Knowledge, Attitudes and Beliefs about Disease and Medications in Adolescents Living with HIV/AIDS at Surin Hospital

นิพนธ์ต้นฉบับ

รัชนก สิทธิโชติวงศ์[1]*, พักตร์วิภา สุวรรณเพรหม[2], หทัยกาญจน์ เชาวนพูนผล[2] และ รัตนาภรณ์ อาวิพันธ์[2]

[1] กลุ่มงานเภสัชกรรม โรงพยาบาลสุรินทร์ อ.เมือง จ.สุรินทร์ 32000
[2] ภาควิชาบริบาลเภสัชกรรม คณะเภสัชศาสตร์ มหาวิทยาลัยเชียงใหม่ อ.เมือง จ.เชียงใหม่ 50200

* **ติดต่อผู้นิพนธ์:** ratchas12@yahoo.com

วารสารไทยเภสัชศาสตร์และวิทยาการสุขภาพ 2557;9(2):47-54

Original Article

Ratchanok Sittichotiwong[1]*, Puckwipa Suwanaprom[2], Hathaikan Chowwanapoonpohn[2] and Ratanaporn Awiphan[2]

[1] Department of Pharmacy, Surin Hospital, Surin, Thailand 32000
[2] Department of Pharmaceutical Care, Faculty of Pharmacy, Chiang Mai University, Chiang Mai, Thailand 50200

* **Corresponding author:** ratchas12@yahoo.com

Thai Pharmaceutical and Health Science Journal 2014;9(2):47-54

บทคัดย่อ

วัตถุประสงค์: เพื่อสำรวจความรู้ ทัศนคติ และความเชื่อเกี่ยวกับโรคและยาในมุมมองของวัยรุ่นติดเชื้อเอชไอวี/เอดส์ที่ได้รับการรักษาด้วยยาต้านไวรัส **วิธีการศึกษา:** งานวิจัยเชิงคุณภาพนี้ใช้วิธีการสนทนากลุ่มและสัมภาษณ์เชิงลึกในกลุ่มวัยรุ่นติดเชื้อเอชไอวี/เอดส์ที่มารับบริการ ณ คลินิกภูมิคุ้มกัน โรงพยาบาลสุรินทร์ ระหว่างเดือนมีนาคม – พฤษภาคม 2556 โดยใช้คำถามที่สร้างขึ้นจากแบบจำลองการอธิบายโรค แบบจำลองความเชื่อด้านสุขภาพ และทฤษฎีพฤติกรรมตามแผน วิเคราะห์ข้อมูลเชิงเนื้อหา **ผลการศึกษา:** วัยรุ่นติดเชื้อเอชไอวี/เอดส์จำนวน 20 คน เข้าร่วมการสัมภาษณ์เชิงลึกและดำเนินการสนทนากลุ่ม 3 ครั้ง สำหรับความรู้เกี่ยวกับโรคและยาที่สัมพันธ์กับเอชไอวี/เอดส์พบว่ากลุ่มตัวอย่างมีการรับรู้ตามแบบจำลองการอธิบายโรคและความเชื่อด้านสุขภาพว่าเอชไอวี/เอดส์เป็นโรคที่รักษาไม่หายขาดและรักษาได้ด้วยการใช้ยาต้านไวรัสเท่านั้น มีการรับรู้ว่ายาต้านไวรัสจะช่วยให้ร่างกายแข็งแรงขึ้น หากจำแนกผลการศึกษาตามช่วงกลุ่มอายุคือ วัยรุ่นตอนต้นอายุ 10 - 15 ปี และวัยรุ่นตอนกลางอายุ 16 - 18 ปี พบว่าทั้งสองกลุ่มมีความรู้ที่แตกต่างกันอย่างชัดเจนคือ กลุ่มวัยรุ่นตอนกลางสามารถอธิบายรายละเอียดได้มากกว่าวัยรุ่นตอนต้นที่ยังสับสนและตอบได้เพียงคำถามพื้นฐาน ด้านการรับรู้อุปสรรคของการกินยาพบว่าขนาดของเม็ดยาและผลข้างเคียงจากยาเป็นสิ่งที่มีผลต่อความรู้สึกของวัยรุ่นมากที่สุดเมื่อเกิดการดื้อยาของเชื้อเอชไอวี ส่วนอุปสรรคในการรับประทานยาต้านไวรัสให้สม่ำเสมอได้แก่ ปัญหาการเดินทางไปโรงพยาบาล คุณสมบัติทางกายภาพของยา กิจวัตรประจำวัน และความไม่พร้อมของอุปกรณ์ช่วย นอกจากนี้ยังพบว่าครอบครัวมีอิทธิพลต่อพฤติกรรมความร่วมมือในการรักษาของวัยรุ่นมากที่สุด **สรุป:** วัยรุ่นตอนกลางมีความรู้เรื่องโรคและยาเอชไอวี/เอดส์ชัดเจนและลึกซึ้งกว่าวัยรุ่นตอนต้น มีการรับรู้ตามแบบจำลองความเชื่อด้านสุขภาพระดับมากในทุกด้าน และพบว่าสมาชิกในครอบครัวเป็นผู้มีบทบาทสำคัญต่อพฤติกรรมความร่วมมือในการรักษาด้วยยาต้านไวรัส

