

Can HIV/AIDS be fought by targeting youths in Zambia? Analysis of the Knowledge, Attitudes and Sexual Behaviour among youths aged 15 – 24 years

BUPE B. BWALYA⁽¹⁾, ANDREW BANDA⁽²⁾, STANLEY JERE⁽¹⁾, PATRICK AMANZI⁽³⁾, PETER FUNSANI⁽⁴⁾

ABSTRACT

BACKGROUND: Although people of any age are susceptible to HIV, youths aged 15 – 24 face a disproportionate risk of contracting the virus, presumably as a result of limited HIV- and AIDS-related knowledge and attitudes and high-risk behaviours. Our aim was to assess the influence of demographics and socio-economic status on knowledge, attitudes and sexual behaviour of 15 - 24 year old youths, with the goal of informing the fight against HIV and AIDS in Zambia.

METHODS: The study utilised secondary data from a self-weighting nationally representative sample of the 2009 Zambia Sexual Behaviour Survey. Chi-squared tests and binary logistic regression were carried out using SPSS version 18.0 and p-values less than 0.05 were considered statistically significant.

RESULTS: General knowledge about HIV and AIDS was high (98 percent). However, comprehensive correct was considerably low among youths (43 percent). This is in spite youths full general knowledge and the ABCs of HIV and AIDS prevention. Attitudes towards PLHIV, Condom use and HIV counselling and testing were negative. Youths with comprehensive correct knowledge on HIV and AIDS had increased odds of having positive attitudes towards use of condoms during sexual intercourse (AOR=1.645; $p<0.001$). Female youths were (AOR=3.934; $p<0.001$) more likely to have tested for HIV than males. Youths without education had increased odds of not using a condom with their most recent sexual partner than those with secondary and higher education (AOR=6.635; $P=$).

CONCLUSION: Though HIV and AIDS general knowledge by youths was high, comprehensive correct knowledge, positive attitudes and behaviour were considerably low or poor. Gender educational, age and place of residence acts as explanatory variables in the observed negative attitudes and behaviours among youths in Zambia.

Key words: Youths; HIV/AIDS; Knowledge; Attitudes; Behaviour, Demographic and Socio-economic factors, Zambia

(1) Department of Mathematics and Statistics, Centre for Information Communication Technology Education, Mulungushi University, Kabwe-Zambia

(2) Department of Population Studies, School of Humanities and Social Sciences, University of Zambia, Lusaka-Zambia

(3) HIV/AIDS, United Nations Development Programme, Lusaka-Zambia

(4) Ministry of Health Headquarters, Global Fund-PMU, Lusaka Zambia

CORRESPONDING AUTHOR: Bupe B. Bwalya Department of Mathematics and Statistics, Centre for Information Communication Technology Education, Mulungushi University, Kabwe-Zambia; tel. +260 955 216560 email: bwalya1983@gmail.com

DOI: 10.2427/11484

Accepted on December 12, 2015

INTRODUCTION

The human devastation being wrought by HIV/AIDS and the rippling effect that this epidemic is having on communities in sub-Saharan Africa and other regions presents a great public health challenge. Globally, it is estimated that about 35 million people are living with HIV [1]. While UNAIDS reported a 33% decline in new infections between 2001 and 2012, the new infections that were reported were concentrated (~70%) in sub-Saharan Africa [2, 3].

Although people of any age are susceptible to HIV, youths aged 15 – 24 face a disproportionate risk of contracting the infection [4]. UNAIDS estimates that 4 million younger people (15-24 years) are living with HIV, 29% of whom are adolescents aged 15-19 years [1]. Regional estimates indicate that HIV prevalence among young people, and particularly women, is much higher in Sub-Saharan Africa relative to the rest of the world. The UNAIDS GAP report indicates that young women in Sub-Saharan Africa are twice as likely as young men to be living with HIV [5].

At the national-level, Zambia has one of the world's most devastating HIV and AIDS epidemics, with more than one in every seven adults in the country living with HIV [8] and the life expectancy at birth falling to just 49.4 years [9]. Zambia is predominantly a young population, with about half of the population below the age of 25 years [6]. It follows that 15-24 year olds are not alien to the devastation being wrought by HIV. Available statistics indicate that the HIV prevalence among women aged 15-24 years stands at 7 percent; and prevalence is higher among young women (9 percent) than among young men (4 percent). In addition, HIV prevalence increases with age, from 4 percent among youth ages 15-17 years to 6 percent among those aged 18-22 years to 13 percent among youth age 23-24 years [35]. There is evidence of an association between low HIV prevalence (i.e., in this range) and lower perceived risk of contracting HIV among youths [11].

In spite of the low HIV prevalence, young people are particularly vulnerable to the HIV infection pandemic. Over half of all new infections worldwide been found in young people aged 15-24 years, contracted through heterosexual intercourse [12]. HIV prevention among youths is particularly important

given their evolving needs. Epidemiological data from UNAIDS and national surveys show modest progress in global prevention efforts. For instance: the 2009 Zambia Sexual Behaviour Survey indicates that, M median age at first sexual experience among both females and males has increased during the period from (17.5 percent to 19.5 percent and 16.5 percent to 17.5 percent) respectively from 2000 to 2009 ; condom use at first sexual encounter has also marginally increased from 10% to 30%two to three in every ten among youths from 2005 to 2009—although there was a decline (35 percent in 2000 to 31.4 percent in 2009) in the proportion of . On the contrary, among males youths who reported, condom use with most recent sexual partner has actually decreased from about 35 percent in 2000 to 31.4 percent in 2009 [10]. The reduction in risk behaviours has been too slow and has not been sufficient to result in substantial declines in new HIV infections among youths [7].

The aforementioned may be attributed to a number of factors, including the lack of correct health information, indulgency in risk behaviours, and lack of access to adequate reproductive health services best suited to youths [13]. Alcohol and drug abuse is another major factor associated with HIV infection among youths. The influence of alcohol and experimentation with drugs is associated with increased high-risk behaviours [14, 15]. Another serious issue is that younger girls lack sexual negotiation skills because of fear of physical abuse, rejection, or and their partner's objection [14, 16]. Anecdotal evidence further suggests that youths may be HIV positive but unaware of their serostatus and thus do not protect themselves or their partners from the infection [17].

Although there are number of studies on HIV/AIDS-related knowledge, attitudes, and practices from other countries and a few selected institutional or regional studies within Zambia, there has not been much analysis done using a nationally representative sample. The goal of our research was therefore to describe the knowledge, attitudes, and sexual behaviours of Zambian youths aged 15 – 24 years.

The specific aim of this analysis were:

1. To describe the knowledge, attitudes, and sexual behaviour of youths with regard to HIV and AIDS; and

2. To explore demographic and socio-economic differentials in knowledge, attitudes, and behaviour towards HIV and AIDS among youths.

METHODS

This descriptive analysis utilized individual-level data from the 2009 Zambia Sexual Behaviour Survey. The sample was designed to allow for separate estimates at national- and provincial-levels, as well as rural and urban areas of the country, using a probability sample of approximately 2,500 households from 100 clusters. All eligible adults (women aged 15-49 and men aged 15 – 59) in each household were interviewed. The sample is nationally representative (i.e., stratified random sample of 105 clusters) and self-weighting; and designed to produce national, urban and rural estimates by sex on sexual and reproductive health behavior [10].

Firstly, the process started by isolating from the main dataset, youths aged (15 – 24 years) who were part of the 2009 ZSBS. The dataset provided data on demographics (sex and age), socio-economics (education attainment and place of residence), knowledge, attitudes and sexual behaviours in relation to HIV and AIDS. The analysis and findings of this study are therefore generalizable to the entire population aged 15 – 24 years.

To assess full general knowledge about HIV and AIDS, a composite variable was computed based on responses to three questions: having heard of HIV and AIDS (q501), knowing that HIV/AIDS can be avoided (q503), knowing that a healthy-looking person can have HIV/AIDS (q505). Individuals without knowledge in any of these three areas were classified as having as follows: no general knowledge of one, two, or all three were classified as having low, medium, or full general knowledge, respectively for all those who have never heard of HIV and AIDS (q501), don't know that it can be avoided (q503) and that a healthy-looking person can't have HIV and AIDS (q505); low general knowledge for all those knowing only one of the three variables (i.e., either having heard of HIV/AIDS/know that HIV/AIDS can be avoided/a healthy looking person can still have HIV and AIDS), medium general knowledge for those knowing only two of the three variables;

and full general knowledge as those knowing all the three variables.

