not confident to postpone sexual activity.	SD 1	D 2	O 3	A 4	SA 5
73.	Based on what you know about HIV infection and STIs, then you are confident to visit a medical professional to get more information on prevention and treatment of HIV or sexually transmitted infection.	SD 1	D 2	O 3	A 4	SA 5

74. What is your sex? Please circle your answer.

- 0. Male
- 1. Female

75. What is your sexual orientation? Please circle your answer.

- 0. Homosexual
- 1. Heterosexual
- 2. Bisexual
- 3. Transgender

76. When is your birthdate?

Date Month Year

77. What is your parents' ethnicity?

Father Mother

78. What are your parents' occupation?

Father Mother

79. What is your religion?

- 0. Catholic
- 1. Protestant
- 2. Islam
- 3. Hindu
- 4. Buddha
- 5. Others, please state:

80. What is the level of your religiosity according to you?

- 0. Not religious
- 1. Ordinary
- 2. Very religious

81. This question is related to your previous sexual experience. Have you ever engaged in any of the sexual experiences below? Please circle your answer.

- a. Sexual experiences above the waist (e.g. intense hugging, cheek kissing, lip kissing, and breast fondling)
 - 0. No
 - 1. Yes
- b. Sexual experience below the waist (e.g. genital fondling)
 - 0. No
 - 1. Yes
- c. Oral sex
 - 0. No
 - 1. Yes
- d. Vaginal sex

- 0. No
- 1. Yes
- e. Anal sex
 - 0. No
 - 1. Yes

82. Did you engage in the sexual experience below in the previous month? Please circle your answer.
- a. Sexual experiences above the waist (e.g. intense hugging, cheek kissing, lip kissing, and breast fondling)
 - 0. No
 - 1. Yes
 - b. Sexual experience below the waist (e.g. genital fondling)
 - 0. No
 - 1. Yes
 - c. Oral sex
 - 0. No
 - 1. Yes
 - d. Vaginal sex
 - 0. No
 - 1. Yes
 - e. Anal sex
 - 0. No
 - 1. Yes

For those of you who have experienced sexual intercourse, please continue to the next questions, please be honest and remember that your confidentiality is safe.

For those of you who have not yet experienced any premarital intercourse, please go to question 100.

83. How old were you, when you had experienced your first sexual intercourse?
- 0. ≤ 12 tahun
 - 1. 13-15 tahun
 - 2. ≥ 15 tahun
84. What motivated you to have your first sexual intercourse? Please give a brief description

85. Where did you have your first sexual intercourse?
- 0. In your house
 - 1. In your friend's house
 - 2. In other place, please specify
86. Who was your partner when you had had your first sexual intercourse?
- 0. Friend
 - 1. Sexual workers
 - 2. Others, please specify
87. How many sexual partners have you ever had in your lifetime? Please circle your answer.
- 0. 1
 - 1. 2-5
 - 2. ≥ 6
88. How many sexual partners did you have in the previous month?
- 0. 0
 - 1. 1
 - 2. 2-5
 - 3. ≥ 6
89. What is the sex of your sexual partners?

- 0. Males only
- 1. Females only
- 2. Males and females

90. What is the frequency that you use a condom in the previous month?

- 0. Never
- 1. Rarely
- 2. Sometimes
- 3. Often
- 4. Always

91. Did you use a condom in your last sexual intercourse?

- 0. No
- 1. Yes

92. If you answered no to question no. 87, can you give the main reason why you do not use a condom in your last sexual intercourse?

- 0. I don't have a condom
- 1. I am not sure how to use a condom correctly
- 2. My partner is faithful to me
- 3. Condom is useless
- 4. Save money and time
- 5. I was drunk
- 6. I am afraid to ask my partner to use a condom
- 7. I don't like to use a condom
- 8. I don't want to show distrust to my partner
- 9. I use other method of prevention from getting pregnant or infection
- 10. Others, please specify:

93. What is the method that you are using to protect you or your partner from getting pregnant or sexually transmitted infection?

- 0. I don't use any contraception methods
- 1. Condom
- 2. Withdrawal
- 3. Pill
- 4. Traditional medicine
- 5. Calendar method
- 6. Others, please specify

94. Have you ever experienced pain when urinating with thick or clear discharge from penis or vagina?

- 0. No
- 1. Yes

95. Had you ever had a painless sore in the penis or vagina?

- 0. No
- 1. Yes

96. Where did you seek treatment to alleviate the symptoms of pain when urinating with clear or thick discharge, or painless sore in the penis or vagina?

- 0. I bought over-the-counter medicine
- 1. I went to a doctor
- 2. I went to a midwife
- 3. I went to a nurse
- 4. I went to a traditional healer
- 5. Others, please specify

Questions number 97 to 99 are for female students who had engaged in a sexual intercourse. For female students who had never engaged in a sexual intercourse and male students please go to question 98.

97. Have you ever been pregnant?

- 0. No
- 1. Yes

98. If you have ever been pregnant, have you ever tried to terminate your pregnancy?

- 0. No
- 1. Yes

99. If you had ever tried to terminate your pregnancy, who had carried out the abortion?

- 0. Myself
- 1. Midwife
- 2. Doctor
- 3. Traditional healer
- 4. Others, please specify

Questions number 100 to 123 are for all female and male students.

100. Have you ever been tested for HIV or other sexually transmitted infections?

- 0. No
- 1. Yes

101. As far as you know, how many of of your friends have engaged in a sexual intercourse?

- 0. No one
- 1. Some
- 2. Many
- 3. All

102. As far as you know, how many of of your friends have ever been pregnant?

- 0. No one
- 1. Some
- 2. Many
- 3. All

103. As far as you know, how many of of your friends have ever had an abortion?

- 0. No one
- 1. Some
- 2. Many
- 3. All

104. What is your main source of information on HIV, other sexually transmitted infections, and sexuality?

- 0. Media : television, radio, films, newspapers, magazines.
- 1. School
- 2. Parents
- 3. Friends
- 4. Others, please specify

105. How much would you like to know about menstrual cycle from school?

- 0. No need
- 1. A little more
- 2. A lot more

106. How much would you like to know about how pregnancy occurs from school?

- 0. No need

1. A little more
 2. A lot more
107. How much would you like to know about sexually transmitted infections from school?
0. No need
 1. A little more
 2. A lot more
108. How much would you like to know about contraceptive methods from school?
0. No need
 1. A little more
 2. A lot more
109. How much would you like to know about how to prevent HIV from school?
0. No need
 1. A little more
 2. A lot more
110. Have you ever smoked?
0. No
 1. Yes
111. Are you currently smoking?
0. No
 1. Yes
112. Have you ever drunk alcoholic beverages?
0. No
 1. Yes
113. Are you currently drinking alcoholic beverages?
0. No
 1. Yes
114. Have you ever used drugs?
0. No
 1. Yes
115. Are you currently using drugs?
0. No
 1. Yes
116. With whom are you living now?
0. With parents
 1. With relatives
 2. I rent a room
117. Who is the main source of funding for your senior high school tuition fee?
0. My parents
 1. My relatives
 2. Friends
 3. Myself
118. If you pay your senior high school tuition fee, what is your occupation?
119. Who has the main influence in your life?
0. Parents
 1. Teachers

- 2. Friends
- 3. Girlfriend or boyfriend
- 4. Others, please specify

120. What norms have the main influence in your life?

- 0. Religious norms
- 1. Cultural norms
- 2. Parental norms
- 3. Others, please specify

121. What is your main extracurricular activity?

- 0. Sports
- 1. Music
- 2. Youth organization
- 3. Religious activities
- 4. Others, please specify

122. Was there HIV, AIDS, or other sexually transmitted infections awareness in your school?

- 0. No
- 1. Yes

123. Who gave the HIV, AIDS, or other sexually transmitted infections awareness in your school?

- 0. Teachers
- 1. Doctor or paramedics
- 2. Friends
- 3. Others, please specify

Questions number 124-128 are for students who have ever attended the ‘Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans’ program in March 2009:

124. If you have ever attended the ‘Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans’ program in March 2009, what topic did you remember the most from the program?
.....

125. If you have ever attended the ‘Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans’ program in March 2009, what topic was the most useful for you?
.....

126. How was the explanation of the materials in the ‘Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans’ module in March 2009?

- 0. Not clear
- 1. Quite clear
- 2. Very clear

127. What is your plan in your sexual life after you have learned the ‘Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans’ module in March 2009? You can have more than one answers.

- 0. I am going to be abstinent before marriage
- 1. I am going to be faithful to my partner
- 2. I am going to use a condom when I have sex
- 3. Others, please specify

128. Please write your suggestion for the HIV and other sexually transmitted infections prevention program in Papua and West Papua Provinces

Thank you so much for your participation, please insert the questionnaire in the envelope, and seal it. Please give the envelope to the research team.

Appendix 3. Questionnaire in Indonesian and Papuan Malay language

Petunjuk pengisian

Kuesioner ini tidak ada hubungannya dengan nilai sekolah anda, dan tidak ada konsekuensi negatif apapun dari pihak manapun atas jawaban yang anda berikan. Jawaban yang anda berikan akan benar-benar dijaga kerahasiaannya.

Partisipasi anda dalam pengisian kuesioner harus benar-benar atas kemauan anda sendiri, tanpa paksaan dari pihak manapun. Pengisian kuesioner dilakukan di dalam kelas. Jika anda menolak untuk berpartisipasi dalam penelitian ini, maka anda bisa meninggalkan kelas. Anda juga berhak untuk tidak menjawab pertanyaan yang ada dalam kuesioner. Namun, saya berharap anda bersedia berpartisipasi dalam penelitian ini dan bersedia menjawab seluruh pertanyaan yang ada, karena jawaban dan informasi yang anda berikan sangat berguna untuk mengevaluasi hasil dari penelitian ini, untuk mencegah meluasnya penularan HIV/AIDS. Saya persilakan anda untuk membaca dengan seksama dan menjawab seluruh pertanyaan dengan serius dan sejujur-jujurnya.

Kuesioner ini terdiri dari 128 pertanyaan, yang membutuhkan waktu sekitar satu jam untuk mengisinya. Silakan diperiksa kelengkapan soalnya. Silakan menuliskan nomor kode yang diberikan tim peneliti di lembar tes ini. Nama anda dan nama sekolah anda tidak akan disebutkan dalam publikasi apapun.

Dalam kuesioner ini, yang dimaksud dengan hubungan seksual adalah hubungan kelamin termasuk seks anal dan vaginal, baik pada hubungan seks sesama lelaki, sesama wanita, maupun hubungan lelaki dan wanita.

Bagian 1.

Lingkirlah satu jawaban berdasarkan pengetahuan anda, dengan serius dan sejujur-jujurnya.

Pilihan jawaban :

B = Benar (True)

S = Salah (False)

1.	Membersihkan alat kemaluan perempuan dengan cairan pembersih alat kemaluan bisa mengeluarkan sperma, mencegah kehamilan, HIV dan penyakit kelamin lainnya. Membersihkan perempuan pu barang di bawah dengan cairan seperti betadin bisa mengeluarkan sperma, mencegah HIV dan penyakit kelamin lainnya.	B S
2.	Hampir semua pelecehan seksual atau perkosaan dilakukan oleh orang yang tidak kita kenal. Hampir semua pelecehan seksual atau perkosaan dilakukan oleh orang yang torang tara kenal.	B S
3.	AIDS dan penyakit kelamin lainnya termasuk penyakit yang bisa dicegah penularannya.	B S
4.	Seseorang bisa menderita HIV selama lebih dari sepuluh tahun tanpa menunjukkan gejala.	B S
5.	Menarik penis keluar dari vagina sebelum ejakulasi (= sebelum penis mengeluarkan cairan sperma) saat berhubungan seksual bisa mencegah penularan HIV dan penyakit kelamin lainnya. Menarik laki-laki pu batang dari perempuan pu barang sebelum laki-laki pu batang keluar sperma waktu baku naik boleh mencegah penularan HIV dan penyakit kelamin lainnya.	B S
6.	Banyak orang menderita penyakit kelamin tetapi tidak menunjukkan gejala. Banyak orang menderita penyakit kelamin tarada menunjukkan gejala.	B S
7.	Abstinen (=tidak melakukan hubungan seksual sebelum menikah) merupakan pilihan terbaik untuk mencegah HIV, penyakit kelamin lainnya dan kehamilan yang tidak diinginkan. Tidak baku naik sebelum diberkati jalan terbaik untuk mencegah HIV, penyakit	B S

	kelamin lainnya dan tara mau hamil.	
8.	Remaja bisa mendapatkan pil KB dan kondom dari klinik KB, dokter atau apotek tanpa harus minta ijin dari orangtua.	B S
9.	Seseorang bisa terinfeksi penyakit kelamin yang sama lebih dari satu kali.	B S
10.	Kalau seseorang terinfeksi HIV, maka 9 bulan kemudian virus baru bisa diketahui dengan pemeriksaan laboratorium.	B S
11.	Penyakit kelamin jarang terjadi pada remaja.	B S
12.	Pil KB bisa mencegah perpempuan tertular penyakit kelamin, terutama gonore (kencing nanah).	B S
13.	Seorang perempuan bisa tidak hamil sejak hari pertama dia minum pil KB. Seorang perempuan boleh tara hamil kalau minum pil KB satu kali.	B S
14.	Orang yang terinfeksi HIV bisa disembuhkan kalau mendapatkan pengobatan sejak dini (sejak awal).	B S
15.	Kalau digunakan dengan benar, kondom bisa memberikan perlindungan 100% terhadap semna penyakit kelamin dan kehamilan.	B S
16.	Orang yang menderita penyakit kelamin lebih beresiko terinfeksi HIV.	B S
17.	Penyakit kelamin yang tidak diobati dengan benar bisa menyebabkan laki-laki atau perempuan tidak bisa punya anak. Penyakit kelamin yang tara diobati dengan benar bisa menyebabkan laki-laki atau perempuan tarada anak.	B S
18.	Orang bisa terinfeksi HIV dari hubungan sex melalui vagina (perempuan pu barang), anus atau mulut.	B S
19.	Cara terbaik untuk menggunakan kondom dengan benar adalah dengan cara menariknya ke pangkal penis sampai tidak ada sisa kondom di ujung penis. Cara terbaik untuk pakai kondom adalah dengan cara menariknya ke pangkal laki-laki pu batang sampai tarada sisa kondom di ujung laki-laki pu batang.	B S
20.	Seorang perempuan bisa hamil meskipun saat ejakulasi (= saat penis mengeluarkan cairan sperma) penis tidak masuk dalam ke vagina. Seorang perempuan bisa hamil meskipun saat baku naik laki-laki pu batang tidak masuk dalam ke perempuan pu barang.	B S
21.	Untuk menghindari penyakit kelamin, maka setelah melakukan hubungan seksual sebaiknya buang air kecil karena virus dan bakteri penyebab penyakit kelamin bisa ikut terbuang bersama air kencing. Untuk menghindari penyakit kelamin, maka setelah baku naik sebaiknya kencing karena virus dan bakteri bisa keluar bersama kencing.	B S
22.	Orang yang kena HIV bisa menularkan virus HIV ke orang lain melalui tempat duduk di toilet, air di bak, dan pegangan pintu kamar mandi yang dipakainya.	B S
23.	Anda tahu seseorang terinfeksi HIV dari penampilannya.	B S
24.	Orang yang kena HIV bisa menularkan virus HIV melalui jarum suntik yang dipakai bergantian.	B S
25.	Anda bisa melakukan tes HIV dan penyakit kelamin di Palang Merah Indonesia (PMI), Puskesmas, dan klinik milik Lembaga Swadaya Masyarakat (LSM).	B S

BAGIAN 2

Lingkarilah satu jawaban (nomor) yang mencerminkan sikap anda dengan serius dan sejuju-jujurnya.

Pilihan jawaban:

STS = Sangat tidak setuju (Strongly disagree)

TS = Tidak setuju (disagree)

- O = Bukan tidak setuju dan bukan setuju, netral
 S = Setuju (Agree)
 SS = Sangat setuju (Strongly agree)

26.	Menggunakan kondom menimbulkan kecurigaan pada pasangan.	STS	TS	O	S	SS
		1	2	3	4	5
27.	Anda perlu memberitahu pasangan anda jika anda terinfeksi HIV atau penyakit kelamin lainnya.	STS	TS	O	S	SS
		1	2	3	4	5
28.	Sekolah dan masyarakat perlu diberitahu jika ada orang yang terinfeksi HIV.	STS	TS	O	S	SS
		1	2	3	4	5
29.	Kalau seseorang telah memberi anda berbagai hadiah kepada anda, maka anda merasa berhutang padanya paling tidak dengan ciuman.	STS	TS	O	S	SS
		1	2	3	4	5
30.	Tidak melakukan hubungan sex (tara baku naik) dengan orang yang bukan pasangan anda membuat anda merasa lemah.	STS	TS	O	S	SS
		1	2	3	4	5
31.	Menggunakan kondom akan mengurangi kenikmatan dalam berhubungan seksual. Pakai kondom akan mengurangi kenikmatan waktu baku naik.	STS	TS	O	S	SS
		1	2	3	4	5
32.	Kalau seseorang memakai pakaian yang memperlihatkan bagian badannya (seperti memakai rok mini atau belahan dada rendah) maka anda berharap mau baku naik dengannya.	STS	TS	O	S	SS
		1	2	3	4	5
33.	Anda bisa kehilangan pasangan, jika menolak berhubungan seks dengannya (tara baku naik)	STS	TS	O	S	SS
		1	2	3	4	5
34.	Melakukan hubungan seksual merupakan cara terbaik untuk menunjukkan perhatian kepada seseorang yang anda cintai. Baku naik merupakan cara terbaik untuk menunjukkan rasa cinta.	STS	TS	O	S	SS
		1	2	3	4	5
35.	Anda merasa bisa menjaga diri anda sendiri dari kehamilan yang tara diinginkan, HIV dan penyakit kelamin lainnya.	STS	TS	O	S	SS
		1	2	3	4	5
36.	Untuk mendapatkan pasangan yang lebih baik, anda perlu melakukan hubungan sex dengan beberapa orang.	STS	TS	O	S	SS
		1	2	3	4	5
37.	Melakukan hubungan sex saat pesta adat perlu diteruskan.	STS	TS	O	S	SS
		1	2	3	4	5
38.	Setelah berpacaran selama enam bulan, seharusnya anda baku naik dengan pacar anda.	STS	TS	O	S	SS
		1	2	3	4	5
39.	Membatasi hubungan sex dengan satu orang saja akan mengurangi kenikmatan seksual.	STS	TS	O	S	SS
		1	2	3	4	5
40.	Anda perlu diskusi dengan orangtua anda tentang seksualitas, kehamilan, minuman keras dan narkotika.	STS	TS	O	S	SS
		1	2	3	4	5
41.	Kalau anda membicarakan masalah hubungan seksual dengan pasangan anda, berarti anda ingin melakukan hubungan seksual dengannya. Kalan anda bicara masalah baku naik dengan pacar anda, berarti anda man baku naik dengan pacar anda.	STS	TS	O	S	SS
		1	2	3	4	5
42.	Laki-laki boleh berhubungan sex sebelum menikah dan sesudah menikah dengan orang yang bukan pasangannya, tapi perempuan tidak boleh.	STS	TS	O	S	SS
		1	2	3	4	5
43.	Anda yakin akan pergi ke dokter, perawat atau bidan jika anda punya gejala penyakit kelamin	STS	TS	O	S	SS
		1	2	3	4	5
44.	Membeli obat bebas merupakan pilihan terbaik jika anda punya gejala penyakit kelamin.	STS	TS	O	S	SS
		1	2	3	4	5

45.	Tidak melakukan hubungan sex merupakan cara terbaik untuk mencegah HIV yang perlu anda ikuti.	STS 1	TS 2	O 3	S 4	SS 5
46.	Setia kepada satu orang yang tidak terinfeksi HIV bisa mengurangi resiko terinfeksi HIV.	STS 1	TS 2	O 3	S 4	SS 5
47.	Remaja perlu diajari cara memakai kondom dengan benar.	STS 1	TS 2	O 3	S 4	SS 5
48.	Kalau seseorang membawa kondom berarti dia ada rencana mau berhubungan sex (baku naik).	STS 1	TS 2	O 3	S 4	SS 5
49.	Anda bisa yakin memberitahu teman-teman anda bahwa tara baku naik merupakan tanda kematangan emosi dan moral.	STS 1	TS 2	O 3	S 4	SS 5
50.	Pendidikan kesehatan reproduksi tidak perlu diajarkan di sekolah karena akan membuat murid ingin melakukan hubungan sex.	STS 1	TS 2	O 3	S 4	SS 5
51.	Perempuan berhak memutuskan sejauh mana dia ingin melakukan hubungan dengan seseorang.	STS 1	TS 2	O 3	S 4	SS 5
52.	Perempuan punya hak untuk mendapatkan kehidupan seksual yang aman dan meyenangkan.	STS 1	TS 2	O 3	S 4	SS 5
53.	Memakai kondom dengan benar akan mengurangi resiko terinfeksi HIV.	STS 1	TS 2	O 3	S 4	SS 5
54.	Orang yang terinfeksi HIV tidak boleh bersekolah atau bekerja.	STS 1	TS 2	O 3	S 4	SS 5
55.	Anda akan meyakinkan pasangan anda untuk minum minuman keras, untuk meningkatkan kemungkinan berhubungan sex.	STS 1	TS 2	O 3	S 4	SS 5

BAGIAN 3.