คำสำคัญ: ความรู้, ทัศนคติ, ความเชื่อ, วัยรุ่น, เอชไอวี/เอดส์

Abstract

Objective: Objective: To explore knowledge, attitudes and beliefs about disease and medication in the perspective of adolescents living with HIV/AIDS (ALWHs) and receiving antiretroviral (ARV) therapy. **Methods:** A qualitative research using focus group discussion and in-depth interview to explore the knowledge, attitudes and beliefs of ALWHs followed up at immunology clinic of Surin hospital, Thailand from March to May 2013 with the questions guided by constructs of the Explanatory Model (EM), the Health Belief Model (HBM) and the Theory of Planned Behavior (TPB). Data were analyzed by content analysis. **Results:** Twenty ALWHs participated in 3-rounded focus group discussions and an individual interview. According to the HBM, the findings showed that the ALWHs perceived that HIV/AIDS was an incurable disease, and ART was the only treatment which also helped them get stronger. Based on the information obtained, ALWHs were classified into two groups according to their age; early (aged 10 to 15 years) and middle adolescents (aged 16 to 18 years). The obvious difference was the middle adolescents were able to explain their answers in detail while most of the early adolescents had unclear and basic answers. Regarding to the perceived barriers, pill size and side-effects of ARV drugs were the first concern when they had the ARV drug resistance. Barriers to taking ARV drugs regularly were transportation to the hospital, physical properties of ARV drugs, their daily activities, and unavailability of adherence aids. Their family was the strongest influence on their normative belief. **Conclusion:** Middle ALWHs had clearer and deeper explanations about HIV/AID disease and medications than early counterparts. Their perceptions according to HBM were in high level. Their family members played major roles on their adherence to ARV therapy.

Keywords: knowledge, attitudes, beliefs, adolescents, HIV/AIDS

Introduction

Acquired Immune Deficiency Syndrome (AIDS) is an important public health issue worldwide. Adherence with antiretroviral (ARV) therapy (ART) is an important factor to achieve the goal of ART. Literature suggests that long-term ART with at least 95% adherence is needed to achieve good clinical outcomes, and reduce HIV/AIDS related mortality and morbidity.[1-3] Adherence on ARV drugs has been a challenge in all groups of HIV patients. Adolescents living with HIV/AIDS were reported as being problematic in maintaining optimal treatment adherence.[4]

Only 50% of adolescents living with HIV/AIDS (ALWHs) were reported to have maintained an undetectable viral load at one year after achieving optimal control in a U.S. cohort.[5] In Thailand, patients aged 10 - 19 years had significantly less adherence than the younger cohort after receiving medications for 288 weeks.[6] A lower adherence might be

related to a finding that Thai HIV-infected teenagers had psychosocial difficulties, i.e. depression, suicide ideation, stigma, and discrimination, and tried to conceal their HIV infection from others.[7] Thus, to improve long-term adherence with ART, the healthcare team has to pay attention to both the patients' medical and psychosocial factors.[8] Studies related to psycho-social factors associated with adolescents living with HIV/AIDS in Thailand remains very limited. This study aimed to explore knowledge, attitudes and beliefs about disease and medications in the perspective of ALWHs receiving ART.