In this study, comprehensive correct knowledge about HIV/AIDS is defined: (i) consistent condom use (q506) and having only one faithful, uninfected partner (q508); (ii) a healthy looking person can be infected with HIV (q505); (iii) HIV virus cannot be transmitted by mosquito bites (q507); and (iv) HIV cannot be transmitted through witchcraft (q511).

Besides the aforementioned, in order to determine youths positive attitudes towards people living with HIV and AIDS (PLHIV), a positive attitude score was computed based on nine key variables: (q602 knowing someone who is suspected to or has HIV (q602)the AIDS virus, q606 disagree that people with AIDS should be ashamed of themselves (q606), q607 disagreed that people with AIDS should be ashamed (q607), q608 ever shared a meal with a person they know or suspected had HIV and /AIDS (q608) , q609 willing to care for s/he if a relative became sick with AIDS (q609), q610 worker with AIDS but not sick should continue working (q610,) q610a female teacher has AIDS but not sick should continue teaching (q610a,) q611 buy fresh vegetables from a shopkeeper or vendor who has AIDS (q611), and q613 would not keep it as a secret if family member got infected with AIDS (q613). A youth was classified as having positive attitude towards PLHIV if s/he had a score greater than or equal to the computed mean and negative attitude if his/her score fell below the mean if it was below. Further, to assess positive attitude towards condom use, a score was computed based on seven key variables (condoms don't break easily q340a, condoms don't suppress sexual pleasure q340b, condoms are for use even with regular partners q340c, condoms don't promote promiscuity q340d, most parents support youths condom use q340e, most young people support condom use by their friends q340f and condoms are not too embarrassing to suggest q340g). Similarly, a score greater than or equal to the mean was classified as a youth having positive attitude towards condom use.

To assess youths practice and behaviour towards condom use and HIV counselling and testing, the following variables were taken into consideration: (i) condom use at first sexual intercourse (q315); condom use with most recent sexual partner in the last twelve

months (q321); Knowledge of a place to test for HIV virus, desire to re-test and having been tested (variables q709, q707 and q701). Lastly, receiving counselling before testing and getting results (q706 and q705) respectively.

Statistical Analysis

The analysis was undertaken at two levels. The first level were the descriptive and bivariate approaches in which basic statistics were used to describe background variables such as age, sex and place of residence. Bivariate and multivariate data analysis were then performed to tests associations among the three key variables (knowledge, attitudes, and practices) using the chi square test and logistic regression. Results of the latter are presented as odds ratios and 95 percent confidence intervals. Statistical significance was considered as $p < 0.05$. Data were analyzed using Statistical Package for Social Scientists (SPSS) for Windows, version 18.0.

RESULTS

Demographic Characteristics of the youths

The 2009 Zambia Sexual Behaviour Survey data set had a total of 1,594 youth respondents (15 – 24 years) consisting of 732 males and 862 females. The overall mean (\pm SD) age was 19.23 ± 2.88 . Disaggregation of these data by sex and rural-urban brings specific differentials. Boys tended to be younger (mean age of 18.94 ± 0.21) than girls (19.47 ± 0.19). Rural youth also had a slightly lower mean age (19.18 ± 0.19 versus 19.29 ± 0.22 in rural and urban areas, respectively).

As shown in Table 1 there were more female than male youths. Just over half of the sample (55%) was aged 15 – 19 years, compared to 44.9 percent aged 20 – 24 years. Six in every ten youths resided in rural areas.

General and full knowledge about HIV and AIDS among youths

As shown in Table 2, males generally had more knowledge than females about HIV and AIDS (98.1 percent of males versus 97.9 percent of females; NS), and were significantly more

aware of how it can be avoided (94.9 percent versus 92.2 percent in females; $p=0.03$). Males were also significantly more likely than females to know that a healthy-looking person can still have HIV and AIDS (88.8 percent versus 85.2 percent, respectively; $p=0.03$). There was also a general increase in knowledge about HIV and AIDS with age. Youths aged 20 – 24 years were more likely to have heard about HIV and AIDS (99.3 percent), know that HIV and AIDS can be avoided (95.1 percent) and that a healthy-looking person can still have HIV and AIDS than those aged 15 – 19 years (96.9 percent $p=0.001$), (92.1 percent $p=0.02$) and (83.3 percent $p<0.001$) respectively. In addition, youths with higher education and those in urban areas (100 percent and 93.2 percent) than those with none education and in rural areas (68.0 percent and 82.5 percent $p<0.001$) know that even a healthy-looking person can still have HIV and AIDS.

Table 3 shows that more males (86.3 percent) than females (81.7 percent) have full general knowledge on HIV and AIDS $p=0.019$. Full general knowledge on HIV and AIDS increased with age: youths aged 20 – 24 years had more full general knowledge (88.5 percent) on HIV and AIDS relative to those aged 15 – 19 years (80 percent, $p<0.001$). A higher proportion of youths with higher education (100 percent) than those with none (71.9 percent) had more full general knowledge $p<0.001$. Urban youths (90.4 percent) compared to rural youths (79.3 percent) had more full general knowledge on HIV and AIDS $p<0.001$ respectively.

Knowledge of Abstinence, Being faithful to one uninfected partner and Consistent correct condom use (ABC) of HIV prevention; and Comprehensive correct knowledge about HIV and AIDS.

Overall, about seven in every ten youths knew the three ABCs of HIV prevention (Table 4). There was no relationship observed between sex and knowledge of ABC ($p=0.466$). Older youths (72.6 percent) were more likely to know the three HIV prevention methods than younger ones (66.5 percent $p=0.016$). Further, a relationship was observed between education level of youths and knowledge of all the three preventive methods $p<0.001$.

Similarly, only four in every ten youths had

TABLE 1

PERCENTAGE DISTRIBUTION OF YOUTHS SEX, AGE GROUP AND PLACE OF RESIDENCE (N=1594)		
VARIABLES	NO	PERCENT
SEX OF RESPONDENT		
Male	732	45.9
Female	862	54.1
AGE GROUP		
15 - 19	878	55.1
20 - 24	716	44.9
RESIDENCE		
Rural	949	59.5
Urban	645	40.5
EDUCATIONAL ATTAINMENT		
None	89	5.6
Primary	689	43.2
Secondary	779	48.9
Higher	37	2.3

TABLE 2

GENERAL KNOWLEDGE ABOUT HIV AND AIDS BY SEX, AGE, EDUCATIONAL ATTAINMENT AND PLACE OF RESIDENCE (N=1594)			
EXPLANATORY VARIABLE	GENERAL KNOWLEDGE ABOUT HIV AND AIDS		
	HEARD OF HIV AND AIDS	HIV AND AIDS CAN BE AVOIDED	HEALTHY-LOOKING PERSON CAN HAVE HIV AND AIDS
SEX OF RESPONDENT			
Male	98.1	94.9	88.8
Female	97.9	92.2	85.2
AGE GROUP			
15 - 19	96.9	92.1	83.3
20 - 24	99.3	95.1	91.2
EDUCATIONAL ATTAINMENT			
None	83.0	84.3	68.0
Primary	96.4	90.1	78.7
Secondary	99.9	97.2	94.6
Higher	100	100	100
PLACE OF RESIDENCE			
Rural	97.4	92.1	82.5
Urban	98.9	95.5	93.2

comprehensive correct knowledge about HIV and AIDS in Zambia. Sex appeared to have a bearing on comprehensive correct knowledge: more males than females (45.1% versus 41.5%) had comprehensive correct knowledge about

HIV and AIDS. Youths aged 20 – 24 years (46.6 percent) compared to those aged 15 – 19 years (40.3 percent $p=0.013$) had more comprehensive correct knowledge about HIV and AIDS. Comprehensive correct knowledge

about HIV and AIDS among youths with no education was low (31.3 percent) compared to those with higher education (81.1 percent