Bacalah skenario situasi berikut, dan cobalah untuk menempatkan diri anda seolah-olah anda mengalami situasi tersebut. Pilihlah satu jawaban yang bisa mewakili keinginan berperilaku anda dengan serius dan sejujur-jujurnya.

Pilihan jawaban:

STS = Sangat tidak setuju (Strongly disagree)

TS = Tidak setuju (Disagree)

O = Bukan tidak setuju dan bukan setuju, netral

S = Setuju (Agree)

SS = Sangat setuju (Strongly agree)

56.	Kalau pasangan anda ingin berhubungan sex tanpa kondom, dan anda takut putus dengan pasangan anda jika anda memaksanya pakai kondom, maka anda setuju untuk berhubungan sex tanpa kondom.	STS 1	TS 2	O 3	S 4	SS 5
57.	Anda pergi dengan pacar anda yang sangat anda cintai. Pacar anda mengajak baku naik. Kalau anda tara mau baku naik sebelum diberkati, maka anda bisa yakin menolak permintaannya.	STS 1	TS 2	O 3	S 4	SS 5
58.	Berdasarkan pengetahuan anda tentang HIV dan AIDS, jika pasangan anda ingin memakai kondom, maka anda akan meyakinkan pasangan anda bahwa memakai kondom tidak ada gunanya.	STS 1	TS 2	O 3	S 4	SS 5
59.	Anda sedang menghadiri pesta dan sebagian teman anda mabuk dan menggunakan narkotika, tapi anda tidak ingin kehilangan teman anda, maka anda akan minum minuman keras tersebut dan menggunakan narkotika supaya bisa diterima teman-teman anda.	STS 1	TS 2	O 3	S 4	SS 5
60.	Anda berada di lingkungan yang sebagian besar remajanya terbiasa baku naik sebelum diberkati, tapi anda tidak ingin berbeda dari teman anda, maka anda akan baku naik juga supaya bisa diterima teman-	STS 1	TS 2	O 3	S 4	SS 5

	teman anda.					
61.	Jika anda tahu bahwa punya banyak pasangan sex meningkatkan resiko terinfeksi HIV, maka anda tetap akan baku naik dengan lebih dari satu orang.	STS	TS	O	S	SS
		1	2	3	4	5
62.	Anda sangat mencintai pasangan anda dan tidak ingin kehilangan dia, maka anda tidak akan memberitahunya jika anda terinfeksi HIV atau penyakit kelamin lainnya.	STS	TS	O	S	SS
		1	2	3	4	5
63.	Jika teman anda memberitahu anda bahwa dia punya luka di kemaluannya atau nyeri saat kencing atau anus, maka anda yakin bisa memberitahunya untuk memeriksakan diri ke klinik VCT.	STS	TS	O	S	SS
		1	2	3	4	5
64.	Berdasarkan pengetahuan anda tentang HIV dan AIDS, maka anda ingin berhubungans ex (baku naik) dengan lebih dari satu orang.	STS	TS	O	S	SS
		1	2	3	4	5
65.	Jika anda ingin baku naik dengan seseorang, maka anda tidak ingin menanyakan masalah seksualnya sebelum baku naik dengannya.	STS	TS	O	S	SS
		1	2	3	4	5
66.	Jika anda sudah berpacaran lebih dari 6 bulan dan anda punya rencana menikah pacar anda, maka anda akan baku naik dengannya.	STS	TS	O	S	SS
		1	2	3	4	5
67.	Jika anda punya luka di kemaluan atau anus atau nyeri saat kencing, tapi anda ingin baku naik, maka pertama kali yang anda lakukan adalah membeli obat di apotek.	STS	TS	O	S	SS
		1	2	3	4	5
68.	Jika anda telah memiliki pasangan, tapi anda menghadiri pesta adat atau anda bepergian, maka anda akan baku naik dengan orang lain.	STS	TS	O	S	SS
		1	2	3	4	5
69.	Berdasarkan pengetahuan anda tentang HIV dan AIDS, maka anda yakin bisa menjaga diri anda supaya tidak terinfeksi penyakit kelamin.	STS	TS	O	S	SS
		1	2	3	4	5
70.	Berdasarkan pengetahuan anda tentang HIV dan AIDS, maka anda merasa yakin untuk melakukan tes HIV atau penyakit kelamin lainnya	STS	TS	O	S	SS
		1	2	3	4	5
71.	Berdasarkan pengetahuan anda tentang HIV dan AIDS, maka anda tidak yakin untuk memakai kondom atau meminta pasangan anda untuk memakai kondom.	STS	TS	O	S	SS
		1	2	3	4	5
72.	Berdasarkan pengetahuan anda tentang HIV dan AIDS, maka anda tidak yakin bisa menunda aktivitas seksual anda.	STS	TS	O	S	SS
		1	2	3	4	5
73.	Berdasarkan pengetahuan anda tentang HIV dan AIDS, maka anda yakin akan pergi ke tenaga medis (dokter, perawat atau bidan) untuk mendapatkan informasi tentang pencegahan dan pengobatan HIV atau penyakit kelamin lainnya.	STS	TS	O	S	SS
		1	2	3	4	5

74. Jenis kelamin anda:

- 0. Laki-laki
- 1. Perempuan

75. Apa orientasi seksual anda?

- 0. Homoseksual (tertarik dengan sesama jenis kelamin)
- 1. Heteroseksual (tertarik dengan lawan jenis)
- 2. Biseksual (tertarik dengan sesama jenis dan lawan jenis)
- 3. Waria (laki-laki yang suka berpenampilan seperti wanita)

76. Kapan anda lahir?

Tanggal Bulan Tahun

77. Apa suku bangsa orang tua anda?

Ayah Ibu

78. Apa pekerjaan orangtua anda?

Ayah Ibu

79. Apa agama anda?

0. Katolik
1. Protestan
2. Islam
3. Hindu
4. Budha
5. Lainnya, tuliskan

80. Bagaimana ketaatan anda dalam beragama?

0. Kurang taat
1. Biasa
2. Sangat taat

81. Apakah anda pernah memiliki pengalaman seksual berikut ini?

- a. Pengalaman seksual sebatas pinggang ke atas (berpelukan mesra, mencium/dicium di pipi, mencium/dicium di bibir, meraba/diraba di payudara)
 0. Tidak
 1. Ya
- b. Pengalaman seksual sebatas pinggang ke bawah (meraba/diraba alat kelamin perempuan pu barang atau laki-laki pu batang)
 0. Tidak
 1. Ya
- c. Oral seks (mulut pada perempuan pu barang atau laki-laki pu batang atau anus)
 0. Tidak
 1. Ya
- d. Seks vagina (laki-laki pu batang masuk ke perempuan bu barang)
 0. Tidak
 1. Ya
- e. Seks anal (laki-laki pu batang masuk ke anus laki-laki atau perempuan)
 0. Tidak
 1. Ya

82. Apakah anda pernah memiliki pengalaman seksual berikut ini bulan lalu?

- a. Pengalaman seksual sebatas pinggang ke atas (berpelukan mesra, mencium/dicium di pipi, mencium/dicium di bibir, meraba/diraba di payudara)
 0. Tidak
 1. Ya
- b. Pengalaman seksual sebatas pinggang ke bawah (meraba/diraba alat kelamin perempuan pu barang atau laki-laki pu batang)
 0. Tidak
 1. Ya
- c. Oral seks (mulut pada perempuan pu barang atau laki-laki pu batang atau anus)
 0. Tidak
 1. Ya
- d. Seks vagina (laki-laki pu batang masuk ke perempuan bu barang)
 0. Tidak
 1. Ya
- e. Seks anal (laki-laki pu batang masuk ke anus laki-laki atau perempuan)
 0. Tidak
 1. Ya

Bagi anda yang pernah melakukan hubungan seksual (baku naik), silakan mengisi pertanyaan berikut dengan jujur. Nama anda dan sekolah anda tidak akan disebutkan dalam laporan atau tulisan lainnya.

Jika anda belum pernah melakukan hubungan seksual, silakan langsung mengisi pertanyaan nomor 100 dan seterusnya.

83. Berapa usia anda saat anda melakukan hubungan seksual pertama kali?
0. \leq 12 tahun
 1. 13-15 tahun
 2. \geq 15 tahun
84. Apa yang mendorong anda untuk melakukan hubungan seksual pertama kali?
.....
85. Di mana anda melakukan hubungan seksual pertama kali?
0. Di rumah sendiri
 1. Di rumah teman
 2. Di tempat lain, sebutkan
86. Siapa pasangan anda ketika melakukan hubungan seksual pertama kali?
0. Teman
 1. Pekerja seks
 2. Lainnya, sebutkan
87. Berapa orang yang pernah melakukan hubungan seksual dengan anda selama ini?
0. 1
 1. 2-5
 2. \geq 6
88. Berapa orang yang pernah melakukan hubungan seksual dngan anda bulan lalu?
0. 0
 1. 1
 2. 2-5
 3. \geq 6
89. Apa jenis kelamin pasangan seksual anda selama ini?
0. Laki-laki saja
 1. Perempuan saja
 2. Laki-laki dan perempuan
90. Seberapa sering anda menggunakan kondom bulan lalu?
0. Tidak pernah
 1. Jarang
 2. Kadang-kadang
 3. Sering
 4. Selalu
91. Apakah anda menggunakan kondom saat melakukan hubungans eksual yang terakhir?
0. Tidak
 1. Ya
92. Tolong berikan alasan utama jika anda tidak menggunakan kondom saat berhubungan seksual yang terakhir
0. Saya tidak (tara) punya kondom
 1. Saya tidak tahu bagaimana cara menggunakan kondom dengan benar
 2. Pasangan saya setia kepada saya
 3. Kondom tidak ada gunanya
 4. Hemat uang dan waktu
 5. Saya mabuk
 6. Saya malu hati minta pasangan saya pakai kondom
 7. Saya tidak suka pakai kondom
 8. Saya tidak ingin menunjukkan curiga pada pasangan saya
 9. Saya memakai cara lain supaya saya / pasangan saya tidak hamil atau kena penyakit kelamin
 10. Lainnya, sebutkan

93. Cara pengaman apa yang anda pakai supaya pasangan anda / pasangan anda tidak hamil atau kena penyakit kelamin?
0. Saya tidak pakai apapun
 1. Kondom
 2. Menarik penis keluar dari vagina atau anus sebelum sperma keluar
 3. Pil
 4. Obat tradisional
 5. Perhitungan kalender
 6. Lainnya, sebutkan
94. Apa anda pernah mengalami nyeri / sakit saat buang air kecil disertai keluarnya cairan bening atau kental dari penis atau vagina?
0. Tidak
 1. Ya
95. Apa anda pernah mengalami luka yang tidak nyeri di penis atau vagina?
0. Tidak
 1. Ya
96. Ke mana anda mencari pertolongan jika anda mengalami nyeri / sakit saat buang air kecil disertai keluarnya cairan bening atau kental dari penis atau vagina, atau mengalami luka yang tidak nyeri di penis atau vagina?
0. Saya membeli obat sendiri
 1. Saya periksa ke dokter
 2. Saya periksa ke bidan
 3. Saya periksa ke perawat
 4. Saya periksa ke dukun
 5. Lainnya, sebutkan

Pertanyaan nomor 97 sampai 99 adalah untuk murid perempuan yang pernah melakukan hubungan seksual. Murid perempuan yang belum pernah melakukan hubungan seksual dan murid laki-laki silakan langsung mengisi pertanyaan nomor 100 dan seterusnya.

97. Apakah anda pernah hamil?
0. Ya
 1. Tidak
98. Apakah anda pernah menggugurkan kandungan?
0. Ya
 1. Tidak
99. Jika anda pernah menggugurkan kandungan, siapa yang melakukannya?
0. Saya sendiri
 1. Bidan
 2. Dokter
 3. Dukun
 4. Lainnya, sebutkan

Pertanyaan nomor 100 -123 ditujukan untuk semua murid laki-laki dan perempuan.

100. Apa anda pernah melakukan tes HIV atau penyakit kelamin lainnya?
0. Ya
 1. Tidak
101. Berapa banyak teman anda yang pernah melakukan hubungan seksual?
0. Tidak ada
 1. Beberapa
 2. Banyak
 3. Semua

102. Berapa banyak teman anda yang pernah hamil?
0. Tidak ada
 1. Beberapa
 2. Banyak
 3. Semua
103. Berapa banyak teman anda yang pernah menggugurkan kandungan?
0. Tidak ada
 1. Beberapa
 2. Banyak
 3. Semua
104. Dari mana sumber utama informasi anda tentang HIV, penyakit kelamin lainnya dan seksualitas?
0. Media (TV, radio, film, surat kabar, majalah)
 1. Sekolah
 2. Orangtua
 3. Teman
 4. Lainnya, sebutkan
105. Seberapa besar keinginan anda untuk mngetahui lebih jauh tentang siklus menstruasi dari sekolah?
0. Saya tidak membutuhkan informasi tersebut
 1. Sedikit
 2. Banyak
106. Seberapa besar keinginan anda untuk mngetahui lebih jauh tentang bagaimana terjadinya kehamilan dari sekolah?
0. Saya tidak membutuhkan informasi tersebut
 1. Sedikit
 2. Banyak
107. Seberapa besar keinginan anda untuk mngetahui lebih jauh tentang penyakit kelamin dari sekolah?
0. Saya tidak membutuhkan informasi tersebut
 1. Sedikit
 2. Banyak
108. Seberapa besar keinginan anda untuk mngetahui lebih jauh tentang metode kontrasepsi dari sekolah?
0. Saya tidak membutuhkan informasi tersebut
 1. Sedikit
 2. Banyak
109. Seberapa besar keinginan anda untuk mngetahui lebih jauh tentang cara mencegah HIV dari sekolah?
0. Saya tidak membutuhkan informasi tersebut
 1. Sedikit
 2. Banyak
110. Apakah anda pernah merokok?
0. Tidak
 1. Ya
111. Apakah saat ini anda masih merokok?
0. Tidak
 1. Ya
112. Apakah anda pernah minum minuman keras?
0. Tidak
 1. Ya
113. Apakah saat ini anda masih minum minuman keras?

0. Tidak
1. Ya
114. Apakah anda pernah menggunakan narkotika?
0. Tidak
1. Ya
115. Apakah saat ini anda masih menggunakan narkotika?
0. Tidak
1. Ya
116. Dengan siapa saat ini anda tinggal?
0. Dengan orangtua
1. Dengan keluarga selain orangtua
2. Saya menyewa kamar (kost)
117. Siapa yang membayar sebagian besar/seluruh biaya sekolah anda?
0. Orangtua saya
1. Keluarga selain orangtua saya
2. Teman
3. Saya sendiri
118. Jika anda membayar sendiri biaya sekolah anda, apa pekerjaan anda?
119. Siapa yang mempunyai pengaruh terbesar dalam hidup anda?
0. Orangtua saya
1. Guru
2. Teman
3. Pacar
4. Lainnya, sebutkan
120. Norma / aturan apa yang mempunyai pengaruh terbesar dalam hidup anda?
0. Norma / aturan agama
1. Norma / aturan adat
2. Norma / aturan orangtua
3. Lainnya, sebutkan
121. Apa kegiatan ekstra kurikuler utama anda?
0. Olahraga
1. Musik
2. Organisasi pemuda (misal: Karang Taruna, Pramuka, PMI)
3. Kegiatan rohani
4. Lainnya, sebutkan
122. Apakah pernah diberikan penjelasan tentang HIV, AIDS, atau penyakit kelamin lainnya di sekolah anda?
0. Tidak
1. Ya
123. Siapa yang memberikan penjelasan tentang HIV, AIDS, atau penyakit kelamin lainnya di sekolah anda?
0. Guru
1. Dokter, bidan atau perawat
2. Teman
3. Lainnya, sebutkan

122 Berapa kali anda pernah mendapat penjelasan tentang HIV/AIDS dan penyakit menular

seksual di sekolah?

123. Apa yang masih anda ingat dari penjelasan tentang HIV / AIDS di sekolah anda? (Anda boleh melingkari dan menjawab lebih dari satu jawaban)
- Penyebab HIV/AIDS
 - Cara pencegahan HIV/AIDS
 - Pengobatan HIV/AIDS
 - Pemeriksaan HIV/AIDS
 - Lain-lain, sebutkan

Pertanyaan nomor 124-128 merupakan evaluasi dari penjelasan program pencegahan HIV 'Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans'

124. Kalau anda sudah pernah mendapat penjelasan tentang program pencegahan HIV pada bulan Maret 2009 yang lalu, topik apa yang paling anda ingat dari penjelasan tersebut?
.....
125. Kalau anda sudah pernah mendapat penjelasan tentang program pencegahan HIV pada bulan Maret 2009 yang lalu, topik apa yang paling bermanfaat bagi anda?
.....
126. Bagaimana penilaian anda tentang penjelasan modul pencegahan HIV pada bulan Maret 2009 yang lalu?
- Tidak jelas
 - Kurang jelas
 - Sangat jelas
127. Apa yang akan anda lakukan berkaitan dengan kehidupan seksual anda setelah anda mendapatkan penjelasan tentang modul pencegahan HIV pada Bulan Maret yang lalu? Jawaban bisa lebih dari satu
- Ingin abstinen (tidak melakukan hubungan seksual sebelum menikah)
 - Ingin setia pada satu pasangan seksual saja
 - Ingin menggunakan kondom saat berhubungan seksual
 - Lainnya, sebutkan
128. Tuliskan saran anda untuk program pencegahan HIV di Papua dan Papua Barat
.....

Jika anda sudah selesai menjawab pertanyaan, silakan melipat kuesioner, memasukkannya ke dalam amplop yang telah disediakan, merekatkan amploponya, dan menyerahkannya kepada tim peneliti.

Saya sangat menghargai dan menyampaikan terima kasih atas kesediaan anda untuk berpartisipasi dalam penelitian ini.

TERIMA KASIH

Appendix 4. Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans module

This module consists of:

1. Introduction
2. Session 1. Changes during puberty, pregnancy, abstinence, and unprotected sex
3. Session 2. Refusals and delaying tactics
4. Session 3. Avoiding high risk situation and using protection

Introduction

The '*Reducing the Risk of HIV Infection: Intervention Trial for Young Papuans*' module presents an active approach to prevent HIV infection and other STIs, as well as unintended pregnancy. This module was adapted from '*Reducing the Risk: Building Skills to Prevent Pregnancy, STD and HIV*' (Barth 2004), and intended to motivate senior high school students, aged 16 years and over, to avoid high-risk behaviors and sexual practices, and encourage healthy and safer behavior and sexual practices.

Program Objectives

After completion of this program, the students will be able to:

- i. Evaluate the risks and lasting consequences of becoming an adolescent parent or becoming infected with HIV or other STIs.
- ii. Recognize that abstaining from sexual activity before marriage is the best choice, while using a condom correctly is another way to avoid HIV infection and other STIs, as well as an unintended pregnancy.
- iii. Conclude that factual information about conception and protection is essential for avoiding HIV infection and other STIs, as well as unintended pregnancy.
- iv. Demonstrate effective communication skills for remaining abstinent before marriage and for avoiding unprotected sexual intercourse.

Information

This program will provide accurate and unbiased information about the consequences of unprotected sex that may strengthen young people not to have sex and for those who are sexually active or want to initiate sex not to have it without protection. Knowing that many of their peers and many young people their age do not have sex will also help young people understand that they have a choice to abstain. However, if they do choose to have sex, then they must be responsible in their choice, meaning they have to use protection to avoid HIV infection and other STIs, as well as an unintended pregnancy (Barth 2004).

In order for information to influence decisions, students must personalize the information: this is about them. Students are expected to complete several activities that demonstrate their own reasons for abstaining from sex or using protection. They should start discussing sexuality with their parents. In addition, the program also shows how becoming an adolescent parent or infected with HIV or STIs would affect their daily lives and future (Barth 2004).