Methods

Study Design and Sample

With its qualitative design, focus group discussion (FGD) and in-depth interview (IDI) were used to gain a better understanding about knowledge, attitudes and beliefs about disease and medications in the perspective of ALWHs. In developing questions for the FGDs, we were guided by constructs of the Explanatory Model (EM), the Health Belief Model (HBM) and the Theory of Planned Behavior (TPB). The validity of the questions was assessed by content analysis by opinion of three experts including two university faculty members with experience in health behavior research and a pediatrician caring ALWHs at the immunology clinic, Surin hospital. The questions are shown in Table 1.

Purposive sampling was conducted for this study. The study sample was patients followed up at Surin Hospital, a regional hospital in the North-East of Thailand, during March to May 2013. Eligible participants included those ALWHs who (1) were prenatally infected with HIV-1, (2) had been taking antiretroviral therapy for at least one year, (3) were at the age between 10 - 18 years, (4) had already disclosed about their infection status, and (5) were willing to participate in the study with their informed consent or informed consent from their guardian such as, parent, grandparents, or other relatives. This study received ethics approval from the Ethical Review Committee of the Faculty of Pharmacy, Chiang Mai University (No. 11/2556, issued on Mar. 20, 2013) and the Ethical Committee of Surin hospital (No. 33/2555, issued on Aug. 1, 2012).

Table 1 Questions for assessing knowledge, attitudes and beliefs about HIV/ AIDS disease and medication for focus group discussion.

Topic
Knowledge of disease and medications
Cause of HIV/AIDS
How is HIV-infection transmitted from one person to another?
What do you think about HIV progression?
Severity of HIV/AIDS
What do you think about the difference between HIV-infection and AIDS?
What make you feared of this disease?
Treatment of HIV/AIDS
Why can antiretroviral drugs help you?
What kind of HIV/AIDS treatment do you think you should receive?
What are the most important results you hope to receive from HIV/AIDS treatment?
Attitudes and beliefs about disease and medications
Perceived severity of the disease
Can you die from HIV/AIDS?
Can HIV/AIDs be cured by anti-retroviral treatment?
Perceived risk of HIV drug resistance
Can drug resistance make your disease more complicated?
What will happen, if you take antiretroviral drugs too late or forget to take the drugs?
Perceived barriers to antiretroviral treatment
Do you have any transportation problems for coming to the hospital?
Have you ever had antiretroviral drugs side effects which are intolerable?
What are the barriers in taking antiretroviral drugs regularly?
Perceived benefits of treatment with antiretroviral drugs
Do antiretroviral drugs have a positive effect on your health?
Environment that affects adherence with antiretroviral drug therapy
What are your family's opinions about your disease?
What are your friends' and teachers' opinions about your disease?
What are your cousins' opinions about your disease?
What do you want from the doctor or healthcare team to improve your adherence?
What can make you feel motivated to take your medication?
What can make you feel bad for taking your medication?
What is the level of your intention to take your medication at the right time?

Procedure

People living with HIV/AIDS who work as volunteers at the clinic described the study detail for ALWHs and guardians who met the study's inclusion criteria while they were waiting to see the doctor. Those who agreed to participate were asked to sign the assent and consent form. In this study, there were 3 rounds of FGD and one individual interview Each FGD was conducted with 6 - 8 participants in a separate room. The moderator was a volunteer at the clinic who had close contact with these ALWHs. The researcher (RS) served as an observer. An individual interview was conducted with an individual who were shy, soft-spoken or uncomfortable in sharing information with others. It was taken after the FGD in a separate room. The

findings and working hypotheses gained from the first group was shared with the moderator in order to develop questions for the next group sessions. Each FGD took 30 – 40 minutes of conversation. The second and third FGDs were taken at 2 and 4 weeks respectively after the first FGD. After the third FGD, with no new relevant data obtained, data saturation was reached. All FDGs and interviews were audio-taped and verbatim-transcribed.

Data Analysis

Qualitative content analysis was used for data analysis. The content of the interviews and discussions was analyzed by three coders which were two of the researchers (RS and PS) and the moderator. They familiarized the data by independently reading the transcripts then creating a list of nodes and coded individually. The coding was then compared for consistency. Any unclear points were resolved by a discussion between the two researchers. Finally, we identified themes, defined concepts and interpreted the data.

Results

A total of twenty participants joined three FGDs. Six participants spent 25 minutes in the first FGD. The second group with eight participants took 40 minutes of conversation; while the last group with six participants took 30 minutes. One individual interview was conducted after the first FGD. Characteristics of the study participants are shown in table 2.