$p < 0.001$). Similarly, there was an observed relationship between place of residence and youths having comprehensive correct

TABLE 3

PERCENTAGE DISTRIBUTION OF FULL GENERAL KNOWLEDGE ABOUT HIV AND AIDS BY SEX, AGE GROUP, EDUCATIONAL ATTAINMENT AND PLACE OF RESIDENCE (N=1594) AMONG YOUTHS IN ZAMBIA				
EXPLANATORY VARIABLE	FULL GENERAL KNOWLEDGE ABOUT HIV AND AIDS			
	NO GENERAL KNOWLEDGE	LOW GENERAL KNOWLEDGE	MEDIUM GENERAL KNOWLEDGE	FULL GENERAL KNOWLEDGE
SEX OF RESPONDENT				
Male	1.9	0.7	11.1	86.3
Female	2.1	2.2	14.0	81.7
AGE GROUP				
15 - 19	3.1	1.5	15.5	80.0
20 - 24	0.7	1.5	9.2	88.5
EDUCATIONAL ATTAINMENT				
None	6.7	4.5	16.9	71.9
Primary	3.6	2.2	19.6	74.6
Secondary	0.1	0.6	6.7	92.6
Higher	0.0	0.0	0.0	100
PLACE OF RESIDENCE				
Rural	2.6	2.1	15.9	79.3
Urban	1.1	0.6	7.9	90.4

TABLE 4

PERCENTAGE DISTRIBUTION OF YOUTHS KNOWLEDGE OF ALL THREE ABCS OF HIV PREVENTION (N=1594) AND COMPREHENSIVE CORRECT KNOWLEDGE ABOUT HIV AND AIDS (N=1562) BY SEX, AGE GROUP, EDUCATIONAL ATTAINMENT AND PLACE OF RESIDENCE		
EXPLANATORY VARIABLE	KNOWLEDGE OF ABCS OF HIV PREVENTION	COMPREHENSIVE CORRECT KNOWLEDGE ABOUT HIV/AIDS
SEX OF RESPONDENT		
Male	70.5	45.1
Female	68.2	41.5
AGE GROUP		
15 - 19	66.5	40.3
20 - 24	72.6	46.6
EDUCATIONAL ATTAINMENT		
None	53.9	31.3
Primary	65.6	32.1
Secondary	73.6	52.1
Higher	83.8	81.1
PLACE OF RESIDENCE		
Rural	68.4	39.4
Urban	70.5	48.6
Overall	69.3	43.1

knowledge about HIV and AIDS ($p < 0.001$). About 50 percent of youths in urban areas had correct knowledge compared and not 50 percent in rural areas.

Attitudes towards people living with HIV and AIDS (PLHIV) and Condom Use among youths

Table 5 shows the overall attitudes of youths aged 15 – 24 years towards people living with HIV and AIDS. Six in every ten youths personally know someone who is suspected to or has the AIDS virus. However, only one third (32.2 percent) of the youths have ever shared a meal with a person they know or suspected had HIV and AIDS. About nine in every ten (88.8 percent) of the youths were willing to care for a relative if they were to become sick of AIDS. Youths were asked whether they would keep it a secret if a family got infected with HIV and AIDS. About 50 percent were of the view that they would keep it within the family circle if a family member got infected with HIV. In addition, about seven or more youths revealed that a worker and a female teacher

who had AIDS viruses but not sick should continue working and teaching; would buy fresh vegetables from a shopkeeper or vendor who has AIDS; and disagreed that people with AIDS should be ashamed or blamed.

The mean youth's positive attitude score for PLHIV was 6.28 ± 1.88 with a corresponding confidence interval and range of ± 0.09 (6.19 to 6.37) respectively. Furthermore, more than two thirds (71.8 percent) of the youths aged (15 – 24 years) had positive attitudes towards PLHIV compared to less than a third (28.2 percent) with negative .

In addition, the data in the table further shows the social acceptability of condoms and their views regarding condom use held by majority of the youths. Two thirds (60.8 percent) of the youths revealed that condoms do not break easily while 71 percent revealed that condoms do not suppress sexual pleasure when having sex. Only about one third (33.8 percent and 30.1 percent) of the youths revealed that condoms can be used even with a regular partner and that their parents supported condom use by young people, 51.5 percent that it doesn't promote promiscuity, and 67.9

TABLE 5

PERCENTAGE DISTRIBUTION OF YOUTHS POSITIVE ATTITUDES TOWARDS PEOPLE LIVING WITH HIV AND AIDS (PLHIV) AND CONDOM USE

VARIABLE	PERCENTAGE
POSITIVE ATTITUDE TOWARDS PEOPLE LIVING WITH HIV AND AIDS AMONG YOUTHS (1562)	
Personally know anyone who is suspected to or who has the AIDS virus	64.1
Disagree that people with AIDS should be ashamed of themselves	80.2
Disagree that people with AIDS should be blamed	79.8
Ever shared a meal with a person they know or suspected had HIV and AIDS	32.2
Willing to care for him/her if relative became sick of AIDS	88.8
Worker who has AIDS virus but not sick should continue working	78.9
Female teacher has AIDS virus but not sick should continue teaching	81.8
Would buy fresh vegetables from a shopkeeper or vendor who has AIDS	72.7
would not want it to remain a secret if family member got infected with AIDS	50.1
POSITIVE ATTITUDE TOWARDS CONDOM USE AMONG YOUTHS (N=1594)	
Condoms do not break easily	60.8
Condoms do not suppress sexual pleasure	71
Condoms are for use with regular partners	33.8
Condoms do not promote promiscuity	51.5
Most parents support condom use by young people	30.1
Most young people support condom use by their friends	53.6
Condoms are not too embarrassing to suggest	67.9

percent that condoms are not embarrassing to suggest when about to have sexual intercourse. Moreover, of the total seven questions that addressed positive attitudes towards youth's condom use, our score ranged from 0 to 7. The mean score was 3.69 ± 1.42 with a corresponding confidence interval and range of ± 0.07 (3.62 to 3.76) respectively. Furthermore, less than two thirds (58.3 percent) of the youths aged (15 – 24 years) who scored equal or more than the mean were classified as having a positive attitudes towards condom use as compared to 41.7 percent who scored less than the mean with negative attitudes towards condom use.

Sexual Behaviour and HIV and AIDS among youths

Timing of first sexual experience, early sexual debut (sex before age 15) and exchange of money for sex among youths

Findings revealed that, 58 percent of all young people aged 15 – 24 years reported ever had sex. There were variations in ever having had sex among males and females, with female youths 64 percent than males 51 percent having ever had sex though not shown in the table. The mean age at first sexual experience among youths was 16.5 ± 2.45 with no major difference when disaggregated by sex (males 16.51 ± 2.76 and females 16.50 ± 2.15). In addition, the promotion of abstinence and delay of sexual debut among adolescents has received a strong emphasis in HIV prevention efforts in Zambia (CSO et al, 2009). In 2009, 8 percent of the youths aged 15 – 24 at the time of the survey reported having sex before age 15. With a one percentage point difference between males (8 percent) than females (7 percent) reporting having had sex before the age of 15.

Besides the aforementioned, among the never married (924) youths who had sex in the 12 months prior the survey, 6.6 percent of the youths aged 15 – 24 years reported exchanging money for sex. Unfortunately, the data further reveals that, among those who had exchanged money for sex, about two thirds (60.7 percent) did not even use a condom. On the other hand, among those who reported having used a condom last time they had sex, only 58.3 percent of them reported using a condom every time money was exchanged for sex though table not shown here.

Behaviour towards condom use and HIV counselling and testing among youths

Studies have shown that along with postponement of first sexual intercourse, consistent condom use is a way that young people can reduce their chances of becoming infected with HIV (CSO et al, 2009). The data in table 6 below reveals that overall, about one third (26.1 percent) of the youths reported using a condom at first sex. More males (32.9 percent), those with higher education (52.9 percent) and residing in urban areas (39.0 percent) had used a condom during their first sexual encounter than females (22.7 percent), those with no education (12.3 percent) and residing in rural areas (20.1 percent).