Social skills

Students will learn that they must consult with their parents regarding sexuality, and think through their own values to decide what to do. The program provides ideas, skills and practice to do these things effectively. The key skills are:

Refusal: Responses that clearly say “no” in a manner that does not put at risk a good relationship, but which leaves no ambiguity about the decision not to have sex or to refuse unprotected sex.

Delaying tactics and alternative action: Ways in which students can avoid a situation or delay taking action until they have time to decide what to do or say, or until they are more prepared to make a decision. These strategies are incompatible with impulsive and unprotected sex.

All skills are first explained and demonstrated by the facilitator and then practiced by the students in role-plays (Barth 2004).

Initiating the program

Ground-rules for classroom discussion

To accomplish the goals of this program, students need to feel free to talk about sexuality, contraception and protection from STI. They have to be convinced that this is about them and that they need these skills to face the challenges in their real world. Several guiding principles or ground-rules are:

- i. Everyone has the right to 'pass'. Each person, including the facilitator has the right to pass on an activity or choose not to answer a question.
- ii. Every question is a good question. Questions show a desire to learn new things, clarify information, or confirm what you already know.
- iii. No teasing, put-downs or talking about others. All thoughts, feelings, ideas and opinions are respected. Class members do not tease, put down or talk about others inside or outside of the classroom.
- iv. Classroom discussions are confidential. Personal information is not to be shared outside of the classroom by the facilitator or students. This will help everyone feel safe and supported here. However, students should understand that the teacher is required, by law and school policy, to report certain kinds of information, such as abuse, suicidal feelings, or other dangerous behaviors.
- v. Treat role-plays seriously. Use them to learn the skills. Remember that the role-plays are fictional. Nothing in a role-play should be considered as indicating an interest in having a relationship or sex.
- vi. No personal questions. People can voluntarily share information about themselves, but no one should be put 'on the spot' with specific questions about personal beliefs or practices, including the teacher or any outside speakers.
- vii. Use standard terms. People may use slang or street language, however, the facilitator will explain and ask students to use the standard terminology.
- viii. Be accurate with parents. When you discuss the class with parents, be accurate about what the class is about. Give specific examples, and do not sensationalize.
- ix. Each person speaks for himself or herself. The class is not a forum for discussing other people's beliefs or behaviors. Comments should be limited to what is thought or felt by individuals in this class (Barth 2004).

Anonymous question box

An anonymous question box provides an opportunity for all students to get answers to questions they might be hesitant to ask in the class. It also gives the facilitator time to think about answers to difficult questions or to look for more information.

Session 1. Changes during puberty, pregnancy, abstinence, and unprotected sex

Synopsis

The facilitator models a role-play to demonstrate refusal skills to help prevent HIV infection. Students participate in an 'HIV and pregnancy risk' activity to personalize their vulnerability to HIV and pregnancy and to symbolically experience modes of HIV transmission, as well as the chance of becoming pregnant. The facilitator has to emphasize that there are only two ways to avoid pregnancy and HIV: by not having sexual intercourse (abstaining) before marriage, or consistently using protection (Barth 2004).

Outline of activities

Activity	Time	Materials
Introduce curriculum and model role-play	10 minutes	LCD or flipchart Frans and Grace role play
Pregnancy and HIV risk activity	25 minutes	My HIV and pregnancy risk
Facts about abstinence and reasons that many teens do not have sex	15 minutes	Facts about abstinence (LCD or flipchart). Hand out reasons of abstinence bookmark
Summary	5 minutes	'What do you want to be' chart

One person, the facilitator, should play the Frans and Grace role-play. This initial presentation will set the tone and break the ice for the activities that follow. Performing alone is usually the best approach, since facilitators rarely have access to another adult assistant to play the other part, and asking a student to read with a teacher could be misinterpreted.

Activities

- i. Introduce curriculum and model role-play.
- ii. Today's class will start with sharing information about changes in their body and feelings during puberty and how to deal with the changes. They will also learn about personal hygiene related to their reproductive organs. Adolescents experience a growth spurt around the ages of 9-12 for girls and around the ages of 11-14 for boys. Dramatic physical changes are the hallmarks of early adolescence. Typically, girls show signs of puberty two years earlier than boys (Green and Palfrey (eds) 2002).

During puberty most adolescents will experience (i) physical changes, such as oilier skin and some acne; growth of pubic and underarm hair; and facial and chest hair in boys; enlargement of testicles and deepening voice in boys; breast budding in girls; (ii) sexual maturation, including masturbation and fantasies about sexual intimacy; erections, first experience of conscious ejaculation or nocturnal emission (semenarche or wet dream) in boys; increased vaginal lubrication and beginning of menstrual cycle in girls; (iii) cognitive development: become more independent, becoming concerned about social issues, developing a sense of values and ethical behavior; (iv) emotional development: develop self-esteem, empathy, learning to resolve conflict, realizing gender and cultural differences; (v) social development: strong desire to conform to and be accepted by a peer group, develop intimate relationship, increasing conflict between adolescents and their parents (Piermo 2009; WHO 2010c, 2011d-a).

There are several ways to deal with the changes: (i) develop family closeness, open and respectful communication among family members; (ii) have positive extracurricular activities, such as sports, arts, cooking, writing, dancing, social activity, or religious activity; (iii) develop self-esteem, be yourself; (iv) find positive peer group and avoid negative peer group; (v) avoid unhealthy behaviors, such as smoking, alcohol use and drug use; (vi) early sexual maturation appears to be associated with early relationship formation. Being abstinent is the best choice, however, if you choose to be sexually active, then you must use protection and avoid having multiple sexual partners (Blum and McGinnis 2006; WHO 2011d-a; Kirby et al. 2011; Blum and Mmari 2005).

Once a girl becomes mature sexually (she has already had a period), she can become pregnant even after single sexual intercourse. The sperm that has been ejaculated in the vagina cannot be washed out with a vaginal douche, antiseptic solution, or other spermicides (Grimes 2007; Hatasaka 1997; Pray and Prey 2004).

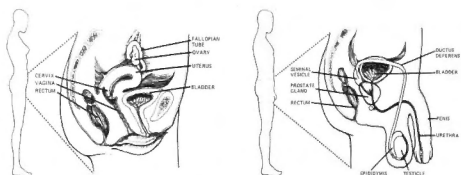


Figure A-1. Female and male reproductive organs
Source: (CDC 2011e)

For very young adolescent below the age of 15, there are physical risks associated with the fact that the pregnant girl is not fully developed (WHO 2006c). Further, a longitudinal study designed to examine the development of adolescent mothers and their children in Indiana, U.S. indicated that adolescent mothers were less cognitively prepared, experienced more stress in the parenting role, and were less adaptive in their parenting style than adult mothers (Sommer et al. 1993). A study on unwed adolescent prospective fathers in the U.S. indicated that 75 percent of them were definitely unready for paternity, did not want to become a father, and they tended to project lower levels of postnatal involvement with the adolescent mothers of their children (Westney, Cole, and Munford 1986)

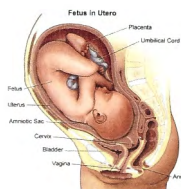


Figure A-2 Fetus in uterus
Source: (Johns Hopkins Medicine 2009)

Being pregnant and having a baby are happy events, but for millions of young girls, the pregnancy was unplanned, the birth is too early and the experience is one of fear and pain. Worldwide, adolescent girls with lack of support and access to health services face

high-risk pregnancy and childbirth, including infection, malnourishment, having a low birth-weight baby, bleeding and maternal death. Infant and child mortality is highest among children of adolescent mothers. Maternal mortality is associated with low rates of antenatal and obstetric care, lower social and economic status and low levels of education, and is four to six times higher in rural areas in both developed and developing countries (WHO 2006c; Villareal 1998; Bhatia 1993; Lewis and Drife 2001; AbouZahr et al. 2004).

Further, many pregnant adolescents around the globe have dropped out of school; so they cannot continue their study, miss schooling and opportunities for employment. Many adolescent pregnancies are not merely unplanned, but also unwanted, and the pregnancy is often ended through unsafe abortion, since they are less likely to have access to a legal and safe abortion. Moreover, the unsafe abortion is usually performed by an unqualified person in unhygienic circumstances that lead to maternal death (WHO 2006c, 2004, 2007b; UNFPA 2009; CDC 2012a).

Abstinence (not having sexual intercourse) before marriage is the best way to prevent pregnancy, and using protection is an option (Kirby 2002b).

- i. In this session the students will learn skills to prevent from getting infected with HIV. Students should know that HIV is a virus that causes AIDS.
- ii. Many young people don't have either the knowledge or the skills to prevent contracting HIV. To introduce the informational skills, you are going to do a one-person play, called Frans and Grace. The facilitator will play Frans and Grace's friend. See 'Frans and Grace below'.
- iii. After performing the role-play, facilitator should ask students their reactions to the way Frans and Grace discussed having sex and the risk of HIV. Include the following questions: Is this the way our religion views about relationships? Is this the way many teenagers decide whether or not to have sex? Why did Grace not stick to the decision not to have sex? What makes it difficult to say no?

In this session the students will learn skills to prevent HIV infection, other STIs and pregnancy. In the next few lessons, they will act out situations like 'Frans and Grace' that they may face outside the classroom.

Frans and Grace

Narrator: Frans and Grace have been going together for 4 months. They're sitting on the sofa together, kissing and touching.

Grace : Don't, Frans. Please, stop.

Frans : Why?

Grace : I'm scared and not ready for this. We don't have anything to use for protection.

Frans : Don't worry. We don't have anything to worry about.

Grace : But what if something happens? What if I get pregnant or something like HIV?

Frans : Don't worry. You wouldn't get pregnant or HIV. Kids like us aren't at risk! It's only hard-core kids that get HIV

Grace : I've been scared of getting pregnant or HIV for months...ever since you told me you and Eva didn't use...well, you know...rubbers. I've heard about Eva.

Frans : What did you hear?

Grace : I heard Eva has HIV. That's what everyone is saying at school. I'm scared.

Frans : I'm not worried. I don't have anything to worry about. I feel great. I look good, don't I? Besides, I only went out with Eva a few times.

Grace : It wouldn't matter if it was only once. Anyone who has sex with someone who has HIV can get HIV

Frans : Listen, Grace. We're lucky. The only thing that's important is that we have each other.

Frans : (Laughs and kisses Grace) You're right, we're two lucky people. I am crazy about you too, Grace.

Narator: Frans and Grace went ahead and had sex without using a condom. Despite their belief about being lucky, Grace got pregnant and was diagnosed with HIV shortly before their graduation.

HIV Risk Activity

- i. This activity will help students understand the transmission of HIV, and the risks of getting HIV.
- ii. Distribute four cards of the same color to each student (e.g., four pink, four white). Ask students to write their names on each of their four cards. Tell students they will be introducing themselves to four other people by exchanging cards. 'Model this process by exchanging your two yellow cards with those of two students'.
- iii. Inform all other students (except those with white cards) that they now have three minutes to mingle and exchange the cards.
- iv. Explain privately and quietly to the students with white cards that they represent abstinence. The other students should not be able to hear this information. When other students try to exchange cards with them, they are to hold onto their white cards and refuse to exchange them. It is OK for these students to accept cards (representing advances) from other students.
- v. Reconvene the whole group. Announce that, for this particular activity, you have HIV and those people with whom you exchanged your yellow cards were exposed to the virus.
- vi. Explain the meaning of the colors of the other cards:
 - People with pink cards had unprotected sex.
 - People with blue cards used latex condoms consistently and correctly.
 - People with green cards shared needles (to inject drugs or vitamins or for tattooing or piercing).
 - People with white cards abstained from risky behaviors.
- vii. Ask the two students who had contact with the teacher to stand, and state who else they had contact with (by reading the names on the cards they collected).

- viii. Ask the other students to stand when they hear their names called, if they had unprotected sex (pink cards) or shared needles (green cards) with the person calling their name
- ix. Illustrate the pattern of transmission by writing on the chalkboard the names of the first two students (yellow cards) and listing their contacts to the right. Ask those who are still sitting to stand if they had "risky" contact (pink cardholders and green cardholders with any student already standing). Ask everyone to sit down.
- x. Ask the students with the white cards to stand. Announce that they represent abstinence and that many approached them but they used refusal skills to protect themselves. Ask these students to sit down.
- xi. Ask the students:
 - How did it feel waiting for your name to be called once you learned that the teacher "infected" the two students? (Dispel any anxiety expressed.)
 - How did you feel about getting HIV and pregnancy?
 - How did it feel to approach the students with white cards? What refusal skills did they use?
 - Ask the students with the white cards to share how it felt to refuse contact.
- xii. Acknowledge that those who originally had blue cards reduced their risk of infection by using latex condoms consistently and correctly.
- xiii. Emphasize that the contacts in this activity symbolized transmission of HIV. The virus is not transmitted through casual contact (Barth 2004).

Personalizing Risks

- i. Have students fill out Parts A and B of 'My HIV Risks'. Allow five minutes to complete the worksheet.
- ii. Ask volunteers to share their responses to some of the immediate results of a positive HIV and pregnancy test (e.g. telling your partner, parents, friends)
- iii. Ask for other volunteers to state how getting HIV and pregnancy might affect their lives.
- iv. Lead a discussion around all the things students can do if they do not have to cope with getting HIV and pregnancy. Use the following points to help guide the discussion:

- Adoption, abortion or even a pregnancy scare can have serious personal consequences. These can ruin relationships, alienate parents and make students' remaining high school years very difficult.
- Researchers have shown that teen pregnancy is associated with lower levels of 3 E's: less *education*; less *employment* in well-paying, interesting jobs; and less *enjoyment* of life (Barth 2004).

Lesson summary

- Remind students that this class has introduced them several facts:
- All of us are at risk of HIV and other STIs. It is not who we are but what we do that places us at risk.
- HIV is mainly transmitted through unprotected vaginal, anal or oral sex and use of non-sterile injecting equipment with a person who has HIV.
- For teenagers, abstinence from sex and use of non-sterile injecting equipment are the best choices. The second best choice is to use condoms. The third best choice is to avoid having multiple partners.
- It is not easy to always follow either of these courses of action; but there are skills for handling situations in ways that help young people avoid pregnancy and keep relationships safe.
- In a later lesson they will receive further information about risky situations, HIV transmission, symptoms and prevention (Barth 2004).

My HIV and pregnancy risk

Part A. You have learned that you may have been infected with HIV and maybe pregnant.

- I did not get HIV nor am I pregnant because:
- I (or my girlfriend) caught HIV or became pregnant because:
- Within a few days of finding out that I might have HIV or am pregnant, I would have to:
- If my HIV and pregnancy tests show positive results, I would have to:
- The HIV and pregnancy would change the next year of my life by:

Part B. I do not want to become infected with HIV or become pregnant because:

ABSTINENCE : Not having sex

Activities

Review previous lesson

Ask students what they have learned about previous lessons about getting pregnant and HIV infection. It should be learned that having sex without protection is a high-risk; most couples who have unprotected sex will get pregnant, and all couples have a risk of HIV infection. Students do not have to rely on luck to avoid pregnancy and HIV infection.

Communicating about abstinence

- i. Ask students the meaning of abstinence. Ask students whether they want to have a girlfriend or boyfriend, to be liked, to get along with people, or to have a family someday
- ii. Tell the students that this time the class will be talking about how to avoid pregnancy, HIV or other sexually transmitted diseases and still have successful relationships.
- iii. Explain to students that there are four basic elements that provide a foundation for successful relationships:
 - Religiosity: the more religious we are, the more likely we are to choose abstinence
 - Communication: being honest and saying what you want so there is no doubt you mean it.
 - Relationship building: talking and acting in a way that shows you want to keep a good relationship going.
 - Planning: talking and acting to make your future healthy and happy. Planning shows knowledge of what you want and how to get it.
- iv. Talking about these things is hard, so it is tempting to just hope that your girlfriend or boyfriend will understand what you want. Teens who are pregnant or get HIV or other STIs, when asked what they talked about in the situations that led to pregnancy, often say, "We did not talk about it, we just did it". Not talking about it will almost surely put you at risk of pregnancy, HIV or other STIs.
- v. Have students work in groups to identify the four elements above in the 'Frans and Grace' dialogue (LCD or flipchart).

- vi. Have students work in groups to fill in 'What abstinence means to me' (Barth 2004).

Facts about abstinence

Some teens believe 'everyone' is having sex. Most overestimate the number of their peers who are sexually active. In fact, rates of teen sexual activity have been declining for the past several years, and most students your age are not sexually active. Ask students to guess the proportion:

- Research shows that in 10th grade,% (61%) of girls and% (58%) of boys have not had sex.
- In 12th grade,% (40%) of girls and% (39%) of boys have not had sex.
- Among all high school students,% (68%) are not currently sexually active. This means about (7) out of 10 students have either never had sex, or have had sex before, but are choosing to be abstinent now.

- vii. As students know, some young people do have sex. Ask them to think about likely results of having sex. List the results on the board or flipchart. Some students may include some positive outcomes (e.g. "It's fun or "it makes us feel close") and these should be acknowledged as reasons that millions of teens risk getting pregnant or infected with HIV or other STIs each year.
- viii. Next, ask students to brainstorm a list of religious, personal, psychological and medical reasons for abstaining from sex as a valid option. Some reasons are (hand out the abstinence bookmark in the shaded frame):

What abstinence means to me:

- What are my reasons for staying abstinent?
- What are the results of having sex when I am not married?
- What are the advantages to me if I do not have sex at this time in my life?
- What could make it difficult not to have sex?

THE ABSTINENCE BOOKMARK

- Many young people believe in and practice abstinence for religious reasons and personal moral beliefs
- Abstinence can be a sign of real *emotional maturity* and *integrity*. Many young women and men report feeling pressured about sex. It requires maturity and honesty to resist the pressure of someone you love in order to make a decision that is consistent with personal values, morals and needs.
- Abstinence *reduces* the risk of getting STIs such as herpes, chlamydia, gonorrhea, syphilis and HIV (show the signs of STIs on LCD or flipchart).
- Abstinence is the only method of birth control that is 100% *effective*, 100% *safe* and 100% *free of side effects*.
- Abstinence *reduces* the risk of cervical cancer. Research suggests there is a connection between early sexual activity, multiple sexual partners and increased cervical cancer in women under 25.
- Abstinence shows that you are *stronger* than peer pressure.
- Many parents would be *hurt* and *upset* to know that their child is having sex.
- A couple may find that delaying sexual intercourse contributes in a positive way to their relationship: Abstaining may allow them time to *develop a deeper friendship*. They may spend more time talking, building mutual interests, sharing good times with other friends and establishing an intimacy that is other than sexual.
- Abstaining can be a *test for love*. Counter to the old line, "You would if you loved me". Not having sex can allow time to test the endurance of love beyond the first attraction and before having sexual intercourse.
- Abstaining may ultimately help people be *better lovers*; it allows them to explore a wide range of ways to express love and sexual feelings.

Frans and Grace

Narrator: Frans and Grace have been going together for 4 months. They're sitting on the sofa together, kissing and touching.

Grace : Don't, Frans. Please, stop. (*Communication*)

Frans : Why?

Grace : It is not allowed in our religion. (*Religion*) I'm scared and not ready for this.

(*Planning*) We don't have anything to use for...protection.

(*Communication and Planning*)

Frans : Don't worry. Nothing is going to happen, Grace.

Grace : Yes, but being ready means more than love. (*Communication*) I am

saying NO to get pregnant or something like HIV! (*Planning*)

Frans : Don't worry. You wouldn't get pregnant or HIV. Kids like us aren't at risk!

It's only hard-core kids that get HIV

Grace : Stop joking, Frans! I am serious. I have no plans to become a parent

while I am still in high school. (*Planning*)

Frans : Listen, don't worry about getting pregnant or HIV. We can stop before anything happens.

Grace : That doesn't work! That is not a protection. (*Communication*). Why don't

we go out and get something to eat? Let's hang out with other friends!

(*Relationship-building statements*).

Narrator: Frans and Grace leave to hang out with their friends and have something to eat. That was the year Frans got a great after-school job and Grace won a college scholarship. Show the list of possible future careers and scholarships for the students. Emphasize that students are the future, the future leader at least for oneself and his/her family. Thus, they have to know what they want to be in the future and try hard to achieve it.

Session 2. Refusals and delaying tactics

Synopsis

This session provides understanding about sexual and reproductive rights and encourages discussion of students/parents. The facilitator explains about sexual and reproductive rights and introduces verbal and non-verbal communication skills. Students are provided with a demonstration of the social skills important to abstaining and using protection. Students are also given the chance to practice and examine the five characteristics of effective refusals and delaying tactics that are very useful to handle difficult situations. Ask students to repeatedly practice both refusals and delaying tactics, so that they become used to them and confident (Barth 2004).