Findings from the interview and discussion showed that the early adolescents (aged 10 to 15 years) and middle adolescents (aged 16 to 18 years) had different level of knowledge about their disease and medications. The distribution number of participants each group was shown in table 3. The first FGD comprised of 4 early adolescents and 2 middle adolescents. The second FDG comprised of 2 early adolescents and 6 middle adolescents, while there were 3 children in each age group in the third FGD. Using content analysis, the researchers distinguished their core understanding regarding the HIV/AIDS by their age group. The data saturation grids for early and middle ALWHs are shown in tables 4 and 5, respectively.

Table 2 Characteristics of study participants (N = 20)

Characteristic	Number (%)
Gender	
Male	8 (40.0)
Female	12 (60.0)
Age (years)	
10 – 15	9 (45.0)
16 - 18	11 (55.0)
Education	
Primary school	7 (35.0)
Secondary school	13 (65.0)
Family income (baht per month)	
Less than 1,000	10 (50.0)
1,000 - 3,000	6 (30.0)
More than 3,000	4 (20.0)
Parents status	
Living with parents	4 (20.0)
Separate from parents	12 (60.0)
Parents died	4 (20.0)
Duration on antiretroviral therapy (years)	
4 – 7	6 (30.0)
8 – 11	5 (25.0)
12 – 15	9 (45.0)
Person who help preparing medications	
Self	10 (50.0)
Caregiver	10 (50.0)
Number of medications taken each time	
1	7 (35.0)
2 – 3	7 (35.0)
More than 3	6 (30.0)
CD4 levels (cell/ml.)	
Less than 200	4 (20.0)
200 – 350	4 (20.0)
More than 350	12 (60.0)
HIV drug-resistance	
Yes	4 (20.0)
No	16 (80.0)
Opportunistic infection status	
Never	5 (25.0)
Ever	13 (65.0)
Current	2 (10.0)

Table 3 Distribution number of participants each group

FGD	Number of early ALWHs	Number of middle ALWHs	Total Number	Time (minute)
First	4	2	6	25
Second	2	6	8	40
Third	3	3	6	30

Table 4 Data saturation grid for early adolescents living with HIV/AIDs at each focus group discussion (FGD)

Topics	First FGD (n = 4)	Second FGD (n = 2)	Third FGD (n = 3)
Cause of HIV/AIDS	Don't know (3) Mother to child (1)	Don't know (2)	Don't know (2) Mother to child (1)
Severity of HIV/AIDS	Make body weak (4)	Make body weak (2)	Make body weak (3)
Treatment of HIV/AIDS	Only by antiretroviral drugs (4) Hope to be cured (3)	Only by antiretroviral drugs (2)	Only by antiretroviral drugs (3) Hope to be cured (1)
Perceived severity of the disease	Dead (4) Will die quickly if not received the treatment (1)	Dead (2)	Dead (3)
Perceived risk of HIV drug resistance	Don't know cause (3) Frequently forgotten was a major cause of HIV drug resistance (1)	Don't know cause (2)	Don't know cause (3)
Perceived barriers to antiretroviral treatment	Travel expense (1) Playing outside at the time to take drugs (2)	Difficulties to travel (1) Drugs' side effect (1)	Drugs' side effect (1) Playing outside at the time to take drugs (1)
Perceived benefits of antiretroviral drugs	Make body stronger (4)	Make body stronger (2)	Make body stronger (3)
Environment that affects adherence with antiretroviral drug therapy	Grandmother support (1) Aunt support (1)	Mother support (2)	Grandmother support (1)

Table 5 Data saturation grid for middle adolescents living with HIV/AIDs at each focus group discussion (FGD)