In addition, among youths who were sexually active 12 months prior the survey, only 11.8 percent consistently or always used a condom. Disaggregated by sex and educational attainment, about two in every ten male youths compared to one in every ten females reported using a condom with most recent partner. Twenty two percent of youths with higher education compared to (1.7 percent and 7.2 percent) among those with no education or primary education reported using a condom with most recent partner.

In addition, table 6 further shows that, of the 1594 youths, 90.1 percent knew of the place where they could go to get an HIV test. About eight (78.9 percent) in every ten youths indicated a desire to be tested or re- tested again for HIV. More than two thirds 573 (64.1 percent) of the youths said they have been tested. Disaggregated by sex, age and place of residence; females (48.7 percent) and youths aged 20 – 24 years (49.9 percent) years were twice as likely to be tested as males (20.9 percent) and youths aged 15 – 19 years (24.6 percent). About four in every ten urban youth were likely to be tested compared to three in every ten among rural youths all of them statistically significant at $p < 0.001$ though not shown in the table.

Lastly, 94 percent of the youths who had been tested revealed that they received counselling before being tested while just about every youth (96.7 percent) who tested received their HIV test results.

TABLE 6

PERCENTAGE DISTRIBUTION OF POSITIVE BEHAVIOUR TOWARDS CONDOM USE AND HIV COUNSELLING AND TESTING AMONG YOUTHS	
VARIABLE	PERCENTAGE
CONDOM USE AT FIRST SEX (666)	
SEX	
Male	32.9
Female	22.7
AGE GROUP	
15 - 19	29.5
20 - 24	24.7
EDUCATIONAL ATTAINMENT	
None	12.3
Primary	18.8
Secondary	35.6
Higher	52.9
PLACE OF RESIDENCE	
Rural	20.1
Urban	39.0
Total	26.1
CONDOM USE WITH MOST RECENT PARTNER (711)	
SEX	
Male	18.9
Female	6.8
AGE GROUP	
15 - 19	15.5
20 - 24	9.1
EDUCATIONAL ATTAINMENT	
None	1.7
Primary	7.2
Secondary	16.6
Higher	22.2
PLACE OF RESIDENCE	
Rural	7.1
Urban	19.4
Total	11.8

Multivariate Analysis

Factors associated with full general knowledge, knowledge of all three ABCs of HIV prevention and comprehensive correct knowledge on HIV and AIDS among youths

Table 7 below shows the binary logistic regression Adjusted Odds Ratios (AORs), corresponding p-values and 95 percent confidence intervals for the association between full general knowledge, knowledge of all three ABCs of HIV prevention and comprehensive correct knowledge on HIV and AIDS among youths aged 15 – 24 years. The factors associated with full general knowledge were sex, age, educational level and place of residence while only age and educational level of the youths

were associated with knowledge of all ABCs of HIV prevention and comprehensive correct knowledge of HIV and AIDS,.

Data shows that sex of a youth was associated with having full general knowledge on HIV and AIDS. Female youths (AOR=0.703, 95%CI: 0.527, 0.938; p=0.017) less likely to have full general knowledge than male youths. Youths aged 15 – 19 had increased odds of not having full general knowledge on HIV and AIDS as (AORs=0.497, 95%CI: 0.368, 0.671; P<0.001) compared to those aged 20 – 24 years. Level of education was also an important marker on youths having full general knowledge. Youths who had no education had increased odds of not having full general knowledge on HIV and AIDS as compared to those with secondary education (AOR=4.553, 95%CI: 2.607, 7.952;

TABLE 6 (CONTINUED)

PERCENTAGE DISTRIBUTION OF POSITIVE BEHAVIOUR TOWARDS CONDOM USE AND HIV COUNSELLING AND TESTING AMONG YOUTHS	
KNOWLEDGE, DESIRE AND EVER BEING TESTED (N=1954)	
KNOWLEDGE OF PLACE WHERE TO GET AN HIV TEST	
SEX	
Male	88.9
Female	91.1
AGE GROUP	
15 - 19	86.6
20 - 24	94.4
EDUCATIONAL ATTAINMENT	
None	77.5
Primary	85.6
Secondary	95.1
Higher	100
PLACE OF RESIDENCE	
Rural	88.4
Urban	92.6
Total	90.1
EVER WANT TO OR RE-TEST AGAIN FOR HIV	
SEX	
Male	78.0
Female	79.4
Age Group	
15 - 19	74.4
20 - 24	84.1
EDUCATIONAL ATTAINMENT	
None	74.2
Primary	74.9
Secondary	82.7
Higher	78.4
PLACE OF RESIDENCE	
Rural	77.4
Urban	80.6
Total	78.7

$p < 0.001$). Place of residence significantly contributed to the youth having full general knowledge on HIV and AIDS. Data shows that, youths in rural areas were less likely to have full general knowledge on HIV and AIDS (AOR=0.624, 95%CI: 0.448, 0.868; $p=0.005$) compared to those in urban areas.

Younger youths (15 – 19 years) of age were more likely not to have knowledge on all the three ABCs of HIV prevention (AOR=0.747, 95%CI: 0.598, 0.934; $p=0.010$) compared to those aged 20 – 24 years. Similarly, youth's knowledge of all the three ABCs of HIV prevention was associated with educational level. Youths with no education were more likely not to have knowledge on all the three ABCs of HIV prevention as compared to those with primary (AOR=1.747, 95%CI: 1.113, 2.743;

$p=0.015$), secondary (AOR=2.579, 95%CI: 1.625, 4.093; $p < 0.001$); and higher education (AOR=4.164, 95%CI: 1.547, 11.208; $p=0.005$) respectively.

In addition, age of the youth was significantly associated with having comprehensive correct knowledge on HIV and AIDS. Youths who were aged 15 – 19 years at the time of the survey (AOR=0.822, 95%CI: 0.666, 1.015; $p=0.068$) less likely to have comprehensive correct knowledge on HIV and AIDS than those aged 20 – 24 years. Further, youths with no education, were more likely not to have comprehensive correct knowledge on HIV and AIDS compared to those with secondary education and higher education (AOR=2.405, 95%CI: 1.464, 3.951; $p=0.001$ and AOR=8.354, 95%CI: 3.190, 21.875, $p < 0.001$).

TABLE 6 (CONTINUED)

PERCENTAGE DISTRIBUTION OF POSITIVE BEHAVIOUR TOWARDS CONDOM USE AND HIV COUNSELLING AND TESTING AMONG YOUTHS	
EVER BEEN TESTED FOR HIV VIRUS	
SEX	
Male	20.9
Female	48.7
AGE GROUP	
15 - 19	24.6
20 - 24	49.9
EDUCATIONAL ATTAINMENT	
None	31.5
Primary	31.3
Secondary	39.9
Higher	48.6
PLACE OF RESIDENCE	
Rural	32.5
Urban	41.1
Total	35.9
COUNSELLING AND HIV RECEIVED COUNSELLING BEFORE HIV TEST	
SEX	
Male	93.5
Female	95.2
AGE GROUP	
15 - 19	90.7
20 - 24	97.2
EDUCATIONAL ATTAINMENT	
None	96.4
Primary	95.8
Secondary	93.9
Higher	94.4
PLACE OF RESIDENCE	
Rural	95.5
Urban	94.0
Total	94.8
GOT RESULTS OF THE AIDS VIRUS TEST	
SEX	
Male	95.4
Female	97.1
AGE GROUP	
15 - 19	95.8
20 - 24	97.2
EDUCATIONAL ATTAINMENT	
None	96.4
Primary	98.1
Secondary	95.5
Higher	100
PLACE OF RESIDENCE	
Rural	96.4
Urban	97.0
Total	96.7

Factors Associated with positive attitudes towards people living with HIV and AIDS and condom use among youths

Table 8 below shows the factors associated with positive attitudes towards people living with HIV and AIDS and condom use among youths.

For PLHIV, age, educational level, residence and comprehensive correct knowledge on HIV and AIDS among youths were some of the factors

associated with it. On the other hand, only comprehensive correct HIV and AIDS knowledge were associated with condom use among youths.