Outline of activities

Activity	Time	Materials
Introduce sexual and reproductive rights	10 minutes	LCD or flipchart
Introduce refusals	10 minutes	LCD or flipchart
Demonstrate role play	30 minutes	Your friend's ex girlfriend Observer checklist
Summary	5 minutes	None

Sexual and reproductive rights

Worldwide, there have been incidents of sexual abuse and exploitation on female and male children and young people, young people resorting to selling sex (UNFPA and Save the Children USA 2009), young people being infected with HIV, young people cannot access health services (UNAIDS 2010a), female adolescents having unintended pregnancies and unsafe abortion (WHO 2006c), and females have long been known to have insufficient control over their sexual health (Hewat 2008; Liguori and Lamas 2003). The lack of access to reproductive health information, disruption of families and education, and inaccessibility of health services also contributed to such incidents (UNFPA and Save the Children USA 2009; WHO 2011d-a).

Sexuality is an important part of being human, whether or not a person chooses to be sexually active. Sexuality comprises sex, gender identities and roles (socially constructed roles ascribed to males and females), sexual orientation (heterosexual, homosexual, transgender), eroticism, pleasure, intimacy and reproduction. Sexuality can

be experienced and expressed in thoughts, fantasies, desires, beliefs, attitudes, values, behaviors, practices, roles, and relationships (WHO 2006a). Having a satisfying and safe sex life, having the capacity to reproduce and the freedom to decide if, when, and how often to do so, being healthy and able to express sexuality, is central to every person; therefore reproductive and sexual rights of all persons must be respected, protected and fulfilled (WHO 2006a; IPPF 2009b).

Tell the students that they have reproductive and sexual rights. Reproductive rights are certain human rights that are already recognized in international human rights documents and other consensus documents. These rights recognize the basic rights of all couples and individuals to decide freely and responsibly the number, spacing, and timing of their children and to have the information and means to do so, and the right to attain the highest standard of sexual and reproductive health (United Nations Population Information Network 1994). Sexual rights embrace human rights and include the right of all persons, free of coercion, discrimination and violence, to: (i) the highest attainable standard of sexual health, including access to sexual and reproductive health services; (ii) seek, receive and impart information related to sexuality; (iii) sexuality education; (iv) respect for bodily integrity; (v) choose their partner; (vi) decide to be sexually active or not; (vii) consensual sexual relations; (viii) consensual marriage; (ix) decide whether or not, and when, to have children; and (x) pursue a satisfying, safe and pleasurable sexual life (WHO 2006a).

Verbal refusals

It is sometimes hard to say no, especially to someone we care about, and to stick with it. Sometimes we are saying no, but it does not come across as NO. Tell the students to remember that they have sexual rights, no one should force them to have sex; therefore they should not be afraid to refuse or delay any sexual relationship. Accordingly, the ability to say NO effectively gives us a lot of power over our lives. Ask volunteers to say "NO" (Barth 2004).

Five characteristics of effective refusals

- Say “NO!”
- Repeat the refusal
- Suggest an alternative
- Use body language that says “NO!”
- Build the relationship (if appropriate)

Refer to four elements of successful relationships (religiosity, communication, relationship building and planning). Emphasize that the verbal aspect of effective refusals involves saying the word NO in a tone of voice that shows you mean it, repeating the refusal if necessary, and suggesting an alternative. You can also reinforce the verbal refusal in nonverbal ways (Barth 2004).

Non-verbal refusals

Explain that ‘body language’ (such as tone of voice, gestures, the look on your face, the way you sit or stand) is an important way to communicate with or without talking. Ask the class to describe body language that says NO to sex. Display the list on LCD or flipchart and ask volunteers to demonstrate each behavior to reinforce the concept of nonverbal communication (Barth 2004).

Skills Overview

Refusals

Purpose: a way of communicating that lets us effectively say NO to things we do not want to do, such as taking sexual risks (Barth 2004).

Behaviors	Actions	Examples
1. Say, “NO!”	Use the word NO Don't laugh, look away, make excuses or explain	“No, I don't want to do that” Look straight at the other person with a serious look on your face
2. Repeat the refusal	Use repetition technique, repeating original no-statement until other person stops pressuring. Restate NO, increasing intensity by including: - statements about how the situation makes you feel - adding consequences if the situation doesn't change	“No, I don't want to do that!” “No, and if you keep pressuring me I am going to leave / shout!”
3. Suggest an alternative	Suggest another activity that is realistic, appealing and gets you out of the situation	“Let's go to a movie, for a walk, to a friend's, etc.”

4. Use body language that says "NO!"	Firm voice Serious expression Eye contact "Soldier body" Gestures that emphasize point Body says the same things as your words Fight back as last resort	Use a strong, business like tone "I mean it" look on face Look directly at the person's face Stand up straight and confident Use hand (hands off=get off me), arm movement to emphasize point Look serious when you say NO Push person away
5. Build the relationship (if appropriate)	Strong, honest communication Use "I" statements Talk and act in a way that says you want to keep the relationship going	"I want you to stop that". "I feel mad when you push me to do things I am not ready for". "I don't want to have sex with you, but I do want to keep seeing you and being close".

Delaying tactics

Purpose : a way of communicating that is an effective alternative to directly saying no and that can buy time until we can think about how to communicate what we really want. Tell the students to remember that they have sexual rights, no one should force them to have sex; therefore they should not be afraid to refuse or delay any sexual relationship (Barth 2004).

Five characteristics of effective delaying tactics:

- Make a delay statement
- Take a delay action
- Create space
- End the situation quickly
- Build the relationship (if appropriate)

Behaviors	Actions	Examples
1. Make a delay statement	Stall for time Make an excuse Excuse yourself from the situation Change the subject Question what is going on Pretend request is not serious	"I'll have to think about this". "I am really not feeling well". "Sorry, I have to go". Did you see "the movie" last night? "What are you doing?" "You are kidding right?"
2. Take a delay action	Change what you are doing. Act distracted. Drop something. Become physically unable to respond.	Stop kissing. Get up and get something to eat. Look around. Pretend you've lost something. Drop your keys. Start coughing and ask for water. Get a sudden pain.

	Leave the situation	Go to the restroom. Go get some fresh air.
3. Create space	Use body language	Serious expression. Look directly at the person. Arms in front of body. Gestures that emphasize your point.
	Move away	Take a step back. Turn away.
4. End the situation quickly	Leave the scene	"Got to go, I am late!"; "I just remembered something."
	Fight back as last resort	Push the person away.
5. Build the relationship (if appropriate)	Strong, honest communication Use "I-statements"	"I want you to stop that!"
	Accept and acknowledge other's needs and wants. Talk and act in a way that says you want to keep the relationship going.	"I feel nervous when you push me to do things I am not ready for." "I want to be with you, too." "I don't want to have sex with you, but I do want to keep seeing you and being close."

Demonstrate role-plays

The role-play 'Your friend's ex-girlfriend' demonstrates some ways that not clearly saying NO can work against getting what you want. Display the role-play dialogue on the LCD or flipchart and pass out the observer checklist. Ask students to identify what the guy (in the role play) did or did not do that led to his ineffectiveness. Pull for such ideas as:

- He never said no
- He never repeated his first objection
- He was trying not to upset the girl and did not use clear communication
- He expressed doubt and felt her thinking it might work out.

Then ask students to read an effective version of the dialogue and ask them to identify refusals that work (Barth 2004).

Talk to your parents

Encourage students to talk to their parents about sexuality, abstinence, contraceptive use, HIV and other STIs. Ask students to fill in the blanks on "Talk to your parents" with their own ideas, including how they think their parents would answer. Ask students to discuss their answers with their parents.

- How should teenagers show affection to someone they love?
 - What I think:
 - What I think my parent(s) think :
- Should adolescents have sex with someone they love if they plan to marry them?

- What I think:
- What I think my parent(s) think :
- What are the best kinds of protection for teenagers who are sexually active?
 - What I think:
 - What I think my parent(s) think :
- What should parents do to help their children avoid pregnancy, HIV or other sexually transmitted disease infection?
 - What I think:
 - What I think my parent(s) think :

Observer checklist of refusals and delaying tactics

Behaviors	Role-play 1	Role-play 2
Said "NO" or used delay statements		
Body language said "NO" or used delay action		
Repeated refusal or created space		
Suggested alternative or ended the situation quickly		
Built the relationship		

Your friend's ex-girlfriend

Ineffective version

Setting the stage:

Your best friend's girlfriend broke up with him. Now she seems very interested in going out with you. You like her, but you really don't want to go out with her because you have been going out with another girl and don't want to mess it up. She speaks first (Barth 2004).

Girl: I haven't seen you for a while. Let's go out some night and do something fun
 Guy: Well, I don't know

Girl: I just want to talk to you about some things.
 Guy: Call me sometime, it gets boring at home

Girl: Let's go check out a movie. We could go this weekend
 Guy: I may be busy

Girl: I know we would have fun together
 Guy: I suppose

Girl: I'll give you a call this weekend. Maybe we can do something. OK?

Guy: I guess so. See you.

Your friend's ex-girlfriend

Effective version

Setting the stage:

Your best friend's girlfriend broke up with him. Now she seems very interested in going out with you. You like her, but you really don't want to go out with her because you have been going out with another girl and don't want to mess it up. She speaks first (Barth 2004).

Girl: I haven't seen you for a while. Let's go out some night and do something fun

Guy: I miss you, too, but I am interested in someone else right now

Girl: I just want to talk to you about some things.

Guy: I don't want to lead you on, but I'd be glad to talk

Girl: Let's go check out a movie. We could go this weekend

Guy: Sorry. I've already got plans to go out.

Girl: What about next Saturday night?

Guy: No, I really don't want to go out

Girl: I guess we're not going to be friends, huh?

Guy: Well, I'd like to be friends, I just don't want to go out.

Session 3. Avoiding high risk situation and using protection

Synopsis

Through a class discussion and a mini-lecture, students identify situations termed 'yellow alert' and 'red alert', situations that can lead to unwanted or unprotected sex. Students practice dealing with the two types of alerts in the activity 'Handling crisis situations'. Then, using the worksheet 'Protection: Myths and Truths, students begin activities related to protecting themselves from pregnancy, HIV and other sexually

transmitted diseases Session III: Avoiding high-risk situations and using protection (Barth 2004).

Outline of activities

Activity	Time	Materials
Signs of sex and caution mini-lecture	10 minutes	Signs of sex, signs of caution (LCD or flipchart)
Handling crisis situation	15 minutes	Handling crisis situation worksheet
Ways to prevent pregnancy, HIV and other sexually transmitted disease infection	25 minutes	Ways to prevent pregnancy, HIV and other sexually transmitted disease infection on LCD or flipchart
Summary	5 minutes	None

Signs of sex and caution mini-lecture

Remind students that there are two ways to avoid pregnancy, HIV and other STIs: say no to sex (abstinence) or to use protection. To be successful at either, you have to GET READY NOW. In a recent study, two-thirds of teens who had sex without protection said “it just happened”. Tell them there are signs they can watch for that will alert them that sex could happen. Emphasize that prevention is always better than cure, meaning that it is better to prevent something from happening in the first place than to repair the damage after it has happened (Barth 2004).

Yellow alerts are signals that there may be an unprotected “sex crisis” in the future and that you should slow down and prepare yourself to avoid pregnancy or infection. *Yellow alert* signals occur when:

- You think that she or he might be thinking about sex
- You think that there will be a chance for sex because you will be alone
- You wonder what will happen

Yellow alert signals tell you that you had better develop a sound plan for avoiding having sex, getting pregnant or becoming infected with HIV or other STIs (Barth 2004).

Red alert signs show that there is going to be an unprotected “sex crisis” at any moment and you have to act fast to avoid it. *Red alert signs* usually occur about 20 minutes to an hour before the crisis, when:

- You are alone with the other person.
- You may have done a lot of touching and are feeling close.

- You can still stop and decide not to have sex or you can still use protection, but if you go past a red alert signal without stopping and/or preparing first, your life may be forever changed.
- Show yellow and red alert signals on the LCD or flipchart, and then add signs that the students suggest (Barth 2004).

Yellow Alert Signs

I get dressed up to look really sexy
 I plan to get some beer to help us loosen up
 I think about ways to be alone with him or her
 I think about touching him or her
 We touch "by accident"
 We talk about being alone at home

Red Alert Signs

We make and take chances to touch
 We touch each other in more ways and are getting excited
 We play sexy music
 We go to a place to "get away from everybody"
 We are drinking and touching
 We are alone at home

Signs of sex, signs of caution

Handling crisis situations

Explain to students that they now have had the opportunity to clearly identify sex alert situations. The next step is to learn to deal effectively with those situations. Therefore, they need to think about possible ways to get out of an alert situation.

Distribute "Handling crisis situations" worksheet. Students should work in groups to name two yellow alert signs and two red alert signs and identify an alternative action plan for each. Tell students that red alert situations usually require alternative actions, delaying, or refusal until the crisis passes or until you are able to get protection. In yellow alert situations, students can avoid situation entirely or get protection so that red alert situation does not occur (Barth 2004).

Discuss an example: If the student wrote, "I get dressed up in my sexiest clothes" as a yellow alert sign, he or she might generate an alternative action plan such as:

- I'm going to think through what I will do to stop if I get close to having sex
- I'll plan something to do that will keep us away from having sex (Barth 2004)

Handling crisis situations worksheet

Directions: Write down two yellow alert signs. Then describe a plan to prevent or manage the crisis. Then do the same for red alerts.

Yellow 1.

Alternative action plan:

Yellow 2.

Alternative action plan:

Red 1.

Alternative action plan:

Red 2.

Alternative action plan:

Getting and using protection

The facilitator uses lecture and demonstration to provide information on methods for protection against unplanned pregnancy, HIV and other sexually transmitted diseases.

Explain about methods to prevent pregnancy, HIV and other sexually transmitted disease infections on the LCD or flipchart.

Ask students to assess the effectiveness of methods to prevent pregnancy, HIV and other sexually transmitted disease infections.

Effectiveness of methods for protection from pregnancy, HIV and other sexually transmitted disease infections

Method	Protects for pregnancy, HIV & other STIs	Protects for pregnancy only	Doesn't protect for all
Withdrawal			X
Douching			X
Hoping			X
Rhythm			X
Birth control pill, birth control patch, vaginal ring		X	
Depo provera		X	
Implant/Implanon		X	
Abstinence	X		
Latex condom	X		
Contraceptive foam		X (fair)	

Protect yourself

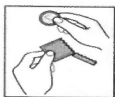
1. Abstinence (not having sex) is the best way and a safe way to prevent pregnancy, HIV transmission and other STIs.

If you do have sex:

- Make sure you do not come in contact with someone else's blood, semen, or vaginal fluids, as body fluids of an infected person may transmit HIV and other STIs. It is a myth found among some indigenous Papuan culture that ingesting someone's semen will make an adolescent boy grow up to be a man and it will protect him from the harmful effects of "women's fluids" (Butt, Numbery, and Morin 2002; Kelly 1977).
- Consistent and correct condom use is likely to provide greater protection against STIs that are transmitted by genital fluids (STIs such as gonorrhea, Chlamydia, Trichomoniasis and HIV infection) than against infections that are transmitted primarily by skin-to-skin contact, which may or may not infect areas covered by a condom (STIs such as genital herpes, human papilloma virus, syphilis and chancroid), but are still the best way of preventing most STIs (CDC 2011c; Department of Health Government of Western Australia 2007).
- Use a new latex condom and a water-based lubricant every time you have vaginal, oral and anal sex. An oil-based lubricant (e.g. petroleum jelly, shortening, mineral oil, massage oil, baby oil, body lotion, cooking oil), will damage the latex condom (CDC 2011c; NSW Health Australia 2009).

Steps in using a male condom (IPPF 2012b; CDC 2011c; NSW Health Australia 2009):

- Use a new male condom for each sex act.
- Store condom in a cool place.
- Condoms come in different sizes. Find a condom brand and size that is comfortable for you.
- Check the condom package. Do not use if torn or damaged. Avoid using a condom past the expiration date—do so only if a newer condom is not available.
- Tear open the package carefully. Do not use fingernails, teeth, or anything that can damage the condom.



- Place the condom on the tip of the erect penis with the rolled side out. For the most protection, put the condom on before the penis makes any genital, oral, or anal contact.



- Unroll the condom all the way to the base of the erect penis.
- The condom should unroll easily. Forcing it on could cause it to break during use.
- If the condom does not unroll easily, it may be on backwards, damaged, or too old. Throw it away and use a new condom.
- If the condom is on backwards and another one is not available, turn it over and unroll it onto the penis.

- If the condom does not have a reservoir tip, pinch the tip enough to remove the air bubble and to leave a half-inch space for semen to collect. Holding the tip, unroll the condom all the way to the base of the erect penis.



- Apply a water-based lubricant to the outside of the condom to increase pleasure and to reduce the risk of the condom breaking. Oil-based products will weaken the condom and lead to breakage.



- Immediately after ejaculation and before the penis gets soft, hold the rim of the condom and carefully withdraw. Then gently pull the condom off the penis, making sure that semen does not spill out.



- If having sex again or switching from one sex act to another, use a new condom.
- Wrap the condom in a tissue and throw it in the trash.
- Don't put two condoms on for strength. They may tear more easily because of friction. If you want extra safety, buy an extra strength condom.
- Male and female condoms should not be used together. This may cause friction that may lead to slipping or tearing of condoms.
- You can get a male condom from any drug store or pharmacy.
- It is not recommended to use condoms or lubricants containing nonoxynol-9. A large double-blind placebo study conducted by UNAIDS from 1996 to 2000 indicated that nonoxynol-9 irritating vaginal tissues and making them more susceptible to HIV (Pinsky and Douglas 2009).

Steps in using a female condom (IPPF 2012a; Family Planning NSW 2012; IPPF 2012c):

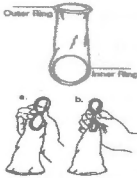
- Use a new female condom for each sex act.
- Store condom in a cool place.
- Female condom is made of polyurethane and is inserted into the vagina before sex. It is about 15 cm long and has two flexible rings, one at each end, to keep it in place in the vagina. One of the rings is closed and this end rests inside the woman's vagina. The other ring, which is open, rests outside.



- Woman can use the female condom during their period. The female condom cannot be used at the same time as a tampon. The tampon must be removed before inserting a female condom.
- Female condoms are the same length as male condoms, but wider. They are very flexible and fit to the shape of any vagina and any penis.
- Check the condom package. Do not use if torn or damaged. Avoid using a condom past the expiration date—do so only if a newer condom is not available.
- Tear open the package carefully. Do not use fingernails, teeth, or anything that can damage the condom.
- Use a female condom before having sex. Female condom can be inserted up to eight hours before having sex. Choose a position that is comfortable for insertion – squat, raise one leg, sit, or lie down.



- Hold the inner ring (the closed end of the condom) and squeeze the edges of this ring together to spread the lubricant evenly.



- Insert this end as far as possible into the vagina. Upon release, the ring will open to hold the condom in place.
- With your fingers inside the condom, push it up into the vagina. The outer ring should remain outside the vagina, resting against the labia.



- Be sure the condom has not twisted.
- Guide the penis into the vagina during sex.



- After the man withdraws his penis, hold the outer ring of the condom, twist to seal in

fluids, and gently pull it out of the vagina.

- The female condom does not need to be removed immediately after having sex.
- Remove the condom before standing up, to avoid spilling semen.



- If the couple has sex again, they should use a new condom.
- Wrap the used condom in some tissue or its package and dispose of the condom in a rubbish bin.
- You can get a female condom from any drug store or pharmacy.

2. In Papua, it is common for young people to drink alcohol, (e.g. local liquor: *Saguer, Cap Tikus*; beer and whisky), while they are still in junior high school, and drink alcohol before having sex (Djoht 2005; Djoht et al. 2005; CHR-UI 2003). Numerous studies indicate that young people who used alcohol are two to four times more likely to have had sex (Magnani et al. 2002; Podhisita, Xenos, and Varangrat 2001). Young people who used drugs are more likely to have had unprotected sex, multiple sexual partners, and getting HIV infection (Ministry of Health of the Republic of Indonesia 2008b). Abstain from alcohol and drugs, since they affect your judgment and using them may lead to unsafe sex or injecting drugs.