Topics	First FGD (n = 2)	Second FGD (n = 6)	Third FGD (n = 3)
Cause of HIV/AIDS	Sexual intercourse (2) Mother to child (2)	Sexual intercourse (6) Mother to child (6) Contaminated blood (1)	Sexual intercourse (3) Mother to child (3) Contaminated blood (1)
Severity of HIV/AIDS	Makes body weak (2) Cause blister (1) Cause fungus (1)	Makes body weak (6) Destroyed immune (2) HIV is the first stage and AIDS is the last stage (4)	Makes body weak (3) Cause blister (1) Cause abscess (1) HIV is the first stage and AIDS is the last stage (2)
Treatment of HIV/AIDS	Only by antiretroviral drugs (2)	Only by antiretroviral drugs (2) Act by press or kill virus (2) Hope to live as normal people (5) Hope to be cured (1)	Only by antiretroviral drugs (3) Hope to live as normal people (2)
Perceived severity of the disease	Dead (2)	Dead (6)	Dead (3)
Perceived risk of HIV drug resistance	Because forget to take drugs, frequently (1) Because being late for taking drugs (1) Increase viral load (1)	Because forget to take drugs, frequently (4) Because being late for taking drugs (3) Called HIV drug resistant (3) Decrease CD4 (2) Increase viral load (3)	Because forget to take drugs, frequently (2) Because being late for taking drugs (2) Often get sick (2) Decrease CD4 (2) Increase viral load (1)
Perceived barriers to antiretroviral treatment	Drugs' side effect (1) Playing outside at the time taking drugs (1) The clock not available (1)	Drugs' side effect (2) Too many drugs (2) Too big drug (1) Difficulty in travelling to the hospital (1) Doing homework at the time taking drugs (2) The clock not available (1)	Drugs' side effect (1) Too big drug (1)
Perceived benefits of treatment with antiretroviral drugs	Make body stronger (2) Improve immune (1)	Make body stronger (6) Improve immune (3)	Make body stronger (3) Improve immune (2)
Environment that affects adherence with antiretroviral drug therapy	Mother support (1) Friends support (1) Reminding clock (1)	Family support (6) Reminding clock (3) Smaller tablet (1)	Family support (2) Grandmother (1) Friends support (1)

Causes of HIV/AIDS

The middle adolescents informed that HIV could spread from one person to another through sexual intercourse and from mother to child. Only two of them were able to tell that it was through sexual intercourse, from mother to child and through contaminated blood. When they were asked to further explain their answer, they were unable to explain how HIV could transmit through unsafe or unprotected sex. On the other hand, none of the early adolescents knew about the viral transmission.

Severity of HIV/AIDS

Body weakness caused by HIV/AIDS

Most of adolescents explained that HIV/AIDS made their body weak. The middle adolescents could better elaborate their answers than the early adolescents.

"It makes our body weak." A 14-year-old boy

"It'll destroy the immune system of our body. We will get sick more often." A 17-year-old girl

Opportunistic infections and AIDS stage

Some of the middle adolescents gave additional explanations related to opportunistic infections, for example; blisters, fungus, abscess. However the early adolescents did not know about these conditions. They were confused and did not know about the difference between the stages of AIDS.

"I think it's different, but I don't know how." A 14-year-old boy

"It causes blisters to the body. It's the disease that others don't have. It means others are healthier than us. Sometimes we can have kinds of fungus in our brain or TB …things like that." A 18-year-old girl

"I saw an infected adult having an abscess on his neck, needed to be punctured. He said the dirty liquid came out a lot. It seemed to hurt him." A 17-year-old boy

"I think AIDS seems to be the last stage but HIV is the first stage with no symptoms." A 17-year-old girl

Treatment of HIV/AIDS

For the treatment of AIDS, all of them agreed that there was only one method which was using antiretroviral drugs. Most of them said *"The only way is taking antiretroviral drugs."*

Antiretroviral drugs

They had absolute consensus that antiretroviral drugs make their body stronger. However, the early adolescents could not further explain the effects of the drugs while the middle adolescents gave the meaning of "anti-virus" as "**press**" or "**kill**."

"The drugs will resist virus, press them and kill them." A 16-year-old boy

"… but they can't completely kill them. So, we have to take the drugs perpetually." A 17-year-old girl

In addition, they had different levels of expectation from the treatment. Most of the middle adolescents hoped to be able to live as normal people, but the early adolescents wanted a curable treatment in the future.

"I want to be completely cured." A 12-year-old girl

"When I grow up, I want to be a pharmacist. I'll try to discover the medications that can cure (the disease). I'll distribute it to all the patients of this disease." A 13-year-old girl

Perceived severity of the disease

Dead

Most of adolescents believed that they could die from HIV/AIDS. They knew that HIV/AIDS could not be completely cured.