TABLE 7

BIO-DEMOGRAPHIC AND SOCIO-ECONOMIC FACTORS ASSOCIATED WITH FULL GENERAL KNOWLEDGE AND COMPREHENSIVE CORRECT KNOWLEDGE ON HIV AND AIDS AMONG YOUTHS IN ZAMBIA IN 2009				
EXPLANATORY VARIABLES	FULL GENERAL KNOWLEDGE			
	SIG	ADJUSTED OR	95% C.I. FOR EXP(B)	
			LOWER	UPPER
SEX				
Male		1		
Female	0.02*	0.70	0.53	0.94
AGE GROUP				
15 - 19	0.00***	0.50	0.37	0.67
20 - 24		1		
EDUCATIONAL ATTAINMENT				
None		1		
Primary	0.35	1.27	0.77	2.11
Secondary	0.00***	4.55	2.61	7.95
Higher	1.00	3.2	2.13	6.45
PLACE OF RETICENCE				
Rural	0.01**	0.62	0.45	0.87
Urban		1		
KNOWLEDGE OF ABC OF HIV PREVENTION				
SEX				
Male		1		
Female	0.53	0.93	0.75	1.16
AGE GROUP				
15 - 19	0.01**	0.75	0.60	0.93
20 - 24		1		
EDUCATIONAL ATTAINMENT				
None		1		
Primary	0.02*	1.75	1.11	2.74
Secondary	0.00***	2.58	1.63	4.09
Higher	0.01**	4.16	1.55	11.20
PLACE OF RETICENCE				
Rural	0.47	1.09	0.86	1.38
Urban		1		
COMPREHENSIVE CORRECT KNOWLEDGE ON HIV AND AIDS				
SEX				
Male		1		
Female	0.44	0.92	0.75	1.14
Age Group				
15 - 19	0.07*	0.82	0.67	1.02
20 - 24		1		
EDUCATIONAL ATTAINMENT				
None		1		
Primary	0.78	1.07	0.65	1.76
Secondary	0.01***	2.41	1.46	3.95
Higher	0.00***	8.35	3.19	21.88
PLACE OF RETICENCE				
Rural	0.68	0.95	0.76	1.19
Urban		1		

TABLE 8

BIO-DEMOGRAPHIC AND SOCIO-ECONOMIC FACTORS ASSOCIATED WITH POSITIVE BEHAVIOUR TOWARDS CONDOM USE AT FIRST SEX AND MOST RECENT PARTNER; AND HAVING EVER TESTED FOR HIV AMONG YOUTHS IN ZAMBIA

EXPLANATORY VARIABLES	POSITIVE BEHAVIOUR TOWARDS CONDOM USE AT FIRST SEX			
	SIG	ADJUSTED OR	95% C.I. FOR EXP(B)	
			LOWER	UPPER
SEX				
Male		1		
Female	0.19	1.18	0.93	1.49
AGE GROUP				
15 - 19	0.00***	0.69	0.54	0.88
20 - 24		1		
EDUCATIONAL ATTAINMENT				
None		1		
Primary	0.91	1.03	0.63	1.67
Secondary	0.00***	2.43	1.47	4.03
Higher	1.00	4.38	2.03	7.01
PLACE OF RETICENCE				
Rural	0.00***	0.51	0.39	0.67
Urban		1		
COMPREHENSIVE CORRECT KNOWLEDGE ABOUT HIV AND AIDS				
No		1		
Yes	0.00***	2.249	1.745	2.898
POSITIVE BEHAVIOUR TOWARDS CONDOM USE IN THE LAST 12 MONTHS PRIOR THE SURVEY				
SEX				
Male		1		
Female	0.21	0.88	0.71	1.08
AGE GROUP				
15 - 19	0.11	1.18	0.96	1.46
20 - 24		1		
EDUCATIONAL ATTAINMENT				
None		1		
Primary	0.72	0.92	0.58	1.47
Secondary	0.86	1.04	0.65	1.68
Higher	0.40	1.45	0.61	3.41
PLACE OF RETICENCE				
Rural	0.62	0.95	0.76	1.18
Urban		1		
COMPREHENSIVE CORRECT KNOWLEDGE ABOUT HIV AND AIDS				
No		1		
Yes	0.00***	1.65	1.33	2.04

Youths who were age (15 – 19 years) of age at the time of the survey (AOR=0.689, 95%CI: 0.925, 1.492; $p=0.003$) more likely to not to have positive attitudes towards PLHIV than those aged 20 – 24 years. Having some education was also a significant predictor of having positive attitudes (AOR=2.434, 95%CI: 1.471, 4.027; $p=0.001$). Data also shows that, place of residence is associated with youths having positive attitudes towards PLHIV. Urban youths were more likely to have positive attitudes than rural youths (AOR=0.509, 95%CI: 0.389, 0.665; $p<0.001$). Youths with comprehensive correct knowledge on HIV and AIDS were more likely to have positive attitudes towards PLHIV compared with those with non-comprehensive correct knowledge (AOR=2.249, 95%CI: 1.745, 2.898; $p<0.001$).

In addition, youths with comprehensive correct knowledge on HIV and AIDS had increased odds of having positive attitudes towards use of condoms during sexual intercourse (AOR=1.645, 95%CI: 1.330, 2.035; $p<0.001$) compared to those with negative attitudes.

Factors Associated with positive behaviour toward condom use at first sexual, most recent sexual partner; and having ever tested for HIV

Table 9 below shows that, youths with secondary and higher education were 2.3 and 2.7 times more likely to have had used a condom during their first sexual intercourse as compared to those without education. Youths in rural areas were significantly less likely to have had used a condom during their first sexual intercourse compared with those in urban areas (AOR=0.530, 95%CI: 0.387, 0.726; $p<0.001$). The model further reveals that, youths (15 – 24 years) without comprehensive correct knowledge were more likely to not to have used a condom during their first sexual intercourse as compared to those with comprehensive correct knowledge (AOR=1.547, 95%CI: 1.146, 2.086; $p=0.004$).

Male youths were more likely to have used a condom with most recent sexual partner as compared to females (AOR=0.265, 95%CI: 0.160, 0.438; $p<0.001$). Younger youths aged 15 – 19 years (AOR=1.946, 95%CI: 1.167, 3.245; $p=0.011$) were less likely to have used a condom with most recent sexual partner

compared to older ones (20 – 24 years). Youths with no education were more likely not to have used the condom with their most recent sexual partner compared to those with secondary and higher education (AOR=6.635, 95%CI: 0.867, 50.805; $p=0.068$ and AOR=9.664, 95%CI: 0.974, 95.845; $p=0.053$). In addition, place of residence was also associated with youths use of condoms with their most recent sexual partner (AOR=0.327, 95%CI: 0.194, 0.553; $p<0.001$).

Sex of the youth was associated with having ever been tested. Female youths were (AOR=3.934, 95%CI: 3.098, 4.994; $p<0.001$) more likely to have tested for HIV than males. Older youths (20 – 24) (AOR=0.334, 95%CI: 0.265, 0.421; $p<0.001$) were more likely to have tested for HIV than younger ones (15 – 24). Youths with no education were less likely to have tested for HIV compared to those with secondary education (AOR=1.975, 95%CI: 1.164, 3.354; $p=0.012$). Youths in rural areas had increased odds of having not tested for HIV than those in urban areas (AOR=0.783, 95%CI: 0.613, 0.999; $p=0.049$). The model further shows that, youths (15 – 24 year) with comprehensive correct knowledge (AOR=1.456, 95%CI: 1.155, 1.837; $p=0.002$) were more likely to have tested for HIV compared with those without comprehensive correct knowledge about HIV.