Facts about HIV and other STIs

- Ask students to identify the following characteristics about HIV and other STIs they have chosen:
 - How I could get it
 - How I can prevent it
 - How I would know I have it (symptoms)
 - How I would get treatment
 - How it would change my life

HIV and some common STIs:

a. HIV

HIV (Human Immunodeficiency Virus) is a virus that causes damage to the body's immune system. Over time HIV can develop into AIDS (acquired immune deficiency syndrome) when the immune system is seriously damaged. Acquired means you can get infected with HIV. Immune deficiency means a weakness in the body's

system that fights diseases. Syndrome means a group of health problems that make up a disease (Pinsky and Douglas 2009; NSW Health Australia 2009; Nasronudin 2007).

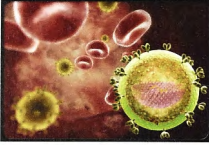


Figure A-3 HIV

Source: (Daar 2012, : 1)

Test:

If you have ever engaged in high-risk sexual practices (e.g. having unprotected sex, having multiple sexual partners), you should check for HIV infection at any province (VCT) clinic. Testing for HIV infection is easy – you only need to give a blood sample. HIV can be detected with an antibody test after two weeks to three months of the infection. In very rare cases, it can take up to six months for antibodies to develop. People who have HIV in their bodies are said to have HIV infection or be HIV positive (Schoub 1994; CDC 2010c, 2009; Nasronudin 2007).

Signs and symptoms:

A person who has been infected with HIV may be unaware of the infection, due to the long latent period, in which the HIV-infected person has not developed any symptoms for eight to 15 years until he/she progresses to the stage of AIDS. You cannot judge a person has HIV by the way he/she looks, since most people with HIV look and feel perfectly healthy, although they can transmit the virus to others. Some people may develop a fever (with swollen glands, night sweats or a rash on the body) in the weeks following infection. However, many people have no symptoms at all. (Schoub 1994; CDC 2010c, 2009; Nasronudin 2007).

In the stage of AIDS, the HIV-infected person may contract opportunistic infections. The most common ones are pneumocystis pneumonia and tuberculosis, lung infections; Kaposi's sarcoma, a skin cancer; Cytomegalovirus infection; and candidiasis, a fungal infection that can cause thrush in the affected area.



Figure A-4 Left: a doctor examines an emaciated AIDS patient in Lusikisiki, South Africa. Right: an AIDS patient with Kaposi's sarcoma
Source: (Mendel 2008; Asuquo et al. 2009, :34)

Transmission:

HIV was found in body fluids, such as blood, semen, vaginal fluid, breast milk, and cerebrospinal fluid. People with HIV can pass the virus to their sexual partner through unprotected oral sex, vaginal sex or anal sex, or to someone with whom they share non-sterile injecting equipment, tattoo or a razor, even if they do not have symptoms and are unaware of having the infection. An HIV-infected mother can pass the virus to her baby during pregnancy, labor or breast-feeding. There is no available cure or vaccine for HIV. HIV is not transmitted by shaking hands with an infected person, a mosquito bite with an infected person, sharing tools and official utensils with an infected person, sharing a toilet or public swimming pools with an infected person. (Schoub 1994; CDC 2010c, 2009; Nasronudin 2007; NSW Health Australia 2009).

Treatment:

There is still no cure or vaccine for an HIV-infected person. Once a person becomes infected with HIV, he/she has to take antiretroviral therapy every day to suppress the number of viruses in the body, so he/she can improve his/her quality of life (Schoub 1994; CDC 2010c, 2009; Nasronudin 2007).

Prevention:

You can prevent HIV infection by abstaining; by having a lifelong, monogamous sexual relationship with a mutually faithful, uninfected partner; reducing the risk by using correctly a new latex condom; not sharing non-sterile injecting, piercing or tattooing equipment with anyone (NSW Health Australia 2009; Barth 2004).

HIV RISK BEHAVIORS	
Associated with sexual activity	
	Wet kissing (if there are bleeding gums, mouth sores)
	Unprotected vaginal, anal or oral sex
	Using the same condom twice
	Sexual stimulation of another's genitals using hands with cuts or broken skin
Associated with use of needles	
	The use of non-sterile injecting equipment for injecting drugs, steroids or vitamins
	Reusing a needle that has been cleaned with bleach
	Reusing a needle that has been cleaned with water
	Sharing needles for tattooing or piercing
Associated with other modes of transmission	
	Receiving a blood transfusion that has not been clearly examined
	Donating blood using a reusable needle
	Cleaning spilt blood without wearing gloves
	Breastfeeding by an infected mother
	Pregnant woman may pass the infection to her baby

b. Chlamydia

Cause: a bacterium, called *Chlamydia trachomatis*. The incubation period, the time from the moment of exposure to an infectious agent until signs and symptoms of the disease appear, is 7-21 days. *Chlamydia trachomatis* can infect genitals of both men and women, but can also infect the throat, anus, and eyes (CDC 2007, 2011b).

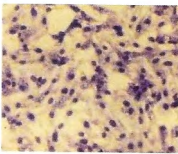


Figure A-5 *Chlamydia trachomatis*

Source: (School of Biochemistry and Microbiology 2007)

Test

Testing for Chlamydia is easy – you only need to have a urine test or a swab test collecting fluid from the penis or vagina (swab test is obtained by briefly placing a swab in the opening of the urethra at the tip of the penis) (NSW Health Australia 2009; CDC 2011b), which can be done at any public health center or hospitals.

Transmission

Any sexually active person can be infected with chlamydia. The greater the number of sexual partners, the greater the risk of infection. The cervix (opening of the uterus) of teenage girls and young women is not fully matured and is probably more susceptible to infection; they are particularly at risk of infection if sexually active. Chlamydia is easily transmitted through unprotected vaginal, anal and oral sex; sharing sex toys; touching parts of the body with fingers (for example Chlamydia often occurs in the eyes). Chlamydia can also be passed from an infected mother to her baby during vaginal childbirth (CDC 2007, 2011b; Murtiastutik 2008).

Signs and symptoms

Chlamydia is known as a 'silent' disease, because around two-thirds of women and half of men with Chlamydia have no symptoms at all; others have symptoms so mild they are not noticeable. Symptoms in women can include an unusual vaginal discharge, pain or burning sensation when passing urine, bleeding between periods, pain during sex or bleeding after sex, low abdominal pain. Symptoms in men can include white/cloudy, watery discharge from the tip of the penis, pain or burning sensation when passing urine, testicular pain or swelling (CDC 2011b; Murtiastutik 2008)

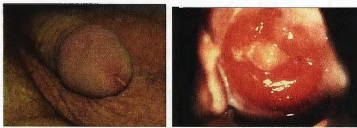


Figure A-6 Chlamydia on a man and a woman, presented as pain when urinating and yellowish discharge

Source: (Bowden et al. 2002, :553; Toney 2011, :slide 42)

Complications

Without treatment, Chlamydia can spread to other parts of the body, causing damage and serious long-term health problems. Like the disease itself, the damage that chlamydia causes is often 'silent'. In women, the complication may include ectopic pregnancy (a pregnancy outside the womb), blocked fallopian tubes (the tubes which carry the egg from the ovaries to the womb), which can result in reduced fertility; long-

term pelvic pain; and early miscarriage or premature birth. In men, untreated Chlamydia can lead to painful inflammation of the testicles, which may result in reduced fertility, occasionally, Reiter's syndrome (inflammation of the joints, urethra and eyes) (CDC 2007, 2011b; Murtiastutik 2008).

Treatment

You and your sexual partners should go to the doctor for examination and treatment of Chlamydia. Chlamydia can be treated with a single dose or a week of antibiotics, however, person with Chlamydia should abstain from sexual intercourse for seven days after single dose of antibiotics or a seven-day course of antibiotics, to prevent spreading the infection to partners (NSW Health Australia 2009; CDC 2011b).

Prevention

The surest way to avoid transmission of any STI is by abstaining or by having a lifelong, monogamous sexual relationship with a mutually faithful, uninfected partner. New latex condoms, when used consistently and correctly, can reduce the risk of infection and transmission. (NSW Health Australia 2009; CDC 2011b).

c. Gonorrhoea

Cause

Gonorrhoea is caused by *Neisseria gonorrhoea*, a bacterium that can infect the cervix (opening of the womb), uterus (womb), and the fallopian tubes in women; and in the urethra (urine canal), mouth, throat, eyes, and anus in women and men. The incubation period is 1-14 days (CDC 2011d; Murtiastutik 2008).

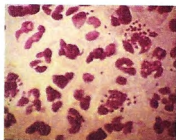


Figure A-7 *Neisseria gonorrhoea*
Source: (Toney 2011, : slide 35)

Test

Testing for gonorrhoea is easy – you only need to have a urine test or a swab test collecting fluid from the penis or vagina (swab test is obtained by briefly placing a swab

in the opening of the urethra at the tip of the penis) (NSW Health Australia 2009; Murtiastutik 2008).

Transmission

Gonorrhea is spread through contact with penis, vagina, mouth, or anus; sharing sex toys; touching genitals with fingers and then the eyes; and from mother to baby during delivery. Ejaculation does not have to occur for gonorrhea to be transmitted or acquired. (CDC 2011d; Freedom Network 2005a).

Signs and symptoms

Half of women and one-tenth of men with gonorrhea have no symptoms. Symptoms in women can include strong-smelling, yellowish or greenish vaginal discharge that may be thin or watery or thick, irritation or discharge from the anus; abnormal vaginal bleeding; low abdominal or pelvic tenderness; pain or burning sensation when passing urine. Symptoms in men can include white, yellow, or green thick discharge from the tip of the penis; inflammation of the testicles and prostate gland; irritation or discharge from the anus; urethral itch and pain or burning sensation when passing urine. Symptoms of rectal infection in both men and women may include discharge, anal itching, soreness, bleeding, or painful bowel movements. Rectal infection also may cause no symptoms. Infections in the throat may cause a sore throat, but usually causes no symptoms (CDC 2011d; Freedom Network 2005a; Murtiastutik 2008).

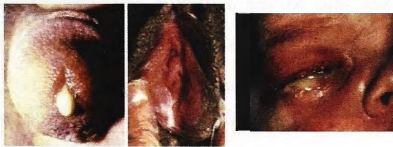


Figure A-8 Gonorrhea on a man's urethra, a woman's vagina, and a baby's eye
Source: (Bertman 2011)

Treatment

You should go to the doctor for examination and treatment of gonorrhea. Gonorrhea can be treated with a single dose of antibiotics. The treatment of Chlamydia is also advocated, since it is common to have both Chlamydia and

gonorrhoea together. People who have had gonorrhoea and received treatment may get infected again if they have sexual contact with a person infected with gonorrhoea. Further, although medication will stop the infection, it will not repair any permanent damage done by the disease (CDC 2011d; Freedom Network 2005a; Murtiastutik 2008; NSW Health Australia 2009; Wasserheit 1992).

Complication

Gonorrhoea infection can spread through the bloodstream to other parts of the body, such as the joints, causing damage and serious problems. In women, it can cause ectopic pregnancy, blocked fallopian tubes that can result in reduced fertility. In men it can cause painful inflammation of the testicles and ducts attached to the testis that results in reduced fertility. People with gonorrhoea can more easily contract HIV. HIV-infected people with gonorrhoea can transmit HIV more easily to someone else than if they did not have gonorrhoea (Freedom Network 2005a; Murtiastutik 2008; CDC 2011d; Fleming and Wasserheit 1999; Wasserheit 1992).

Prevention

The surest way to avoid transmission of any STI is to abstain from sexual intercourse, or to be in a long-term mutually monogamous relationship with a partner who has been tested and is known to be uninfected. Latex condoms, when used consistently and correctly, can reduce the risk of transmission of gonorrhoea. Any genital symptoms such as discharge or a burning sensation during urination or an unusual sore or rash should be a signal to stop having sex and to see a doctor immediately. If a person has been diagnosed and treated for gonorrhoea, he or she should notify all recent sex partners so they can see a health care provider and be treated, to reduce the risk of transmission, re-infection and complications (NSW Health Australia 2009; CDC 2011d).

d. Syphilis

Cause

Syphilis is caused by a bacterium, called *Treponema pallidum*. The incubation period is long, between one week to three months (CDC 2010d; Murtiastutik 2008).

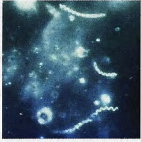


Figure A-9 *Treponema pallidum*, a spiral-shaped bacterium
Source: (CDC 2010)

Test

Diagnosis of syphilis is done through a blood test and/or examination of secretions from chancres (syphilis sores). Untreated syphilis in a pregnant woman can infect and possibly kill her developing baby, therefore, every pregnant woman should have a blood test for syphilis (Freedom Network 2005b; Murtiastutik 2008; CDC 2010d).

Transmission

Syphilis is passed from person to person through direct contact with syphilis sore. Sores occur mainly on the external genitals, vagina, penis, anus, or in the rectum. Sores can also occur in the lips and in the mouth. Therefore, syphilis is transmitted through oral, anal, or vaginal sex, or via direct contact with a syphilis sore through intimate touching or kissing. A syphilis-infected mother can pass the bacterium to her baby via the placenta during pregnancy (Murtiastutik 2008; CDC 2010d; Communicable Disease Control Directorate 2008).



Figure A-10 Congenital syphilis exhibiting classic skin rash
Source: (CDC 2011e, : picture 19)

Signs and symptoms

Many people infected with syphilis do not have any symptoms for years, yet remain at risk for late complications if they are not treated. Although transmission occurs from persons with sores who are in the primary or secondary stage, many of

these sores are unrecognized. Thus, transmission may occur from persons who are unaware of their infection. Further, genital sores (chancres) caused by syphilis make it easier to transmit and acquire HIV infection sexually. There is an estimated two-to-five-fold increased risk of acquiring HIV if exposed to that infection when syphilis is present (Murtiastutik 2008; CDC 2010d; Fleming and Wasserheit 1999; Wasserheit 1992).

Primary Stage

The primary stage of syphilis is usually marked by the appearance of a single sore (called a chancre), but there may be multiple sores. The time between infection with syphilis and the start of the first symptom can range from 10 to 90 days (on average is 21 days). The chancre is usually firm, round, small, and painless. It appears at the spot where the bacterium entered the body. The chancre lasts three to six weeks, and it heals without treatment. However, if adequate treatment is not administered, the infection progresses to the secondary stage (Murtiastutik 2008; CDC 2010d).

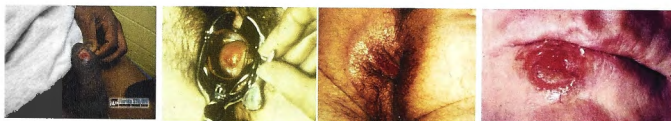


Figure A-11 Primary syphilis chancre (left to right) on penis, cervix, anus, and lips
Source: (Toney 2011, : slide 15,16; CDC 2011e, : picture 7,9)

Secondary Stage

The secondary stage of syphilis represents the spread of the bacterium in the blood. This stage typically starts with the development of a rash on one or more areas of the body. The rash usually does not cause itching. Rashes associated with secondary syphilis usually appear two to eight weeks after a chancre has healed. The characteristic rash of secondary syphilis may appear as rough, red, or reddish-brown spots both on the palms of the hands, the bottoms of the feet, body, face, and inside the mucous membrane of mouth. In addition to rashes, symptoms of secondary syphilis may include fever, swollen lymph glands, sore throat, patchy hair loss (alopecia), headaches, weight loss, muscle aches, fatigue, and condyloma lata (wart-like lesions on the genitals) that are very contagious. The signs and symptoms of secondary syphilis will resolve with or without treatment, but without treatment, the infection will progress to the latent and possibly late stages of disease (Murtiastutik 2008; CDC 2010d; Toney 2011).



Figure A-12 Secondary syphilis rash (pictures 1-3 from left), alopecia (picture 4) and condyloma lata on labia and penis (the last two pictures on the right)

Source: (Toney 2011, : slide 18, 20, 21; CDC 2011e, : picture 13,16,17)

Late and Latent Stages

The latent (hidden) stage of syphilis begins when primary and secondary symptoms disappear. Without treatment, the infected person will continue to have syphilis even though there are no signs or symptoms, since infection remains in the body. This latent stage can last for years. The late stages of syphilis can develop in about 15 percent of people who have not been treated for syphilis, and can appear 10–20 years after infection was first acquired. In the late stages of syphilis, the disease may subsequently damage the internal organs, including the brain, nerves, eyes, heart, blood vessels, liver, bones, and joints. Signs and symptoms of the late stage of syphilis include difficulty coordinating muscle movements, paralysis, numbness, gradual blindness, and dementia. This damage may be serious enough to cause death (Murtiastutik 2008; CDC 2010d).

Treatment

Syphilis is easy to cure in its early stage by a single intramuscular injection of antibiotic. Additional doses are needed to treat someone who has had syphilis for longer than a year. For people who are allergic to penicillin, other antibiotics are available to treat it. There are no home remedies or over-the-counter drugs that will cure syphilis. Treatment will kill the syphilis bacterium and prevent further damage, but it will not repair the damage that has already occurred. Persons who receive syphilis treatment must abstain from sexual contact with new partners until the syphilis sores are completely healed. Persons with syphilis must notify their sex partners so that they also can be tested and receive treatment if necessary. Following successful treatment, people can still be susceptible to re-infection (Murtiastutik 2008; CDC 2010d; Communicable Disease Control Directorate 2008).

Complication

Syphilis can damage the internal organs, including the brain, nerves, eyes, heart, blood vessels, liver, bones, and joints. This damage may be serious enough to cause death. A syphilis infected mother may have a high risk of having a stillbirth (a baby born dead) or of giving birth to a baby who dies shortly after birth. An infected baby may be born without signs or symptoms of disease. However, if not treated immediately, the baby may develop serious problems within a few weeks, including developmentally delayed, have seizures, or die (Murtiastutik 2008; CDC 2010d).

Prevention

The surest way to avoid transmission of any STIs is to abstain from sexual intercourse, or to be in a long-term mutually monogamous relationship with a partner who has been tested and is known to be uninfected. A new latex condom when it is used correctly and consistently may reduce the risk of acquiring and transmitting syphilis from chancre that occurred on the area covered by a condom (CDC 2010d).

e. Genital herpes

Cause

Genital herpes is caused by Herpes Simplex Virus type 1 (HSV-1), but mostly by type 2 (HSV-2). HSV enters the body through delicate membranes of genital tract, anus, or mouth. The virus enters adjacent nerve tissue, where it persists, but generally kept under control by immune cells in healthy skin (CDC 2010a; Stöppler 2012; Melbourne Sexual Health Centre 2009).

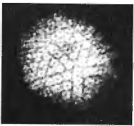


Figure A-13 HSV
Source: (Salazar 2010)

Test

The signs and symptoms associated with HSV-2 can vary greatly. Many doctors will begin treatment based only on the appearance of the sores, if the sores seem typical of herpes. A blood test or a swab test of the sores may be ordered to confirm the diagnosis (Stöppler 2012; Melbourne Sexual Health Centre 2009).

Transmission

HSV-1 and HSV-2 can be found in and released from the sores that the viruses cause, but they are also released between outbreaks from skin that does not appear to have a sore. Generally, a person can only get HSV-2 infection during sexual contact with someone who has a genital HSV-2 infection, although the infected partner does not have a visible sore and may not know that he or she is infected. HSV-1 can cause genital herpes, but it more commonly causes infections of the mouth and lips, called 'fever blisters'. HSV-1 infection of the genitals can be caused by oral-genital or genital-genital contact with a person who has HSV-1 infection (Melbourne Sexual Health Centre 2009; CDC 2010a).

Signs and symptoms

Many people with HSV never have symptoms. In some people, initial infection can be quite severe with multiple painful blisters, difficulty passing urine, muscular aches, headache, and fever. Recurrences are typically small localized blisters, which ulcerate, and occur not only on the genitals, but also on the buttocks, thighs, and anus (Melbourne Sexual Health Centre 2009).



Figure A-14 Genital herpes on penis and labia
Source: (Salazar 2010, : 3; Toney 2011, : slide 30)

Treatment

There is no treatment that can cure herpes, but antiviral medications can shorten and help manage the symptoms of herpes. In addition, daily suppressive therapy for

symptomatic herpes can reduce transmission to partners (Melbourne Sexual Health Centre 2009; CDC 2010a).

Complication

Genital herpes can cause recurrent painful genital sores in many adults, and herpes infection can be severe in people with suppressed immune systems. Regardless of severity of symptoms, genital herpes frequently causes psychological distress in people who know they are infected. A pregnant woman with HSV can pass the virus to her baby, especially when she gets the infection in the last three months of her pregnancy. If a woman has active genital herpes at delivery, a cesarean delivery is usually performed. Herpes may play a role in the spread of HIV, the virus that causes AIDS. Herpes can make people more susceptible to HIV infection, and it can make HIV-infected individuals more infectious (Melbourne Sexual Health Centre 2009; CDC 2010a).