"If we get sick from other diseases, we will also die. AIDS patients that don't receive treatment will die quickly." A 15-year-old girl

An interesting point was that although everyone accepted this fact, some of them still showed their hopes towards the disease. A 16-year-old boy having encountered HIV resistance gave a definition of *"being cured."* In his opinion, *"Taking the drugs regularly will help (the patient) to be completely cured, meaning the virus will be reduced to the comparable level to a normal person.*"

Another girl (18-year-old) with the same experience hopefully said *"I think I might be cured in the future. I'll wait. There might be some medications that can do that."*

Perceived risk of HIV drug resistance

All of adolescents perceived the danger of not taking antiretroviral drugs on-time that they would become weak. Only the middle adolescents could indicate that *"HIV drug resistance will occur."*

Not taking antiretroviral drugs regularly

They believed that *"frequently forgotten or often late in taking medication"* was a major cause of HIV drug resistance.

"weak … our look will be terrible, have blisters, be unwell, get sick easily." A 16-year-old boy

"CD4 will decrease. There'll be more viral load and opportunistic infections." A 18-year-old girl

Perceived barriers to antiretroviral drugs treatment

Barriers to antiretroviral drugs treatment among ALWHs were transportation to the hospital, antiretroviral drugs side effects, their daily activities during the time of taking antiretroviral drugs, and unavailable of medication reminder.

Transportation

The ALWHs' problem in coming to the hospital included travel expenses, difficulties to travel and disturbance of their quality of life.

"For travel expenses, the bus fee is 70 baht per person. I come with my grandmother." A 14-year-old boy

"It's far… buses are rarely available … only twice a day." A 13-year-old girl

"My house is far from here. Each time I have to come here, I've to get up at 05.30 a.m. I take a direct bus but it takes a long time" A 17-year-old boy

Anti-retroviral drugs' side-effects and physical properties

They had many complaints about antiretroviral drugs including side effects (nausea/vomiting), too many items and the large size of the pill.

"I want to vomit after taking DDI, but I have to be patient. If it's not too bad, I' d love it more." A 14-year-old girl

"I have to take so many drugs. They are hard to be swallowed." A 15-year-old boy

"We'll need to take a big sized pill and we'll feel like vomiting later after taking them." A 18-year-old girl with experience in HIV drug resistance

Their activities during the time taking antiretroviral drugs

The early adolescents reported that they were playing while it was time to take medications. The middle adolescents reported that they were doing their homework or playing outside with their friends. For some whose parents asked them to prepare their medications themselves, it took longer time than having it done by their parents.

"When I'm playing football with my friends, my grandmother called me to take home quickly. I want to continue playing." A 14-year-old boy

Unavailability of medication reminder

This problem was only for the middle adolescents taking care of the medications themselves. They had some medication taking reminders such as watch, clock or mobile telephone. But sometimes those reminders were out of order.

"I think it's too late to take my drug. When I went to see the clock, It's 7.20 p.m. My watch was not working." A 18-year-old girl

Perceived benefits of treatment with antiretroviral drugs

All the ALWHs knew the benefits of antiretroviral drugs. They used the words "**make us stronger**." However, the infected early adolescents were unable to further explain the word "be strong" in their own views. The middle adolescents could give clearer explanations that it helped improve the immune system. .

Improved immune system

"I previously stopped taking the drugs about 1 year. I think, the reason that I restarted was that when I didn't take them, I had blisters on my body. My skin wasn't beautiful. I got sick and went to hospital quite often. People who saw me might doubt I am AIDS patient." A 17-year-old girl with HIV drug resistance experience

"After taking the drugs, they'll resist virus. It makes our skin more beautiful. It makes us live longer. I feel better. The immune system is improved." A 17-year-old boy

Social environments that affects antiretroviral drug adherence

Family, friends, teachers and cousins are important supporting factors for medical and treatment adherence. It highlights the important role of family support.

Family

All family members of the infected adolescents knew about their infection. All of them had no problem in living together.

"Everyone in my family accepts my situation. This includes my father, mother, grandfather, grandmother, uncle and aunt, everyone" A 14-year-old boy

Friends and teachers

Most adolescents informed that not all friends and teachers knew about their infection. Those who knew about their infection did not show any signs of abomination. They observed that the persons not knowing may have some doubts of why they often got sick and went to see the doctor frequently.