DISCUSSION

Knowledge on HIV and AIDS

This study was designed to assess the knowledge, attitudes, and sexual behaviour of youths aged 15 – 24 years by looking at the demographic and socio-economic differentials and how these can in turn lead to the reduction of HIV and AIDS through proper interventions targeted at youths. Our findings reveal that general knowledge, full general knowledge, and awareness of the three ABCs of HIV and AIDS prevention was quite high. This is consistent with prior research [10, 14]. This basically implies that the various programs aimed at sensitising youths about HIV/AIDS are yielding fruits through different medium of information dissemination and this should be encouraged through youth programs for the country to have a sustained increased HIV and AIDS knowledge even in years to come. However,

TABLE 9

BIO-DEMOGRAPHIC AND SOCIO-ECONOMIC FACTORS ASSOCIATED WITH POSITIVE BEHAVIOUR TOWARDS CONDOM USE AT FIRST SEX AND MOST RECENT PARTNER; AND HAVING EVER TESTED FOR HIV AMONG YOUTHS IN ZAMBIA

EXPLANATORY VARIABLES	POSITIVE BEHAVIOUR TOWARDS CONDOM USE AT FIRST SEX			
	SIG	ADJUSTED OR	95% C.I. FOR EXP(B)	
			LOWER	UPPER
SEX				
Male		1		
Female	0.43	0.88	0.65	1.20
AGE GROUP				
15 - 19	0.82	1.04	0.76	1.42
20 - 24		1		
EDUCATIONAL ATTAINMENT				
None		1		
Primary	0.29	1.48	0.72	3.05
Secondary	0.03*	2.28	1.11	4.69
Higher	0.06**	2.68	0.96	7.45
PLACE OF RETICENCE				
Rural	0.00***	0.53	0.39	0.726
Urban		1		
COMPREHENSIVE CORRECT KNOWLEDGE ABOUT HIV AND AIDS				
No		1		
Yes	0.00**	1.55	1.15	2.09
POSITIVE BEHAVIOUR TOWARDS CONDOM USE IN THE LAST 12 MONTHS PRIOR THE SURVEY				
SEX				
Male		1		
Female	0.00***	0.27	0.16	0.44
AGE GROUP				
15 - 19	0.01**	1.95	1.17	3.25
20 - 24		1		
EDUCATIONAL ATTAINMENT				
None		1		
Primary	0.22	3.60	0.46	27.98
Secondary	0.07**	6.64	0.87	50.80
Higher	0.05**	9.66	0.97	95.85
Place of Reticence				
Rural	0.00***	0.33	0.19	0,553
Urban		1		
COMPREHENSIVE CORRECT KNOWLEDGE ABOUT HIV AND AIDS				
No		1		
Yes	0.31	1.30	0.78	2.15

TABLE 9 (CONTINUED)

BIO-DEMOGRAPHIC AND SOCIO-ECONOMIC FACTORS ASSOCIATED WITH POSITIVE BEHAVIOUR TOWARDS CONDOM USE AT FIRST SEX AND MOST RECENT PARTNER; AND HAVING EVER TESTED FOR HIV AMONG YOUTHS IN ZAMBIA				
EXPLANATORY VARIABLES	POSITIVE BEHAVIOUR TOWARDS EVER BEEN TESTED			
	SIG	ADJUSTED OR	95% C.I. FOR EXP(B)	
			LOWER	UPPER
SEX				
Male		1		
Female	0.00***	3.93	3.10	4.99
AGE GROUP				
15 - 19	0.00***	0.33	0.27	0.42
20 - 24		1		
EDUCATIONAL ATTAINMENT				
None		1		
Primary	0.16	1.46	0.86	2.45
Secondary	0.01**	1.98	1.16	3.35
Higher	0.24	1.69	0.70	4.05
PLACE OF RESIDENCE				
Rural	0.05*	0.78	0.61	1.00
Urban		1		
COMPREHENSIVE CORRECT KNOWLEDGE ABOUT HIV AND AIDS				
No		1		
Yes	0.00**	1.46	1.16	1.84

in spite of these gains, our findings further indicate disparities in full general knowledge by sex, age, educational attainment, and place of residence (AOR=0.703, $p<0.05$; AOR=0.497 $p<0.001$; AOR=4.553, $p<0.001$; and AOR=0.624, $p<0.01$). This is an interesting finding because the existence of a knowledge gap between the two sexes makes females more vulnerable to contract the virus [18, 19]. In a for example in Zambia setting, school completion rates among female youths are almost half that of males. This disparity begins at grade one, such that their lack of education makes them more vulnerable to contracting the virus because they are unable to read and rarely know their sexual and reproductive rights as such may even end up coerced to having sex even when they don't agree to the act.

Studies show that one of the several factors that enable youths to protect themselves from HIV is the knowledge about its prevention [12]. Similarly, younger individuals (15 – 19 years)

and those residing in rural areas with no or little education are less likely to have general and full general knowledge on HIV and AIDS, hence leaving them more exposed to contract the HIV virus. Similar studies have shown that youths from rural origin, those with minimal education, and females living in poverty were more likely to have limited knowledge and access to health information [12, 18, 20]. Besides, having comprehensive correct knowledge about HIV and AIDS plays a significant role in the attitudes and behaviours that youths have even as they grow into adulthood.

Our findings indicate that comprehensive correct knowledge (CCK) on HIV and AIDS among youths was quite low. Based on Besides, our findings further indicate in the multivariate analysis, that, sex disparities in comprehensive correct knowledge disappear and are only confounded by age and educational level of the youths. Youths who were aged 15 – 19 years at the time of the survey were less likely

to have comprehensive correct knowledge on HIV and AIDS than those aged 20 – 24 years. Comprehensive correct knowledge about HIV and AIDS among youths constitute a major global challenge to the control of this scourge. This is because most people become sexually active as adolescents. The chances of them contracting the virus is quite high, mainly due to lack of comprehensive correct knowledge on how they can protect themselves [12, 19, 21]. Developing programs and disseminating information that address this problem can help in the fight against HIV/AIDS since youths are the epicentre and bear a disproportionate burden of this pandemic [21]. Our results also indicate that youths with more limited educational attainment were more likely not to have comprehensive correct knowledge on HIV and AIDS. Illiterate youths stand a higher chance of becoming infected with HIV and AIDS basically due to lack of knowledge [22]. These findings call for increased sex education both in the formal (school curriculum) and informal (through drama, community sensitisations, etc.) way among Zambian youths if the fight against the spread of HIV and AIDS is to be won. As much as information about CCK is available, as long as these youths are not able to access them, get informed or communicated to very little will be achieved as such improved information, communication and education (ICE) at all levels of society can play a major role to have improved CCK among the youths in Zambia.

Youths Attitudes towards People Living with HIV and AIDS (PLHIV) in Zambia

Generally, youths exhibited a good attitude towards PLHIV with about 7 in every ten having a positive attitude. This is interesting and it should be encouraged so that even the few youths who still harbour negative attitudes towards PLHIV can stop from exhibiting such kind of attitude [14]. In spite of this good attitude, results revealed that some discriminatory attitudes still exist, such as an unwillingness to share meals with people they personally know or suspect to have HIV/AIDS. Similarly, about half of youths want it to remain a secret if a family member were infected with AIDS. This was especially prominent among younger respondents, those with low educational attainment, and those residing in rural areas,

as well as those lacking comprehensive correct knowledge on HIV and AIDS. This finding shows that stigma and discriminating attitudes towards PLHIV still exists among youths. It is argued that, knowledge alone is not enough to change attitudes towards PLHIV, but deep-seated social-cultural norms and beliefs such as religion, attitudes towards ill-health and risk behaviours especially sexual behaviours can affect attitude too [14, 23]. More knowledge about HIV and AIDS among youths is needed in breaking these social-cultural barriers in our societies to help in decreasing the stigma attitudes towards PLHIV. However, these can only be effective if HIV and AIDS awareness campaigns take into account the various differences in age, educational level, place of residence and knowledge gaps among youths.

Youths Attitudes towards Condom Use in Zambia

Social acceptability of condom among youths was relatively high in our sample. However, condom use with regular partners is not widely practiced among Zambian youths, which are substantiated by other previous studies [24, 25]. In short, this finding indicates that condom use among youths is still limited [34]. This is despite the fact that, condom promotion remains one of the key strategies in HIV and AIDS prevention by the Zambian government through its line ministries and non-governmental organisations [18]. Therefore, as long as youths continue having that scepticism about the use of condoms in the fight against HIV, challenges will remain in preventing exposure.