Prevention

The surest way to avoid transmission of any STI, including genital herpes, is to abstain from sexual contact, or to be in a long-term mutually monogamous relationship with a partner who has been tested and is known to be uninfected. Correct and consistent use of latex condoms can reduce the risk of genital herpes. Persons with herpes should abstain from sexual activity with uninfected partners when lesions or other symptoms of herpes are present. It is important to know that even if a person does not have any symptoms he or she can still infect sexual partners. Sex partners of infected persons should be advised that they may become infected and they should use condoms to reduce the risk. Sex partners can seek testing to determine if they are infected with HSV (Melbourne Sexual Health Centre 2009; CDC 2010a).

f. Genital HPV infection

Cause

Around 90 percent of genital warts is caused by Human Papilloma Virus (HPV) type 6 or 11. Besides causing warts on the genital areas, HPV type 6 and 11 have been associated with warts on the eye, nose, and mouth. The types of HPV that cause genital

warts are not the same as the types that cause cancers, including cancers of cervix, vulva, vagina, penis, anus, oropharynx (back of throat including base of tongue and tonsils) (CDC 2012b, 2010b).

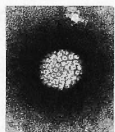


Figure A-15 HPV

Source: (Washington and Lee University 2011)

Test, signs and symptoms

Genital warts can be small or large, raised or flat, appear as bumps or shaped like a cauliflower. The diagnosis is usually made by visual inspection. Genital warts can be confirmed by biopsy. HPV-related cancer usually does not have symptoms until it is quite advanced. For this reason, it is important for sexually active women to get regular screening for cervical cancer (Pap test). Screening tests can find early signs of disease before they turn into cancer (CDC 2012b, 2010b; Melbourne Sexual Health Centre 2007).



Figure A-16 Left to right: Genital warts on penis, thigh and anus. The last right: severe HPV infection on a man

Source: (Toney 2011, : slide 54,55,58; USA Daily 2011)

Transmission

HPV is passed on through vaginal, anal, and oral sex, even when the infected partner has no signs or symptoms. Most HPV-infected persons do not realize they are infected or that they are passing the virus on to a sex partner. It is also possible for someone to get more than one type of HPV infection. Rarely, a pregnant woman with genital HPV can pass HPV to her baby during delivery (CDC 2012b, 2010b).

Treatment

There is no treatment for the virus itself, but there are treatments for the diseases that HPV can cause. Visible genital warts can be removed with medications. However, because there is no cure for HPV, an individual who has been infected will continue to experience wart outbreaks and be capable of spreading the virus throughout his/her lifetime. HPV-related cancers are more treatable in early stage (CDC 2012b, 2010b).

Prevention

The surest way to prevent HPV infection is by abstaining. A vaccine (Gardasil) is available to protect females and males against HPV that cause most genital warts, cervical and anal cancers. Cervarix vaccine is available only for females. Latex condoms only protect the area of skin they cover. Remember that many people carry HPV but it is invisible, and you can catch it from a person whose skin looks perfectly healthy. Therefore, people with only one lifetime sex partner can get HPV (CDC 2012b, 2010b; Melbourne Sexual Health Centre 2007; FPWA 2007).

HIV and AIDS facts in Papua and West Papua provinces

Students should understand about HIV and AIDS facts below, and emphasize the importance of prevention

- As of September 2011, Papua province's AIDS case rate was the highest among all 33 provinces in Indonesia, at 180.7/100,000 population, which was 16.3 times higher than the national rate at 11.1/100,000 population. The second highest rate was in West Papua at 51.5/100,000 population, followed by Bali at 48.3/100,000 population, and DKI Jakarta at 42.3/100,000 population (Ministry of Health of the Republic of Indonesia 2011c).
- Up to March 2011, there were 7,319 cumulative AIDS cases in Papua, around 51.4 percent were among men and 47.7 percent were among women (Harahap 2011a), implied that both men and women had high-risk sexual practices.
- Young people aged 15-29 years accounted for 55 percent of all AIDS cases, which was higher than national percentage at 50.3 percent (Harahap 2011a; Ministry of Health of the Republic of Indonesia 2011a), meaning that they had acquired HIV infection eight to 15 years ago when they were children.

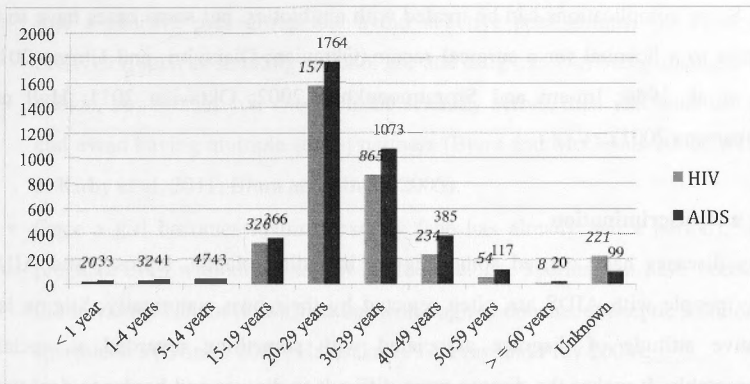


Figure A-17 Number of HIV and AIDS cases in Papua by age group, until June 2011
Source: (Harahap 2011a)

- Furthermore, 95.5 percent of the cumulative cases (compared to 53.1 percent of cumulative AIDS cases in Indonesia up to March 2011) were transmitted through heterosexual contacts (Harahap 2011a; Ministry of Health of the Republic of Indonesia 2011a).
- Therefore, it is very important to avoid high-risk sexual practices in order to prevent HIV infection and other STIs.

Some sexual myths in Papuan cultures

- Remember that STIs often do not show signs or symptoms. Semen may contain HIV virus, and a man's discharge may contain bacteria, such as *Neisseria gonorrhoea* or *Chlamydia trachomatis* (CDC 2010c, 2011b, 2011d). Therefore, it is very dangerous to ingest a man's semen or discharge.
- It is only a myth that if men do not ingest the semen of relatives in a ritual fashion, they will not grow up to be men, due to the harmful effects of 'women's fluids' (Butt, Numbery, and Morin 2002).
- It is only a myth that ingesting semen orally can make a woman strong and prevent her from getting pregnant (Butt, Numbery, and Morin 2002).
- There is a shared belief among Papuan men that women like having sex with men who have a large penis (Djoht 2005). Remember that penile modification have complications, such as severe inflammation, infection, penis tissue damage and dysfunction, difficulties using condoms and trauma during sex, and transmission of

STI. Some complications can be treated with antibiotics, but some cases have to be referred to a hospital for a surgical repair (Oktavian, Diarsvitri, and Utomo 2011; Lim et al. 1986; Im-em and Siriratmongkhon 2002; Oktavian 2011; Hull and Budiharsana 2001).

Stigma and discrimination

- Many diseases have carried some stigma, including plague, leprosy, and AIDS. Many people with AIDS are often rejected by their own community. Stigma is a negative attitude of disgrace associated with something regarded as socially unacceptable. It makes the disease more difficult to discuss and harder to deal with. It can spread infection through misunderstanding. It can make people hide their HIV status, amid fear of rejection from family and community. Discrimination is the prejudicial treatment as a manifestation of stigma. It makes those infected may be denied treatment by health care facilities. It can make infected people have difficulty getting school and jobs (NGO Code of Good Practice 2012; WHO Western Pacific Region 2002; NAM Aidsmap 2012).
- Tell the students that anybody can get HIV infection. The infection should not be considered a deserving punishment for 'immoral' or 'bad' behavior. People with HIV or AIDS should continue schooling and working, and should not be rejected by family or community.

Motivation and conclusion

Encourage students to understand the impact of HIV and other STIs, as well as unintended pregnancy, and apply what they have learned from the program in everyday life.

- Adolescents experience a growth spurt around the ages of 9-12 for girls and around the ages of 11-14 for boys (Green and Palfrey (eds) 2002).
- During puberty most adolescents will experience (i) physical changes, (ii) sexual maturation, (iii) cognitive development, (iv) emotional development, and (v) social development (Pierno 2009; WHO 2010c, 2011d-a).
- There are several ways to deal with the changes: (i) develop family closeness, (ii) have positive extracurricular activities, (iii) develop self-esteem, be yourself, (iv)

find a positive peer group and avoid negative peer groups, (v) avoid unhealthy behaviors, such as smoking, alcohol use and drug use, (vi) being abstinent is the best choice, however, if you choose to be sexually active, then you must use protection and avoid having multiple sexual partners (Blum and McGinnis 2006; WHO 2011d-a; Kirby et al. 2011; Blum and Mmari 2005).

- Once a girl becomes mature sexually (she has already had a period), she can be pregnant even with single sexual intercourse. The sperms that have been ejaculated in the vagina cannot be washed out with vaginal douche, antiseptic solution, or other spermicides (Grimes 2007; Hatasaka 1997; Pray and Prey 2004).
- Adolescent girls face high-risk pregnancy and childbirth, including infection, malnourishment, having low birth-weight baby, bleeding and maternal death. Infant and child mortality is highest among children of adolescent mothers (WHO 2006c; Villareal 1998; Bhatia 1993; Lewis and Drife 2001; AbouZahr et al. 2004).
- Remember that you have reproductive and sexual rights. Reproductive rights recognize the basic rights of all couples and individuals to decide freely and responsibly the number, spacing, and timing of their children and to have the information and means to do so, and the right to attain the highest standard of sexual and reproductive health (United Nations Population Information Network 1994). Sexual rights embrace human rights and include the right of all persons, free of coercion, discrimination and violence, to: (i) the highest attainable standard of sexual health, including access to sexual and reproductive health services; (ii) seek, receive and impart information related to sexuality; (iii) sexuality education; (iv) respect for bodily integrity; (v) choose their partner; (vi) decide to be sexually active or not; (vii) consensual sexual relations; (viii) consensual marriage; (ix) decide whether or not, and when, to have children; and (x) pursue a satisfying, safe and pleasurable sexual life (WHO 2006a).
- Remember that every person has sexual rights, no one should force you to have sex. Be confident about being abstinent, delaying or refusing any sexual relationship. However, if you choose to have sex, be confident to tell your partner that you only want protected sex by correctly using a new latex condom.
- Try to talk to your parents about sexuality, abstinence, contraceptive use, HIV and other STIs.

- You have an opportunity to clearly identify sex alert situations. Be confident to deal effectively with those situations. Think about possible ways to get out of an alert situation.
- Viruses, bacteria, and parasites cause all STIs, including HIV infection, thus, they are not caused by witchcraft.
- Consistent and correct condom use is likely to provide greater protection against STIs that are transmitted by genital fluids (STIs such as gonorrhea, Chlamydiosis, Trichomoniasis and HIV infection) than against infections that are transmitted primarily by skin-to-skin contact, which may or may not infect areas covered by a condom (STIs such as genital herpes, human papilloma virus, syphilis and chancroid), but are still the best way of preventing most STIs (CDC 2011c; Department of Health Government of Western Australia 2007).
- Use a new latex condom and a water-based lubricant every time you have vaginal, oral and anal sex. An oil-based lubricant (e.g. petroleum jelly, shortening, mineral oil, massage oil, baby oil, body lotion, cooking oil), will damage the latex condom (CDC 2011c; NSW Health Australia 2009).
- Many people with STIs do not develop signs or symptoms; therefore, you cannot judge a person is infected by the way he or she looks (CDC 2010e).
- Untreated STIs lead to severe complications. There are available province (VCT) clinics in public health centers, hospitals, and NGO clinics that provide testing and counseling for STIs. It is much better to know earlier if you have STIs, since most of them are better treated in earlier stage (CDC 2010e).
- Visit medical professionals as soon as possible: (i) If you experience any symptoms of STIs; (ii) If you have ever engaged in unprotected sexual acts; (iii) If you have ever ingested semen or discharge; (iv) If you have ever had sex with a sexual worker; (v) If you have ever had a penile modification.
- HIV infection and AIDS primarily affect people in their most productive and reproductive years. There is no vaccine or cure for HIV infection. The available therapy is to increase the longevity and quality of life for people with HIV (WHO Department of Communicable Disease Surveillance and Response 2000; WHO 2011a; Morgan et al. 2002; Bhaskaran et al. 2008). Therefore, you should avoid high-risk sexual practices.

- The government provides antiretroviral therapy for free for people with HIV-related diseases in public health centers and hospitals (National AIDS Commission 2010a).
- It is important to apply the learning and comprehensive reproductive health education program to prevent HIV infection, other STIs, and unintended pregnancy (UNESCO 2009).

+ Female reproductiev organs

Purves et al. Life: The Science of Biology, 6th Edition by Sinauer Associates

Wisma Di 1/26/09

+ Are you ready to become an adolescent parent?

(Johns Hopkins Medicine 2009)

Wisma Diawanti 1/26/09

+ Pregnancy

- Once a girl becomes mature sexually, she can become pregnant even after single sexual intercourse.
- The sperm that has been ejaculated in the vagina cannot be washed out with a vaginal douche, antiseptic solution, or other spermicides.

(Grimes 2007; Hatasaka 1997; Pray and Prey 2004)

Wisma Diawanti 1/26/09

+ Pregnancy

- There are physical risks associated with the facts that the pregnant girl is not fully develop. Adolescent mothers with lack of support and access to health services may face high-risk pregnancy and childbirth, including infection, bleeding, infant death and maternal death.
- Unsafe abortion may lead to many complications including bleeding, infection, and maternal death.

(Grimes 2007; Hatasaka 1997; Pray and Prey 2004)

Wisma Diawanti 1/26/09

+ HIV Risk Activity

Part A. You have learned that you may have been infected with HIV and maybe pregnant.

- I did not get HIV nor am I pregnant because:
- I (or my girlfriend) caught HIV or became pregnant because:
- Within a few days of finding out that I might have HIV or am pregnant, I would have to:
- If my HIV and pregnancy tests show positive results, I would have to:
- The HIV and pregnancy would change the next year of my life by:
- Part B.** I do not want to become infected with HIV or become pregnant because:

Wisma Diawanti 1/26/09

+ ABSTINENCE

- Some young people do have sex.
- Abstinence can be a sign of real emotional maturity, and shows that you are stronger than peer pressure.
- Abstinence reduces the risk of HIV, other STIs, and cervical cancer.
- Abstinence is the only method of birth control that is 100% effective (Barth 2004).

Wisma Diawanti 1/26/09

+ Discussion

- What are my reasons for staying abstinent?
- What are the results of having sex when I am not married?
- What are the advantages to me if I do not have sex at this time in my life?
- What could make it difficult not to have sex?

Wisma Diawanti 1/26/09

+ SESSION 2

Refusals and delaying tactics

Wisma Diawanti 1/26/09

Reproductive rights

All individuals have the rights to decide freely and responsibly the number, spacing, and timing of their children, and to have the information and means to do so, and the right to achieve the highest standard of sexual and reproductive health

(United Nations Population Information Network 1994)

Waste Decisions 1/28/09

Sexual rights (WHO 2006a)

The rights of all persons, free of coercion, discrimination and violence, to:

- Have sexual health, including access to reproductive health services
- Seek, receive, and give information related to sexuality
- Sexuality education
- Respect for bodily integrity
- Choose their partner
- Decide to be sexually active or not
- Consensual sexual relations
- Consensual marriage
- Decide whether or not, and when, to have children
- Pursue a satisfying, safe, and pleasurable sexual life

Waste Decisions 1/28/09

5 characteristics of effective refusals

- Say "NO!"
- Repeat the refusal
- Suggest an alternative activity
- Use body language that says "NO!"
- Build the relationship (if appropriate)

(Barth 2004)

Waste Decisions 1/28/09

REFUSALS	EXAMPLE
Say "NO!"	<ul style="list-style-type: none"> • "No, I don't want to do that!" • Look straight at the other person
Repeat the refusal	<ul style="list-style-type: none"> • "No, I don't want to do that!" • "No, and if you keep pressuring me I am going to shout!"
Suggest an alternative activity	<ul style="list-style-type: none"> • "Let's go to a movie, for a walk, to a friend", etc
Use body language that says "NO!"	<ul style="list-style-type: none"> • Use a strong tone voice • Look serious when you say NO • Push the person away
Build the relationship (if appropriate)	<ul style="list-style-type: none"> • "I feel mad if you push me to do things I am not ready for" • "I don't want to have sex with you, but I want to keep seeing you".

(Barth 2004)

Waste Decisions 1/28/09

5 characteristics of effective delaying tactics

- Make a delay statement
- Take a delay action
- Create space
- End the situation quickly
- Build the relationship (if appropriate)

(Barth 2004)

Waste Decisions 1/28/09

DELAYING TACTICS	EXAMPLE
Make a delay statement	<ul style="list-style-type: none"> • "I'm really not feeling well" • "Sorry, I have to go"
Take a delay action	<ul style="list-style-type: none"> • Stop kissing and get up • Start coughing and ask for water
Create space	<ul style="list-style-type: none"> • Serious expression • Take a step back. Turn away
End the situation quickly	<ul style="list-style-type: none"> • "Got to go, I'm late" • Push the person away
Build the relationship (if appropriate)	<ul style="list-style-type: none"> • "I want you to stop that!" • "I don't want to have sex with you, but I want to keep seeing you".

(Barth 2004)

Waste Decisions 1/28/09

Talk to your parents

- How should teenagers show affection to someone they love?
 - What I think :
 - What I think my parent(s) think :
- Should young people have sex with someone they love if they plan to marry them?
 - What I think :
 - What I think my parent(s) think :

Waste Decisions 1/28/09

Talk to your parents

- What are the best protection for young people who are sexually active?
 - What I think :
 - What I think my parent(s) think :
- What should parents do to help their children avoid HIV, other STIs, or pregnancy?
 - What I think :
 - What I think my parent(s) think :

(Barth 2004)

Waste Decisions 1/28/09

+

SESSION 3

Avoiding high-risk situation and using protection

Warrisa Dierckx 1/26/09

+

Handling crisis situations

- Yellow alerts: signals that there may be an unprotected 'sex crisis' in the future. You should slow down and prepare yourself to avoid HIV, other STIs, or pregnancy.
- Yellow alert signals occur when:
 - You think that she or he might be thinking about sex
 - You think that there will be a chance for sex because you will be alone
 - You wonder what will happen (Barth 2004)

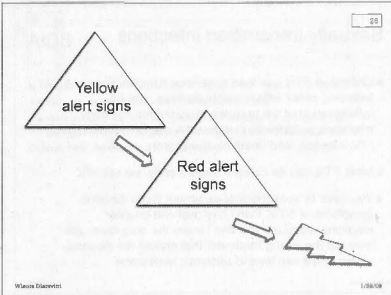
Warrisa Dierckx 1/26/09

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Handling crisis situations

- Red alerts: signals that there is going to be an unprotected 'sex crisis' at any moment, and you have to act fast to avoid it.
- Red alert signals occur when:
 - You are alone with the other person.
 - You may have done a lot of touching and are feeling close.
 - You can still stop and decide not to have sex or you can still use protection, but if you go past a red alert signal without stopping and/or preparing first, your life may be forever changed. (Barth 2004)

Warrisa Dierckx 1/26/09



+

YELLOW ALERT SIGNS	RED ALERT SIGNS
I get dressed up to look really sexy	We make and take chances to touch
I plan to get some beer to help us loosen up	We are drinking and touching
I think about ways to be alone with him or her	We go to a place to 'get away from everybody'
We talk about being alone at home	We are alone at home

(Barth 2004)

Warrisa Dierckx 1/26/09

+

Contraception method	Prevent HIV, other STIs, pregnancy	Prevent pregnancy	Doesn't protect for all
Withdrawal			✓
Douching			✓
Hoping, rhythm			✓
Birth control pill, patch, foam		✓	
Depo provera, implant		✓	
Latex condom	✓		
Abstinence	✓		

(Barth 2004)

Warrisa Dierckx 1/26/09

+

Male latex condom

(CDC 2011c, NSW Health Australia 2009)

Warrisa Dierckx 1/26/09

+

Female latex condom

(PPF 2012a, Family Planning NSW 2012)

Warrisa Dierckx 1/26/09

Sexually transmitted infections 31

- STIs: infections that are spread primarily through person-to-person sexual (vaginal, oral, or anal) contact. Genital herpes and genital warts can also be transmitted by skin contact. HIV and syphilis can also be transmitted from mother to child during pregnancy and childbirth, and through blood products and tissue transfer.
- Cause: virus, bacteria, parasite, fungi, that can be seen only with a microscope. They are not related to the practice of magic.
- Risk factors: having unprotected sex with someone who has been infected with the disease. (Murtiastutik 2008)

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Sexually transmitted infection 32

- Symptoms :
 - Often without any symptoms
 - Penile/vaginal/anal discharge: clear/white/yellow/green/grey, liquid/thick, has smell; intense itching or pain in the penis/vagina/anus; testicular pain or swelling. Example: gonorrhea, candidiasis, chlamydia.
 - Sores on the genitals. Example: syphilis, herpes simplex genitalis.
 - Genital/anal warts. Example : Genital HPV infection (Murtiastutik 2008, Melbourne Sexual Health Centre 2007)

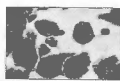
Wiscan Diagnostics 1/26/09

Sexually transmitted infections 33


- Untreated STIs can lead to serious complications, including pelvic inflammatory disease, painful inflammation of the testicles, reduced fertility, early miscarriage, stillbirth, increase the risk of contracting HIV infection, and death (Murtiastutik 2008).
- Most STIs can be cured if treated early, except HIV.
- You have to seek medical treatment if you develop symptoms of STIs. Don't buy over-the-counter medicine, because you don't know the diagnosis, you may get the wrong treatment that makes the disease worse and it can lead to antibiotic resistance.