"Some of my teachers know. They understand me. When I joined my school's camping, they allowed me to leave early. They know I have to be punctual for taking my pills. The persons who aren't aware sometime complain why I am often sick." A 16-year-old girl

"All my friends who know can accept. Everyone can be friends." A 18-year-old girl

Cousins

Most of them reported that their cousins knew about their infection but did not show their abomination. Some of them said that some cousins did not know.

"Uncle and aunt living close to my house don't say anything. For those who live far away, some may know, some may not." A 16-year-old girl

Factors motivated ALWHs to take antiretroviral drugs

Most of the adolescents told that their family members such as maternal grandmother and mother encouraged them to adhere with their treatment and enhance their desire to take antiretroviral drugs. Besides that, the supporting factors were adherence aids, persons helping to prepare the pills, and the appearance of the pills.

Intention to adherence with antiretroviral drugs therapy

Although they had many barriers to regularly taking antiretroviral drugs, but all of them had "high" level of their intention to take antiretroviral drugs.

"I think, I have high intention to take my drugs" A 17-year-old girl

"Of course, I think I'll take it on time" A 14-year-old boy

Discussions and Conclusion

This study revealed that adolescents living with HIV/AIDS and receiving antiretroviral therapy in South-East region of Thailand have a good knowledge about HIV/AIDS. This finding is consistent with other studies on non-HIV adolescents in South Carolina,[9] New York[10] and Malaysia.[11] This finding highlights the success of Thailand's national policy on HIV/AIDS treatment, the National Access to Antiretroviral Program for people living with HIV/AIDS (NAPHA) which provides supports and guidelines targeting

improvement of all major components of HIV/AIDS care, namely, ARV protocol development, healthcare professional training, drug supply chain management, laboratory network formation, monitoring and evaluation and multi-sector and PHA involvement since 2001.[12] As a result, people living with HIV/AIDS in Thailand had received enough knowledge about disease and medication.

The middle adolescents have clearer understanding on the disease and medications than those younger adolescents. The findings suggested that the early adolescents need further knowledge about routes of transmission and the difference between AIDS and HIV-infected persons. This could be explained by the fact that the early adolescents (aged 10 – 15 years) have a limitation on their age potential. In addition, some children might have not been informed about the condition because they are not ready, both physically and mentally. Furthermore, they might not recognize their own illness.[13] Similar findings were found in Nepalese adolescents where non-HIV/AIDS adolescents had moderate level of overall HIV/AIDS knowledge, but lacked in knowledge in the areas of mode of transmission and prevention of HIV/AIDS.[14] Also in Pakistan, non-HIV/AIDS adolescents had partial knowledge about AIDS and its related issues.[15]

Our study findings highlight the constructs of the HBM that the ALWHs had high perceived benefit from ART. For example, they all agreed that ART is only one method of treatment for HIV/AIDS. However, there were several perceived barriers to ART adherence. The physical properties such as taste and size of antiretroviral drugs were the first concern. The ALWHs' daily activities were also an important barrier. They were busy playing with friends, doing homework or going outside when their guardians called for medication taking. This finding may be due to their growing to maturity in their late childhood and adolescence.[16]

Regarding to the Theory of Planned Behavior, data indicated that their family members were the most influential on their normative belief. Participants expressed a need for family support. They stated that their family members helped preparing their medications, reminding them to take medications, supporting them in treatment adherence and understanding their conditions. Otherwise, they sometimes walked away or ignored some friends or teachers for avoiding negative consequences, which was different from most of adults that decided to disclose their HIV status to prevent any rejection from community.[17]

From our findings, it is interesting to note that although they were HIV infected persons, they still wanted to live as normal as uninfected people. They did not to be a stranger. They expected to have social opportunities to live longer and to have the cure for HIV/AIDS in the future.

The strength of this study lies in the fact that it focuses on the perceptions of HIV-infected adolescents which are difficult to access because they are not open to others. We had adults living with HIV/AIDS working as volunteers in the hospital who had close contact with the ALWHs as the focus group discussion moderators Therefore we had open group participation. The main limitation of the study was that the findings might not be able to generalize to the situation in other regions of Thailand.

In conclusion, this qualitative study revealed that the middle adolescents living with HIV/AIDS in Surin hospital had a good knowledge about HIV/AIDS, while the early adolescents lacked of knowledge in route of transmission and the difference between AIDS patients and HIV-infected person. They perceived high benefits of antiretroviral therapy. Their barriers to taking antiretroviral drugs regularly were transportation to the hospital, physical characteristics of antiretroviral drugs, their daily activities and unavailability of adherence aids. Size and taste of antiretroviral drugs were the first concern when they had HIV-drug resistance. Their family played a major role on their normative belief. These findings should be used for designing future interventions to help adolescents living with HIV/AIDS achieve better adherence and quality of life.