Positive attitudes about HIV and AIDS among youths are less likely to be good if their comprehensive correct knowledge is lacking. As such, condom use among youths was inconsistent and would be expected to increase their risk of HIV infection. In short delete everything starting from (Table 8) up to HIV infection and replace it with what I have suggested. Additionally, other factors such as ignorance, socio-cultural and economic factors may help explain this scenario. For example, in our study, slightly less than half of the youths reported that condoms promote promiscuity. This poses a major challenge towards fighting HIV and AIDS in Zambia. Therefore, a lot of factors may be attributed to the misconceptions exhibited by youths. Firstly, if youths in Zambia

regard access to condoms as being promiscuous then the chances that they will have them when they find themselves in compromising state are very minimal as they feel shy to go ask for them even if they are provided for free and; secondly, affordability and accessibility may still be a factor contributing to inconsistent use by some youths despite the fact that they are inexpensive and widely available in pharmacies, hotels, nightclubs, guesthouses, retail shops, health facilities [13]. Parental support of condom use among youths in Zambia is also not very common (50 percent). This may be attributed to the fact that sex education in Zambia among parents and their children is a rare phenomenon which stretches from way back in history and regarded as taboo. Thus, as long this remains the case, youths will continue being vulnerable to contract the virus because the people they spend time with at home or who are supposed to be their mentor rarely give them sex education. As such, there is need to have increased HIV and AIDS awareness among parents so as to remove the barriers that exist to help in shaping positive attitudes among their youth children.

Youths attitudes towards HIV counselling and testing among youths

Amongst the youths in this study, two thirds of them had been tested for HIV. However, considering that HIV counselling and testing is freely available in Zambia this figure cannot be considered as great news. Further, results show that gender, age, educational attainment and having comprehensive correct knowledge on HIV were associated with HIV testing which is similar to a study among Arab students in the United Arab Emirates where females were more willing to be tested for HIV and more supportive of teaching young people to protect themselves than males [26]. Studies show that, knowledge about testing behaviour among youths is very cardinal because, awareness of HIV status can motivate people to actually protect themselves against infection and protect their partners from being infected. Moreover, they may not only be vulnerable to infection, but the gender, age educational attainment and having comprehensive correct knowledge shows that, youths may experience barriers to accessing testing services [12].

Differences exist in HIV counselling and testing among Zambian youths even if they know of the place where they can get tested for HIV [7]. This is because in rural settings for example health facilities may be distant from where people reside. As such, youths may not see it necessary to walk such long distances just to go and have an HIV test, despite having all the comprehensive correct knowledge on HIV and AIDS. Moreover, younger youths (15 – 19) may think that they are not at risk of getting the virus, even as some may have been born HIV positive and not be aware of their status. In addition, youths are not only vulnerable to infection, but they also may experience barriers to accessing testing services because of their young age [12]. Also, youths with no or low educational levels are at increased risk of HIV and AIDS because they are illiterate and may not know the importance of HIV testing even if the facilities are available within their vicinity. Studies show that awareness of HIV status can motivate people to protect themselves against infection and to protect their partners from being infected. Tragically, this is not only the missed opportunity for a well-known entry point to access care and treatment but also a means of preventing HIV infection among youths because most of them do not have access to sexual health advice, condoms, other forms of contraception. Other similar studies also reveal that, reproductive health services are also seldom targeted towards the youth and the lack of favourable social atmosphere for HIV testing makes them to avoid the services, thus putting themselves and their sex partners at risk of infection [7, 18]. Therefore, for increased uptake of HIV counselling and testing among youths, there must be increased access of HIV testing and counselling (HTC) for them within their locality with well-trained staff with the necessary skill and knowledge to appeal to young people.

Sexual Behaviour and HIV/AIDS among youths

Fifty eight percent of youths in Zambia have a history of early sexual debut (sex before age 15) with more females (64 percent) than males (51 percent) having had sex before age 15, similar to other studies [13, 27, 28 29]., This finding is contrary to the generalised view that male engaged in sexual activity at a tender age than females [23]. Though youths indulge in

sexual relations for various reasons that include self-gratification and enjoyment [12], this basically indicates that, youth start engaging in sex at a very tender age as such, sex education in Zambia should start at an early age from primary through to college and that the education curriculum should include such issues before youths start indulging themselves in sexual activities. Further, our study finding reveals that the mean age at first coitus is low (16.5 years) which is in agreement with what other studies found [12, 13, 14, 27, 30, 31, 32, 33].

Also, data in (table 9) shows that, there is no statistical association between sex, age and condom use at first sex. However, an association was also observed that condom use at first sexual intercourse was associated with youth's educational attainment, place of residence and having comprehensive correct knowledge on HIV and AIDS. This is similar to other studies [13]. There are various reasons as to why youths may not be using condoms during sexual intercourse even if they are widely available one of them being due to embarrassment. This may also be attributed to due misconceptions, such as condoms being uncomfortable during sex or reducing sexual pleasure. Evidence from previous studies suggests that gender differences exist in condom use which is consistent with our finding because males are dissatisfied with them, females believe that condom use may signal mistrust, and unprotected sex is viewed as a symbol of love [20]. In addition, sexually active youths are still shy to buy condoms because of religious and social-cultural norms related to youths, especially if they are unmarried [14]. This suggests that with the aforementioned factors alone do not ensure greater condom use. Rather, negotiation skills about condom use, high levels of sexual education and communication especially among the rural females and those with low education may play an important role in consistent condom use throughout youth's life cycle and into adulthood.

Although not widely practiced, youths in Zambia exchange money for sex. This coupled with irregular or non-condom use when money is exchanged amplifies the risk of youth's susceptibility to contracting the HIV virus as sex is usually viewed as a way of cementing a relationship. This finding is similar to what [25] found among University of Botswana students where a number of students engaged in sexual activity for material gain or money.

The fact that youths come from different socio-economic backgrounds, those with poor socio-economic status adopts lifestyles that are against their backgrounds and end up having multiple sexual partners who are responsible for their particular needs as such making it difficult even to negotiate for condom use when having sex.

CONCLUSION

Our findings highlight and AIDS that a specific focus on youths will be required in order to successfully combat HIV and AIDS in Zambia. These efforts should concentrate not only on increasing the knowledge of youths, but improving the attitudes and behaviours with regard to sexual behaviour. However, for youths to undergo such a transformation, a lot of effort is required most especially those that try to bridge the gap between gender, education and place of residence. If this pattern is not changed, the HIV prevalence infection will continue to rise especially among the youths. Therefore, for success to be scored in this fight, devising sustainable sex educational programmes that seek to address the social-cultural and socio-economic barriers and misconceptions about HIV and AIDS are also needed. Such programmes may include increased information, communication and education (IEC) on comprehensive correct knowledge, positive attitude and behaviour towards HIV and AIDS such as HIV testing and condom use whenever they have sex with their partners. However these must be targeted at specific groups already highlighted starting from primary schools onwards so as to instil within a young age the socially and culturally acceptable behaviours for increased HIV and AIDS prevention. Moreover, future research is also needed to assess the social-cultural factors associated with low comprehensive correct knowledge, poor attitude and behaviour among youths in Zambia.

COMPETING INTERESTS: *The authors declares that they have no competing interests*

AUTHORS CONTRIBUTION

BBB: *conceived the paper, data manipulation including*

computation of new variables required for further analysis, actual statistical analysis and interpretation of the study findings, sequencing and alignment according to journal authors' guidelines.

AB: revised the methodology, edited the manuscript and suggested the inclusion of other variables for further analysis and also contributed on the interpretation and discussion of the paper.

SJ: helped in the editing of the manuscript with specific interest on statistical presentation of findings.

PA: helped in the editing the manuscript and provided guidance on HIV and AIDS related technical components.

PF: helped in editing the manuscript and provided guidance on the HIV and AIDS related indicators that are of both government and donor importance.