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CHLAMYDIOSIS 34



The cause: Chlamydia trachomatis
http://www.cdc.gov/nczod/diseases/zoonotic/dx/020404.htm



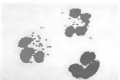
Chlamydia in the eye
http://www.cdc.gov/nczod/diseases/zoonotic/dx/020404.htm



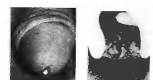
Chlamydia in the penis and vagina
http://www.cdc.gov/nczod/diseases/zoonotic/dx/020404.htm

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GONORRHEA 35




The cause: Neisseria gonorrhoea
http://www.cdc.gov/nczod/diseases/zoonotic/dx/020404.htm



Gonorrhea in the penis and vagina
http://www.cdc.gov/nczod/diseases/zoonotic/dx/020404.htm




Epididymis, a complication of gonorrhea




Gonorrhea in the eye
http://www.cdc.gov/nczod/diseases/zoonotic/dx/020404.htm

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SYPHILIS 36



The cause: Treponema pallidum
Source: CDC 2010



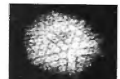
Primary syphilis on anus and penis
Source: Toney 2011, slide 15, 16




Secondary syphilis on lips and penis
Source: CDC 2011e, picture 19, 17

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GENITAL HERPES 37



The cause: Herpes Simplex Virus
Source: Seizer 2010




Genital herpes on penis
Source: Seizer 2010, 3




Genital herpes on labia
Source: Toney 2011, slide 30

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GENITAL HPV INFECTION 38




The cause: Human Papilloma Virus
Source: Washington and Lee University 2011



Genital warts on penis
Source: Toney 2011, slide 54




Genital warts on thigh
Source: Toney 2011, slide 55




Genital warts on anus
Source: Toney 2011, slide 56

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AIDS



The Cause: Human Immunodeficiency Virus
Source: Dismar 2012:1



An emaciated AIDS patient
Source: Merriam 2008



An AIDS patient with Sarcoma Kaposi
Source: Fauqiao et al. 2009:34

Wisma Darmasri 1/26/09

AIDS

- The cause : HIV
- HIV is found in body fluids and transmitted through sexual contact, sharing unsterile injecting equipment, from mother to child during pregnancy and childbirth, and through blood products and tissue transfer.
- HIV can be detected with an antibody test after 2-12 weeks of the infection. In very rare cases, it can take up to 6 months for antibodies to develop.
(Schoub 1994, Nasronudin 2007, CDC 2009)

Wisma Darmasri: 1/26/09

AIDS

- Symptoms:
 - Long latent period: HIV-infected person has not developed any symptoms for 8-15 years until the person progresses to the stage of AIDS. Therefore, you cannot judge a person has HIV by the way the person looks.
 - Some people may develop a fever with swollen glands, night sweats or a rash on the body, in the weeks following infections, but many people have no symptoms at all.
- Opportunistic infections, including skin cancer, lung and other infections are often occurred in people with AIDS.
(Schoub 1994, Nasronudin 2007, CDC 2009)

Wisma Darmasri 1/26/09

AIDS

- Treatment:
 - No cure or vaccine for an HIV-infected person.
 - Antiretroviral therapy suppresses the number of viruses in the body, so the infected person can improve his/her quality of life.
(Schoub 1994, Nasronudin 2007, CDC 2009)

Wisma Darmasri 1/26/09

SUMMARY

- Papua and West Papua Provinces have the highest HIV prevalence in Indonesia.
- Young people accounted for 55 percent of all HIV infection and Papua, and 96 percent of the infection was transmitted by sexual contact.
- It is only a myth that if men do not ingest the semen of relatives in a ritual fashion, they will not grow up to be men.
- Abstain from alcohol and drugs, since they affect your judgment, and using them may lead to unsafe sex or injecting drugs.

Wisma Darmasri: 1/26/09

SUMMARY

- Untreated STIs can lead to serious complications, including pelvic inflammatory disease, painful inflammation of the testicles, reduced fertility, early miscarriage, stillbirth, increase the risk of contracting HIV infection, and death (Murtiasatuk 2008).
- Most STIs can be cured if treated early, except HIV.
- You have to seek medical treatment if you develop symptoms of STIs. Don't buy over-the-counter medicine, because you don't know the diagnosis, you may get the wrong treatment that makes the disease worse and it can lead to antibiotic resistance.

Wisma Darmasri 1/26/09

SUMMARY

- Abstinence is the best way to prevent HIV, other STIs, and unintended pregnancy. If you do choose to have sex, then you should be faithful to one uninfected partner and use a condom correctly and consistently.

THANK YOU

Wisma Darmasri 1/26/09

SUMMARY

THANK YOU

Wisma Darmasri 1/26/09

Beyond sexual desire and curiosity: sexuality among senior high school students in Papua and West Papua Provinces (Indonesia) and implications for HIV prevention

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When it comes to sexuality and norms, young Indonesians are becoming more open. Concern about this is related to the rapid increase in HIV prevalence in Indonesia, especially in Papua and West Papua Provinces. While much research has been conducted among youth who have left school, little is known about senior high school students' sexuality and sexual practices in these provinces. Using qualitative and quantitative data, we explore perspectives on and experiences of sexuality, contraceptive use, unintended pregnancy and unsafe abortion among 1082 Year 11 students from 16 senior high schools in both provinces. Findings suggest that around 38.3% of students reported having had sexual intercourse and 36.5% of these having had their first sexual encounter before they were 15 years old. Furthermore, contraceptive use among sexually active students was very low. Around 32% of female students who reported having had sexual intercourse also reported having an unintended pregnancy and the majority of them had had unsafe abortions. The paper points to the implications of students' high-risk sexual behaviours for HIV prevention.

Keywords: youth; sexuality; sexual behavior; HIV prevention; Papua; Indonesia

Introduction

Sexuality, a central aspect of being human throughout life and encompassing sex, gender identities and roles, sexual orientation, eroticism, pleasure, intimacy and reproduction (World Health Organization [WHO] 2006), has been widely studied. The manifestations of sexuality are constructed by culture (Foucault 1990; Goetsch 1989; WHO 2006) and interactions with many other factors, including sex, social, economy, politics and education (WHO 2006).

Previous studies found a transition towards greater openness in young Indonesians' sexuality (Sarwono 1981), even before the first AIDS case in Indonesia was reported in 1987 (Murray 1993). Although the Indonesia Young Adult Reproductive Health Survey (IYARHS) 2002–2003 and IYARHS 2007 found that only 1.3% of female respondents and 6.4% of male respondents reported having had premarital sex (BPS-Statistics Indonesia and ORC Macro 2004; BPS-Statistics Indonesia and Macro International 2008), several studies have found a rising incidence of premarital sex among young Indonesians

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in several provinces in Java and other provinces out of Java (Bennett 2001, 2005; Singarimbun 1991; Situmorang 2001; Utomo 1997, 2003).

The population of Papua and West Papua, the two most eastern provinces of Indonesia, consist of two different groups. The first is the indigenous Papuans of Melanesian descent, comprising around 252 to 264 different linguistic groups, and the second is the Indonesian settlers, of Malay-Indonesian descent (Butt, Numbery, and Morin 2002b; Summer Institute of Linguistics Inc. 1999). Illiteracy rates are high among indigenous Papuans, many of whom live in small hamlets in isolated areas (Butt, Numbery, and Morin 2002b). This condition is aggravated by the percentage of poor people in both Papua and West Papua Provinces (36.8 and 34.9%, respectively); these figures are much higher than the national average (13.3%) (BPS-Statistics Indonesia 2010).

In both provinces, the current intersection of culture and social change presents many challenges to healthy sexual practice (Butt, Numbery, and Morin 2002a, 2002b). High-risk sexual behaviours, such as polygyny, extra-marital sex, multiple sexual partners and sex at young age have been found in some indigenous Papuan cultures, despite normative ideals and cultural sanctions against 'deviant sexuality' (Butt, Numbery, and Morin 2002a, 2002b; Djoht et al. 2005).

Premarital sex is becoming more common among younger generations in both provinces (Butt and Munro 2007; Centre for Health Research University of Indonesia [CHR-UI] 2003; Djoht et al. 2005; BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007), although some young people prefer to conceal courting as much as possible as it conflicts with moral values (Butt, Numbery, and Morin 2002a; Bennett 2005; Hewat 2008). In a survey among 192 indigenous Papuan men and women aged 16 years old and over in Merauke, Jayawijaya, Jayapura and Sorong, Butt et al. (2002a) found all respondents under 20 years old had had sexual intercourse, with 29% of them having had sex by the age of 15. A survey in 2006 found 40% of the population aged 15–49 years in Papua and West Papua Provinces reported having had their first sexual intercourse with their girlfriend or boyfriend and 1.6% had intercourse with a sex worker. Around 8% of females and 4% of males aged 15–24 years in both provinces had already had sexual intercourse before they reached their 15th birthday (BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007).

A study conducted in 2003 in 37 Junior High Schools (2090 students) in five regions in both provinces revealed 12% of students had had sexual intercourse and around 60% had started having sexual intercourse between 13 and 15 years old, although some students reported their first sexual encounter as early as 8 years old. Of sexually active students, 64% reported having had their first sexual relationship with their boy/girlfriend, 29% with acquaintances and 2% of men had sex with female sex workers (CHR-UI 2003).

High-risk sexual behaviours become a crucial and critical concern in relation to the rapid increase of HIV prevalence in Indonesia compared to declining or stable HIV prevalence in other countries in the South-East Asia Region (WHO 2009). Results of the Integrated Bio-behavioural Surveillance Survey in Tanah Papua (BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007) showed that HIV prevalence among the population aged 15–49 years in Papua and West Papua Provinces was 2.4%, much higher than the national average of 0.2% (UNAIDS and WHO 2008). It was noted that in March 2009, the first rank of total HIV and AIDS cases (45.4%) in Papua Province was among people aged between 20 and 29 years and the total cases among the population aged between 15 and 19 years were ranked fourth. Furthermore, 94.4% of cumulative HIV cases in Papua Province and 90% in West Papua Province (compared to 48.4% of

cumulative HIV cases in Indonesia) were transmitted through heterosexual intercourse (DirGen CDC & EH 2009; Papua Health Department 2009).

To date, little is known about senior high school students' sexuality in Papua and West Papua Provinces. This study aims to explore Year 11 students' perspectives and experiences relating to sexuality, contraceptive use, unintended pregnancy and unsafe abortion among different genders and ethnicities and to draw implications for HIV prevention by combining insights from both quantitative data on self-reported sexual behaviour and qualitative data obtained from in-depth interviews. The analysis across the different genders and ethnicities was aimed at identifying the possible key population at higher risk in order to provide the most suitable prevention programme.

Methods

This paper focuses on the results from the pre-intervention questionnaire from a 2009 study entitled *Reducing the Risk of HIV: Intervention Trial for Young Papuans*, that was carried out between February and June. Sixteen senior high schools were randomly chosen from 89 available senior high schools in Jayapura City and Jayapura Regency, Papua Province, and from Manokwari Regency and Sorong City, West Papua Province. A total of 1082 unmarried Year 11 students, selected from one to two classes from each school, were enrolled in the study and all respondents gave written consent. The recruitment was based on the sample size formula for a cluster randomized trial provided by Donner (1998). On the chosen date approved by the school, the researchers gave the questionnaire to the students in the classes. The pre-intervention, self-administered questionnaire included questions on demographic characteristics, previous sexual experience, pregnancy, unsafe abortion, contraceptive use, alcohol and drug use, living arrangements, source of HIV information, STD symptoms and treatment-seeking behaviour. All questions were translated into both Indonesian and the appropriate Papuan languages. The completed anonymous questionnaires were then put in sealed envelopes by the students themselves and handed over to the research team. The research team for the study consisted of 9 medical doctors and 12 staff of non-governmental organisations who work on HIV prevention.

In addition to the survey, a qualitative study was conducted. In-depth interviews ($n = 40$) were conducted among senior high school teachers and students, staff of education offices, staff of non-governmental organisations, doctors, midwives, nurses, youth street sex workers and indigenous tribal leaders from Jayapura Regency and Sorong. The respondents who were interviewed chose their own time and place for the interview.

The types of schools chosen in this study were categorised into three groups: government schools, private schools and vocational schools. The ethnicities were classified into three groups: Papuan (both of the students' parents were indigenous Papuan), non-Papuan (none of the students' parents were indigenous Papuan) and mixed (one of the students' parents was indigenous Papuan). Sexual experience was categorised into three groups: none (had not had any sexual experience), some (kissing and petting without sexual intercourse) and sexual intercourse (anal and/or vaginal intercourse). The age categories were based on the 33 and 66% percentiles: the lowest category was aged less than 18.2 years, the second category was more than 18.2 but less than 19.2 years and the third was more than 19.2 years. All analyses were performed using SPSS 17.0 (SPSS 2008).

The potential risks pertaining to the study was explained to all respondents. They were entitled to withdraw from the study at any stage without consequence. Confidentiality and anonymity were assured in the consent forms. This study was approved under a full ethical review by the Australian National University Human Research Ethics Committee on

30 January 2009, written permission was received from the Directorate General of Nation Unity and Politics, Ministry of Internal Affairs Republic of Indonesia on 13 February 2009 and written permission from the provincial, regency and city level governments were granted. Written permission was also received from each of the schools along with individual consent from respondents.

We use the term 'youth' in this paper to represents respondents aged 15–24 years (United Nations Population Fund and Save the Children USA 2009). The data collected with youth were only from youth enrolled at school and the findings therefore cannot be generalised to out-of-school youth.

Findings

Of the total 1082 students, 50.5% (546) were females and 49.5% (536) were males. The mean age was 18.9 years ($SD = 1.2$) and students' ages ranged from 16.8 to 21.6 years. All students were unmarried at the time of the research, however many students in private schools had not passed on to the next grade several times, so they were older than other fellow students from government schools. The students who came from public schools made up 25.9% (280), those from private schools were 49.2% (532) and those from vocational schools made up 25.0% (270).

Of the students, 59% were Papuan, 35.3% (382) were non-Papuan and 5.8% (63) were of mixed ethnicity. Of the students, 96% (1036) identified themselves as having heterosexual orientation, 3.4% (37) identified as bisexual, 0.7% (8) were homosexual, and 0.1% (one) was transgender (see Table 1).

Table 1. Characteristics of respondents by sexual experience.

Characteristics	None <i>n</i> (%)	Some <i>n</i> (%)	Sexual intercourse <i>n</i> (%)	Missing information <i>n</i> (%)	Total <i>n</i> (%)
Sex*					
Female	233 (42.7)	143 (26.2)	159 (29.1)	11 (2.0)	546 (100.0)
Male	129 (24.1)	144 (26.9)	255 (47.6)	8 (1.5)	536 (100.0)
Mean age in years (SD)**	18.6 (1.0)	18.7 (1.1)	19.2 (1.2)	18.8 (0.7)	18.9 (1.2)
Age category*					
< 18.2 years	139 (38.6)	107 (29.7)	109 (30.3)	5 (1.4)	360 (100.0)
18.2–19.2 years	126 (34.9)	106 (29.4)	118 (32.7)	11 (3.0)	361 (100.0)
> 19.2 years	97 (26.9)	74 (20.5)	187 (51.8)	3 (0.8)	361 (100.0)
Ethnicity*					
Papuan	209 (32.8)	130 (20.4)	289 (45.4)	9 (1.4)	637 (100.0)
Non-Papuan	136 (35.6)	143 (37.4)	94 (24.6)	9 (2.4)	382 (100.0)
Mixed	17 (27.0)	14 (22.2)	31 (49.2)	1 (1.6)	63 (100.0)
Sexual orientation					
Homosexual	1 (12.5)	2 (25.0)	5 (62.5)	0 (0.0)	8 (100.0)
Heterosexual	355 (34.3)	281 (27.1)	382 (36.9)	18 (1.7)	1036 (100.0)
Bisexual	6 (16.2)	4 (10.8)	26 (70.3)	1 (2.7)	37 (100.0)
Transgender	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	1 (100.0)
Type of school*					
Government school	104 (37.1)	92 (32.9)	84 (30.0)	0 (0.0)	280 (100.0)
Private school	160 (30.1)	114 (21.4)	250 (47.0)	8 (1.5)	532 (100.0)
Vocational school	98 (36.3)	81 (30.0)	80 (29.6)	11 (4.1)	270 (100.0)
Total	362 (33.5)	287 (26.5)	414 (38.3)	19 (1.8)	1082 (100.0)

Note: Table 1 presented row percentages. *Chi square test, $p < 0.001$; **one-way ANOVA, $p < 0.001$.

There was a strong association between gender and sexual experience, with 47.6% of male students reporting having had sexual intercourse, compared to only 29.1% of female students. There was also a strong association between age and sexual experience, with 51.8% of students aged more than 19.2 years reporting having had sexual intercourse, compared to 32.7% of students aged between 18.2 to 19.2 years and 30.3% students aged less than 18.2 years. A strong association was also found between ethnicity and sexual experience. Of mixed ethnicity students, 49% reported having had sexual experience, compared to 45.4% of Papuan students and 24.6% of non-Papuan students. Based on the school type, 47.0% of students from private schools reported having had sexual intercourse, compared to 30% of students from government schools and 29.6% from vocational school. This result might be due to the fact that the majority of the students in private school were from the older and oldest age categories.

Of the students, 38% (414) reported having had sexual intercourse, 27.5% of them had experienced anal intercourse and 96.6% of them had experienced vaginal intercourse. Of the 26.5% (287) of students reporting having had some sexual experiences, 99.7% had experienced kissing or petting from the waist up, 16.4% of them had experienced kissing or petting from the waist down and 4.5% had experienced oral sex without penetration. In addition, 33.5% (362) of the students reported never having had any sexual experience and 19 students did not specify their sexual experience.

There was a strong association between sex and type of sexual intercourse (Table 2). Seventy-three percent of heterosexual students and 80.8% of bisexual students had experienced vaginal sex only. A higher percentage of female students (82.4%) had experienced vaginal sex, compared to males (65.9%), while more male students had experienced anal sex only (4.7%) and both vaginal and anal sex (29.4%), compared to females (1.9% and 15.7%), respectively. Anal sex only was reported by 40% of homosexual students but both vaginal and anal sex was experienced by 60% of homosexual students, 24.3% of heterosexual students and 15.4% of bisexual students. The type of sexual intercourse was similar across different ethnicities.

We found that the age of first sexual intercourse was similar across different ethnicities (Table 3). Around 57 to 68% of students from different ethnicities had experienced their

Table 2. Type of sexual intercourse by sex, sexual orientation and ethnicity.

Characteristics	Vaginal sex <i>n</i> (%)	Anal sex <i>n</i> (%)	Vaginal and anal sex <i>n</i> (%)	Total <i>n</i> (%)
Sex*				
Female	131 (82.4)	3 (1.9)	25 (15.7)	159 (100.0)
Male	168 (65.9)	12 (4.7)	75 (29.4)	255 (100.0)
Sexual orientation				
Homosexual	0 (0.0)	2 (40.0)	3 (60.0)	5 (100.0)
Heterosexual	278 (72.8)	11 (2.9)	93 (24.3)	382 (100.0)
Bisexual	21 (80.8)	1 (3.8)	4 (15.4)	26 (100.0)
Transgender	0 (0.0)	1 (100.0)	0 (0.0)	1 (100.0)
Ethnicity				
Papuan	204 (70.6)	9 (3.1)	76 (26.3)	289 (100.0)
Non-Papuan	74 (78.7)	4 (4.3)	16 (17.0)	94 (100.0)
Mixed ethnicity	21 (67.7)	2 (6.5)	8 (25.8)	31 (100.0)
Total	299 (72.2)	15 (3.6)	100 (24.2)	414 (100.0)

Note: Table 2 presented row percentages. * Chi square test, $p \leq 0.001$.