ACKNOWLEDGMENTS

The authors are highly grateful to all participants, the director of Surin hospital, the multidisciplinary team of immunology clinic and all of adults living with HIV/AIDS that work as volunteers.

References

1. Paterson DL, Swindells S, Mohr J, et al. Adherence to protease inhibitor therapy and outcomes in patients with HIV infection. *Ann Intern Med* 2000;133(1):21-30.
2. Chesney MA. Adherence to HAART regimens. *AIDS Patient Care STDS* 2003;17(4):169-177.

3. Gardner EM, Sharma S, Peng G, et al. Differential adherence to combination antiretroviral therapy is associated with virologic failure with resistance. *AIDS* 2008;22(1):75-82.
4. Trocme N, Vaudre G, Dollfus C, et al. Factors impacting on antiretroviral therapy compliance in HIV positive adolescents. *Archives de Pediatrie* 2002;9:1241-1247.
5. Murphy DA1, Belzer M, Durako SJ, Sarr M, Wilson CM, Muenz LR, for Adolescent Medicine HIV/AIDS Research Network. Longitudinal antiretroviral adherence among adolescents infectd woth human immunodeficiency virus. *Arch Pediatr Adolesc Med* 2005;159(8):764-770.
6. Udompanich T, Kosalaraksa P and Ratanamanee S. Duration of antiretroviral therapy and adherence in HIV-infected children at Srinagarind hospital. *Srinagarind Med J 2008*;23(3):258-264. (in Thai)
7. Washington CH, Oberdorfer P. Stigma in perinatally HIV-infected adolescents [Abstract No.WEPEC102]. 5th IAS Conference on HIV Pathogenesis, Treatment and Prevention. Cape Town, South Africa: International AIDS Society 2009.
8. Protopopescu C, Raffi F, Roux P, et al, for ANRS CO8 APROCO-COPILOTE Study Group. Factors associated with non-adherence to long-term highly active antiretroviral therapy: a 10 year follow-up analysis with correction for the bias induced by missing data. *J Antimicrob Chemother* 2009;64:599-606.
9. Petosa R, Wessinger J. The AIDS education needs of adolescents: a theory-based approach. *AIDS Educ Prev* 1990;2(2):127-36.
10. Koopman C, Rotherman-Borus MJ, Henderson R, Bradley JS, Hunter J. Assessment of knowledge of AIDS and beliefs about AIDS prevention among adolescents. *AIDS Educ Prev* 1990;2(1):58-69.
11. Zulkifli SN, Wong YL. Knowledge, attitudes and beliefs related to HIV/AIDS among adolescents in Malaysia. *Med J Malaysia* 2002; 57(1):3-23.
12. Chasombat S, Lertpiriyasuwat C, Thanprasertsuk S, Suebsaeng L, Lo YR. The National Access to Antiretroviral Program for PHA (NAPHA) in Thailand. *Southeast Asian J Trop Med Public Health* 2006;37(4):704-715.
13. Oberdorfer P. Disclosure of HIV/AIDS status: Update on Pediatric Infectious Diseases 2006. Bangkok. Rungsin Press, 2006: pp. 133-139.
14. Mahat G, Scoloveno MA. HIV/AIDS knowledge, attitudes and beliefs among Nepalese adolescents. *J Adv Nurs* 2006;53(5):583-590.
15. Arsalan MG. AIDS/HIV knowledge, attitude and beliefs of adolescents of Pakistan. *Eur J Soc Sci* 2010;16(2):275-285.
16. Murphy DA, Wilson CM, Durako SJ, et al. Antiretroviral medication adherence among the REACH HIV-infected adolescent cohort in the USA. *AIDS Care* 2001;13:27-40.
17. Alemu T, Biadgilign S, Deribe K, Escudero HR. Experience of stigma and discrimination and the implications for healthcare seeking behavior among people living with HIV/AIDS in resource-limited setting. *SAHARA J* 2013;10(1):1–7.

Editorial note
Manuscript received in original form on January 15, 2014;
accepted in final form on December 14, 2014