Table 3. Age at first sexual intercourse, partners and contraception among those who have ever had sexual intercourse by ethnicity.

Characteristics	Papuan n(%)	Non-Papuan n(%)	Mixed n(%)	Total n(%)
Age at first sexual intercourse				
≤ 12 years	20 (6.9)	6 (6.4)	1 (3.2)	27 (6.5)
13–14 years	91 (31.5)	24 (25.5)	9 (29.0)	124 (30.0)
≥ 15 years	165 (57.1)	63 (67.0)	21 (67.7)	249 (60.1)
Missing information	13 (4.5)	1 (1.1)	0 (0.0)	14 (3.4)
Sexual partner at first sexual intercourse				
Friend	204 (70.6)	67 (71.3)	25 (80.6)	296 (71.5)
Sex worker	27 (9.3)	8 (8.5)	2 (6.5)	37 (8.9)
Others	35 (12.1)	11 (11.7)	3 (9.7)	49 (11.8)
Missing information	23 (8.0)	8 (8.5)	1 (3.2)	32 (7.7)
Number of sexual partners in lifetime				
1	210 (72.7)	68 (72.3)	26 (83.9)	304 (73.4)
2–5	68 (23.5)	19 (20.2)	5 (16.1)	92 (22.2)
≥ 6	11 (3.8)	7 (7.4)	0 (0.0)	18 (4.3)
Number of sexual partners in the last two months				
0	17 (5.9)	4 (4.3)	5 (16.1)	26 (6.3)
1	196 (67.8)	67 (71.3)	22 (71.0)	285 (68.8)
2–5	46 (15.9)	15 (16.0)	3 (9.7)	64 (15.5)
≥ 6	5 (1.7)	3 (3.2)	0 (0.0)	8 (1.9)
Missing information	25 (8.7)	5 (5.3)	1 (3.2)	31 (7.5)
Frequency of use of condom in the last two months				
Never used condom	180 (62.3)	51 (54.3)	14 (45.2)	245 (59.2)
Rarely	68 (23.5)	21 (22.3)	7 (22.6)	96 (23.2)
Sometimes	25 (8.7)	12 (12.8)	5 (16.1)	42 (10.1)
Almost always	1 (0.3)	2 (2.1)	0 (0.0)	3 (0.7)
Always	0 (0.0)	4 (4.3)	1 (3.2)	5 (1.2)
Missing information	15 (5.2)	4 (4.3)	4 (12.9)	23 (5.6)
Use of condom on the last sexual intercourse				
No	282 (97.6)	78 (83.0)	25 (80.6)	385 (93.0)
Yes	1 (0.3)	15 (16.0)	3 (9.7)	19 (4.6)
Missing information	6 (2.1)	1 (1.1)	3 (9.7)	10 (2.4)
Total	289 (100.0)	94 (100.0)	31 (100.0)	414 (100.0)

Note: Table 3 presented column percentages.

first sexual intercourse at the age of 15 years or over, around 26 to 32% had experienced it when they were between 13–14 years old and 3–7% had experienced it by the age of 12 years.

Sexual partner at the first sexual intercourse was also similar across different ethnicities. Around 71 to 81% of students from different ethnicities had experienced their first sexual intercourse with their friend, around 10 to 11% had experienced it with others (including relatives) and around 7–9% had experienced it with sex workers. The three most-cited reasons for having the first sexual intercourse among sexually active male students were sexual desire (30.4%), curiosity (16.0%) and expressing love (10.5%), while the reasons among the female students were expressing love (22.2%), sexual desire (19.7%) and coercive sex (18.5%). It is important to note that coercive sex was only cited by 0.6% of males. However, 'afraid of break up' was cited by 9.6% of females, compared to 1.9% of males, while 'peer pressure' was cited by 8.2% of males compared to 1.9% of females. A similar percentage of male and female students cited watching sexually explicit movies (10.0%) and alcohol intoxication (6.7%) as the reasons.

Of the sexually active students from different ethnicities, 72.3 to 83.9% reported having had one sexual partner in their lifetime, while 67.8 to 71.3% reported having had one sexual partner in the last two months. However, the remainder of the sexually active students reported having had multiple sexual partners.

In addition, we found a very low incidence of condom use and this result was similar across different ethnicities. Sexually active students from different ethnicities who reported they had never used a condom in the last two months and on the last sexual intercourse were ranging from 45.2–62.3% and 80.6–97.7%, respectively. Only around 3–4% of sexually active non-Papuan and mixed ethnicity students reported that they had always used a condom in the last two months. Further, only 0.3% of Papuan students, 9.7% of mixed ethnicity students and 16.0% of non-Papuan students reported that they had used a condom during their last sexual intercourse. The three most-cited reasons for not using condoms among male students were that they did not have condoms (30.6%), were not sure how to use them (22.8%) and 'my partner is faithful to me' (16.8%). The reasons given by female students were afraid to ask partner to use condom (37.0%), were not sure how to use them (21.9%) and did not have condom (14.4%). A larger proportion of students reported that they were currently not using any contraception (44.2%), followed by withdrawal (35.3%), traditional medicine (7.5%), condom (6.5%) and calendar method (0.7%).

Furthermore, 32.1% (51) of female students who reported having had sexual intercourse also reported having had an unintended pregnancy. Around 84% of female students who reported having been pregnant also reported that they had experienced an unsafe abortion by trying to terminate their pregnancy by themselves (74.4%), with the help of a health professional (14.0%) and traditional healer (11.6%). The use of some pills or *jamu* (traditional medicine) was the first option they resorted to in an attempt to terminate their pregnancy. If this failed, then the students sought help from a traditional birth attendant or health professional. Some parents, however, preferred to take care of their daughters' babies so their daughters could continue to study. The experience of having had an unintended pregnancy was similar across different ethnicities.

The quotes from interviews with some teachers and community members below strengthen these findings. It is written in most school regulations that pregnant female students have to leave the school, although certain schools would accommodate those who wanted to return to school after delivery. Merry, the principal of a vocational school in Manokwari Regency said:

Well, in our school, there had been some bad incidents. Some students had sexual relationship, so unavoidably every year there are around two year 12 female students that experience pregnancy. Since we stick to the school rule, they were sent home to their parents. We have a counseling teacher and we often remind them in the morning assembly, however everything is up to them. It is their decision and their life.

Yan, a private Senior High School principal who was also a physical education teacher in Sorong stated:

Every year I say I have grandchildren. A lot of unintended pregnancies had happened here. They were students from Years 10, 11 and 12. It needs time for teenagers to understand the impact of unprotected sexual relationships. This school was established to help the needy, those who dropped out from other schools. So, actually this school is a mechanics garage for students. So, most of the students who cannot go to public school will come here. They are accepted here. We sent home female students who were pregnant. However, after they gave birth, they reported to me and asked whether they could go to school again. I feel pity for them. If we don't accept them, they have nowhere to continue their education. So, I told them the important thing was that they understood the mistake that has happened and they have to study seriously. I see some teenagers become good and become government employees.

Discussion

Our study found 26.5% of students had had some sexual experience and 38.3% of these had had sexual intercourse. We also found an early age of sexual initiation: 36.5% of sexually active students had started a sexual relationship before they had reached their 15th birthday. Around 26.5% of students had had multiple sexual partners. We also found a very low level of condom use among sexually active students, with only 1.2% of them reporting they had used a condom in the last two months and only 4.6% of them having used a condom during their last sexual intercourse. We found that around 8.9% of sexually active male students had had a sex worker as their first sexual partner. The CHR-UI (2003) found around 12% of junior high school students in five regions in Papua and West Papua Provinces had had sexual intercourse, around 31% had had multiple sexual partners and only 7% of them had used a condom on their last sexual intercourse. In our study we did not ask the students about having sex and receiving gifts in return, however, Butt et al. (2002a) found a trend among youth to be involved in secret sex. They estimated that around 20–25% of respondents aged 16–29 years tended to be mobile, drink alcohol, have sex at a young age, have multiple sexual partners and have sex with friends or acquaintances in an opportunistic manner.

We also found that around 18.5% of female students had experienced coercive sex and 9.6% were 'afraid of break up' as the reasons for having their first sexual encounter. Further, 37% of sexually active female students were afraid to ask their partners to use a condom. These findings point to an expectation that women should comply with men's decisions, as in other parts of the world, including the fear that demanding condoms would be to invite allegations of being a 'slut' (Hewat 2008), this led to females having insufficient control over their sexual health (Hewat 2008; Liguori and Lamas 2003).

In Indonesia, free contraception provided by the government through family planning clinics has been aimed at married couples and poor people, as stated in the Articles 23 and 29, paragraph two of *Indonesia Law No. 52/2009*. Papua Province AIDS Commission and some NGOs have also distributed free female and male condoms, but nowadays sexually active secondary school students are not the target group for their activities (interview with the head of Papua Province AIDS Commission and several staff of NGOs). Despite the government policy, the availability and accessibility of condoms in urban areas in both Papua and West Papua Provinces should not be a reason for not using condom. In a personal communication with a medical doctor stationed in Jayapura, it was revealed that condoms are available in any pharmacy in Papua and West Papua Provinces and the price is quite cheap, around Rp 3,500 (around US\$ 0.4) a box, containing three latex condoms.

Although condoms are available in any pharmacy, our study found a low percentage of condom use and the most cited reason among male students for not using a condom was that they 'did not have a condom'. Our study revealed that there was a lack of communication about condom availability, lack of knowledge about how to use a condom properly, the function of using a condom, as well as a false belief that the withdrawal method and using traditional medicine could prevent pregnancy. Around 23 and 22% of sexually active male and female students reported they were not sure how to use a condom, while around 44% of them currently did not use any contraception, 35% had used the withdrawal method and 8% had used traditional medicine to prevent pregnancy. Thus, respondents were more worried about getting pregnant rather than acquiring or transmitting STDs or HIV. Two studies carried out in Papua found sexually active males were not accustomed to using a condom (Djoht et al. 2005), while Butt et al. (2002a) found that only around 29% of their respondents could identify a condom when shown one. Further, knowledge about their proper use, disposal and benefits was even lower.

In this study, anal sex was experienced by students of different sexual orientations. None of the students experiencing anal sex had experienced coercive sex on their first sexual encounter. Previous studies revealed anal sex and oral sex were experienced by some out-of-school young men having sex with other men (Manokwari and Sorong) (Djoht 2005; Djoht et al. 2005) and by Papuan transgender persons (Morin 2008). Anal sex was also experienced by indigenous Papuan women who had been subject to coercive sex (Butt, Numbery, and Morin 2002a) and by out-of-school children who had experienced sexual violence in Jayapura City (Djoht 2004).

The change to more open sexual practices in many Indonesian cities has led to increasing numbers of young, unmarried women who become pregnant choosing abortion (Hull, Sarwono, and Widiantoro 1993; Utomo et al. 2001). Our study revealed that around 74% of female students who reported having had an unintended pregnancy also reported having a self-induced abortion and 11.6% had an unsafe abortion through a traditional healer. It has been estimated there are around two million abortion cases per year in Indonesia and that approximately 30% of these are among adolescents (Utomo et al. 2001). Premarital pregnancy and abortion are still stigmatised and restricted in the community (Bennett 2001; Sedgh and Ball 2008; Utomo 2003). Further, Butt and Munro (2007) found a trend of intra-family adoption among the Dani tribe in highland Papua, where the parents of an unmarried pregnant girl take the infant in as their own. *Indonesia Law No. 36/2009*, section six, article 75 defines abortion as illegal, except for life-threatening pregnancy, severe genetic disorder or congenital anomaly and pregnancy due to rape, which can cause psychological trauma to the victim. Further, it is stated in article 76 that abortion as indicated in article 75 can only be carried out by the sixth week of pregnancy based on the first day of the last menstrual period, except for a medical emergency case, it must be carried out by a certified medical professional and approved by the pregnant woman, with permission from the husband, except for a rape victim.

The three most-cited sources of HIV information reported by students were the media (65.2%), school (20.5%) and other (such as from HIV awareness training for students, from a doctor or a paramedic) (5.4%). All teachers who were involved in our study reported that once a year there was a mass education program on HIV prevention for new students enrolled in the school, in coordination with a public health centre (Puskesmas), an AIDS commission or NGOs working in this field. In Indonesia, elements of sexuality education are included in the Religion, Science and Biology, Sports and Healthy Living Education school textbooks (Lam 2010; Utomo et al. 2010). Utomo et al. (2010) found that sexually transmitted infections (STIs), including HIV information in school textbooks in both primary and secondary schools was quite comprehensive and students were exposed to knowledge about various forms of STIs, modes of transmission and of abstinence and being faithful as HIV prevention, but in general the materials did not discuss safe sex practices. In an interview conducted by Lam (2010), Hull found the materials presented did not emphasise high-risk behaviours that the students need to avoid and how to protect themselves in various situations. Moreover, based on a monitoring survey conducted by UNICEF and from program monitoring by the Indonesian Ministry of National Education, it was disclosed that only around 10% of the total 110 schools provided life skills-based HIV education in Indonesia; of these, 2.3% were primary schools and 41% were secondary schools. However, several positive results were indicated in the qualitative assessment of the program, such as the improvement of students' ability to express their opinions, responsibility and cooperativeness (National AIDS Commission Republic of Indonesia [NAC] 2007).

Djoht (2002) found that some working women, university students, senior high school students and wives in Sorong city were involved in secret sex. Butt et al. (2002a) revealed that secret sex among youth is widespread in all regions of the province. It often implies gifts of money or goods and it seems to signify a transition phase, moving toward more commercialised form of sex.

In 2003, the local government of Papua Province legitimized *Regulation No. 20/2003 on HIV Prevention and Reduction*. This document requires every sex worker to use a condom and if the regulation is violated, then both the sex worker and the pimp will not be permitted to work for five days. Further, if the regulation is violated again, then the sex worker would be subject to imprisonment for a maximum of six months or be fined five million rupiahs (Catholic Diocese of Jayapura 2008). Despite the regulation, Butt et al. (2002b) found that condom use was as low as 2–5% among unregulated open-air sex workers and up to 30–80% among hostess bar or hotel bar and brothel workers in Papua. Furthermore, the 2007 integrated biological-behavioural surveillance among most-at-risk groups in Indonesia disclosed a higher prevalence of HIV and the three most common sexually transmitted infections among brothel-and street-based sex workers compared to women working in karaoke bars, massage parlours etc. The prevalence of HIV, chlamydia, gonorrhoea and active syphilis among all female sex workers was around 2–16%, 20–55%, 8–44% and 1–13%, respectively, and the highest HIV prevalence was found among sex workers in Papua Province (Ministry of Health of the Republic of Indonesia, National AIDS Commission, and Family Health International 2007).

Condom use among the general population was also low. Djoht et al. (2005) found that fewer than 40% of sexually active young people in Papua Province had used condoms, while BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia (2007) found a much lower percentage (2.8%). In an integrated bio-behavioural surveillance survey among population aged 15–49 years in Papua and West Papua Provinces, it was found that the age of initial sexual intercourse was associated with HIV infection: of those who had their first sexual intercourse between the ages of 10 to 14 years, 15 to 24 years and 25 years or more, 3.3, 2.3 and 1.9%, respectively, were HIV-positive. HIV prevalence was higher among those who engaged in paid sex, had contracted a sexually transmitted disease in the previous year and had not used a condom at last sexual encounter or had had more than one sexual partner (BPS-Statistics Indonesia and Ministry of Health of the Republic of Indonesia 2007).

Our study found high-risk sexual behaviours among senior high school students, such as early age of sexual initiation, having multiple sexual partners, unprotected sex, exposure to sexual workers, coercive sex, anal sex and a variety of sexual orientations. These high-risk sexual behaviours, insufficient knowledge of HIV and its prevention, as well as societal factors and inequalities increased their risk and vulnerability to HIV and other sexually transmitted infections (Butt, Numbery, and Morin 2002a; Forhan et al. 2009; NAC 2007; United Nations Development Programme 2005; WHO 2006). In addition, we also found negative consequences of unprotected sex, such as unplanned pregnancy as well as self-induced and unsafe abortions that increased the risk of complications and death (Grimes et al. 2006; Singh 2006; WHO 2007). Our study found few differences in the age at first sexual intercourse, sexual partner on the first sexual intercourse, number of sexual partners, condom use and having an unintended pregnancy among sexually active students across different ethnicities. Accordingly, all prevention and intervention efforts for HIV-risk reduction and vulnerability reduction should be aimed at all students regardless of their ethnicities.

Young people make up around 18% of the Indonesia population and 20% of the Papua population (BPS-Statistics Indonesia 2005) and consequently the most difficult challenge is that of changing sexual behaviour, the route responsible for the vast majority of HIV infections worldwide (Aggleton et al. 1994). Therefore, risk-behaviour change strategies should be a priority for HIV prevention (Coates, Richter, and Caceres 2008; Johnson 1988) and increasing our understanding about youth sexual behaviours is essential for designing prevention efforts that meet the needs of youth with different sexual expectations and experiences (Whitaker, Miller, and Clark 2000).

Butt et al. (2002b) have reminded us that in Papua, any HIV prevention takes place in an extraordinarily complex cultural, economic and political setting. Therefore, it is necessary to implement both programmes and policies (Blum and Mmari 2005) that can be applied in Papua. We recommend that risk-behaviour change strategies should include school-based comprehensive sex and HIV education programmes that cover abstinence, safe sex, respect for others and oneself, relationship, effective communication, high-risk sexual behaviours, HIV and other sexually transmitted infection. These strategies should be supported by the government, parents and community and combined with health, law and society programs.

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Résumé

Les jeunes indonésiens se montrent de plus en plus ouverts à la discussion sur la sexualité et sur les normes. La préoccupation qui en découle est l'augmentation de la prévalence du VIH en Indonésie, en particulier dans les provinces de Papouasie et de Papouasie Occidentale. Alors que beaucoup de recherches ont été conduites sur les jeunes qui ont quitté l'école, la littérature est pauvre sur la sexualité et les pratiques sexuelles des lycéens dans ces provinces. En utilisant des données qualitatives et quantitatives, nous explorons des points de vue et des expériences relatifs à la sexualité, la contraception, aux grossesses non désirées et aux avortements à risques, parmi 1082 lycéens en classe de première, répartis sur seize lycées dans les deux provinces. Les résultats suggèrent qu'environ 38,3% des lycéens ont déclaré avoir eu des rapports sexuels, et parmi ceux-ci, 36,5% avaient fait leur première rencontre sexuelle avant l'âge de quinze ans. De plus, le taux d'usage de la contraception parmi les lycéens sexuellement actifs était très faible. Environ 32% des

lycéennes ont déclaré avoir eu une grossesse non désirée, dont la plupart ont avorté en prenant des risques. Cet article met l'accent sur les implications des comportements sexuels à risque des lycéens pour la prévention du VIH.

Resumen

Los jóvenes de Indonesia son cada vez más abiertos con respecto a la sexualidad y las normas. Este aspecto es preocupante debido al rápido aumento en la prevalencia del VIH en Indonesia, especialmente en las provincias de Papúa y de Papúa Occidental. Si bien esta cuestión se ha estudiado a fondo entre los jóvenes que han terminado sus estudios primarios, poco se sabe sobre la sexualidad y las prácticas sexuales de los estudiantes de enseñanza secundaria de estas provincias. Con ayuda de datos cuantitativos y cualitativos, analizamos las perspectivas y las experiencias con respecto a la sexualidad, el uso de anticonceptivos, los embarazos no deseados y el aborto poco seguro entre 1082 estudiantes del curso 11 de 16 escuelas superiores en ambas provincias. Los resultados indican que aproximadamente un 38.3 por ciento de los estudiantes informaron haber tenido relaciones sexuales y un 36.5 por ciento de estos haber tenido su primera relación sexual antes de cumplir los 15 años. Por otra parte, el uso de anticonceptivos entre los estudiantes sexualmente activos era muy bajo. Aproximadamente el treinta dos por ciento de las estudiantes que informaron haber tenido relaciones sexuales también afirmaron un embarazo no deseado y la mayoría de ellas habían tenido abortos poco seguros. En este artículo destacamos las repercusiones de las conductas sexuales de alto riesgo de los estudiantes en la prevención del sida.

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