The authors read and approved the final manuscript

AUTHORS INFORMATION

BBB: Holds the following qualifications: Master of Arts Degree in Population Studies, Bachelor of Arts Degree Major (Demography) and Minor in (Economics), Certificate in Planning Monitoring and Evaluation; and Certificate Survey Data Analysis Using Stata. Currently is a Lecturer in Demography at Mulungushi University, Centre for Information Communication Technology, Department of Mathematics and Statistics, Kabwe Zambia. The author has also previously worked as a Tutor for the University of Zambia, under the Department of Distance Education; District Planning, Monitoring and Evaluation - for Millennium Development Goal initiative (MDGi) Programme - for the Government of the Republic of Zambia, United Nations in Zambia and European Union; Social Economic Planner - for Chipata Municipal Council under the Local Government Service Commission; Research Manager - for Society for Family Health; and as a Statistician - for the National Food and Nutrition Commission of Zambia and he is also a Member of the Zambia Monitoring and Evaluation Association (ZaMEA). The author has experience in quantitative research with specific focus on Nutrition and HIV, Adolescent and Child Health, Maternal Health and Child Mortality

AB: Holds the following qualifications: Master of Science in Population Studies, Bachelor of Arts Degree Major (Demography) and Minor in (Development Studies), Postgraduate Diploma in Monitoring and Evaluation Methods (PGDMEM), Certificate in Epidemiological Methods, Certificate in Epidemiology for Data users (EDU) and certificate in Advanced Qualitative Data Analysis. Currently is a lecturer in Demography at the University of Zambia, Department of Population Studies. The author also has

previously worked as a Program Technical Coordinator for the Epidemiology for Data Users (EDU) Training Programme for the last five years under the Centre for Disease Control and Prevention (CDC), PEPFAR funded program. The author has vast experience in health behavioural studies such as circumcision and HIV prevention, violence and well-being of children, child health. He is a member of the International Epidemiological Association (IEA)

SJ: Holds the following qualifications: Master of Science Degree in Mathematical Modelling, Bachelor of Science in Mathematics and Statistics. Currently he is working as a lecturer in mathematics and statistics at Mulungushi University. He has also previously worked as a lecturer with the University of Zambia, University of Lusaka and Natural Resources Development College (NRDC)

PA: Holds the following qualifications: Master of Science in Epidemiology, Bachelor of Arts Degree Major (Demography) and Minor in (Statistics). Certificate in Planning Monitoring and Evaluation and he is a Master trainer in Survey Data Analysis using STATA. Currently he is the Monitoring and Evaluation officer for the UNDP/Global fund for HIV. Previously, he worked for the Ministry of Health Zambia in the areas of Monitoring and Evaluation for HIV and health in general.

PF: currently pursuing Master of Analytical Epidemiology (dissertation level) with the University of Zambia, he also holds the following qualifications: Bachelor of Arts Degree Major (Demography) and Minor in (Economic); certificate in Planning, Monitoring and Evaluation; and certificate in Project Management. He is also a certified Survey Data Analyst using STATA (University of North Carolina-Chapel Hill and MEASURE), Certified Trainer in web based District Health Information System (DHIS2) University of Oslo. Currently he is working with the Ministry of Health as a Monitoring and Evaluation Officer, under the global fund programme Management Unit. Previously he worked as a Monitoring and Evaluation Technical Advisor under the USAID supported STEPS OVC program. He is also a member of the Zambia Monitoring and Evaluation Association (ZaMEA).

ACKNOWLEDGEMENTS: Special thanks go to Central Statistical Office (CSO) for allowing us to use the 2009 Zambia Sexual Behaviour Survey (ZSBS) dataset without your permission; it would not have been possible to have this great write-up. We also acknowledge Dr. Amanda Palmer (Johns Hopkins University) for proofreading and feedback on the manuscript.

In addition, since the study utilised secondary data no costs were incurred during the manuscript write up.

References.

- [1] UNAIDS 2014. UNAIDS Report on the Global AIDS Epidemic 2013. Geneva, Switzerland: UNAIDS.
- [2] UNAIDS 2013. UNAIDS Report on the Global AIDS Epidemic 2013. Geneva, Switzerland: UNAIDS.
- [3] Kawana B.M., Mofu M.J., Siamusantu W. S., Kabwe K.F., Bwalya B.B., Tembo G, Goulden J and Banda L. Cash or Food? Which Works Better To Improve Nutrition Status and Treatment Adherence For HIV Patients Starting Antiretroviral Therapy. *Intsitute for Development Studies Special Collection*. 2014: 43-48.
- [4] Thanavanh B., Harun-OR-Rashid Md., Kasuya H., and Sakamoto J. Knowledge, Attitudes and Practices Regarding HIV and AIDS among Male High School Students in Lao People,s Democratic Republic. *Journal of the International AIDS society* 2013, 16:17387.
- [5] UNAIDS 2014. UNAIDS GAP Report 2014. Geneva, Switzerland: UNAIDS
- [6] Central Statistical Office (CSO). 2010 Census of Population and Housing. Lusaka, Zambia.
- [7] Idele P, Gillespie A, Porth T, Suzuki C, Mahy M, Kasedde S and Luo C. Epidemiology of HIV and AIDS Among Adolescents: Current Status, Inequities and Data Gaps. *Journal for Acquired Immune Deficiency Syndrome*. Volume 66, Supplement 2, July 1, 2014, S144-S152.
- [8] UNAIDS. UNAIDS Report on the Global AIDS Epidemic 2012. Geneva, Switzerland: UNAIDS.
- [9] UNDP. Human Development Report 2013: The rise of the south. Human Progress in a Diverse World. 2013 UNDP.
- [10] Central Statistical Office (CSO), Ministry of Health (MoH), University of Zambia, and MEASURE Evaluation, 2010. Zambia Sexual Behaviour Survey 2009. Lusaka Zambia. CSO and MEASURE Evaluation.
- [11] Potsonene R., Kontula O. Adolescent Knowledge and attitudes concerning HIV infection and HIV-infected persons: how a survey and focus discussions are suited for researching adolescents HIV/AIDS knowledge and attitudes. *Health Education Research*. 1999, 14 (4): 473-84.
- [12] Guindo O. M., Liu A., Haba K.. Knowledge, attitudes and practices of youth towards HIV/AIDS in Mali, West Africa. *International Journal of Advanced Physiology and Allied Sciences* 2014, 2(1):12-23.
- [13] Thanavanh B., Harun-Or-Rashid Md., Kasuya H., Sakamoto J. Knowledge attitudes and practices regarding HIV/AIDS among male high school students in Lao Peoples Democratic Republic. *Journal of the International AIDS society* 2013, 16:17387.
- [14] Shiferaw Y., Alemu A., Girma A., et al., Assessment of Knowledge, Attitude and risk behaviour towards HIV/AIDS and other sexual transmitted infection among preparatory students of Gondar town, north west Ethiopia. *BMC Research Notes* 2011, 4:505.
- [15] Zinabu A. Knowledge, attitude and behaviour on HIV/AIDS/STD among workers in the informal scctors in Addis Ababa. *Ethiop J Health Dev* 2003.
- [16] Manzini N. Sexual Initiation and Child bearing among adolescent girls in KwaZulu Natal, South Africa. *Repro Health Matters* 2001; 9(17):44-52.
- [17] Gadegbeku C., Saka R., Mensah B. Attitude of the Youth towards Voluntary Counselling and Testing (VCT) of HIV/AIDS in Accra, Ghana. *Journal of Biology, Agriculture and Healthcare* 2013; 3 (11).
- [18] Hazarika I. Knowledge, attitude, beliefs and practices in HIV/AIDS in India: identifying the gender and rural-urban differences. *Asian Pacific Journal of Tropical Medicine* 2010; 821-7.
- [19] Montazeri A. AIDS knolwegde and attitudes in Iran: results from a population-based survey in Tehran. *Patient Education and Counselling* 57 2005; 199-203.
- [20] Ugarte W.J., Hgberg U., Valladares E., and Essen B., (2013). Assessing knowledge, attitudes, and behaviours related to HIV and AIDS in Nicaragua: A community-level perspective. *Sexual and Reproductive Healthcare* 4 2013; 37-44.
- [21] UNICEF UNAIDS, WHO. Young people and HIV/AIDS opportunity in crisis. 2000 UNICEF, New York.
- [22] Nwokocha A.R.C.,Nyakoby B. A. N. Knowledge, Attitude, and Behaviour of Secondary (High) School Students Concerning HIV/AIDS in Enugu, Nigeria, in the Year 2000. *J Pediatr Adolesc Gynecol* 2002; 15: 93-96.
- [23] Sohn A., Park S.B. HIV/AIDS Knowledge, Stigmatizing Attitudes, and Related Behaviors and Factors that Affect Stigmatizing Attitudes against HIV/AIDS among Adolescents. *Osong Public Health Res Perspect* 2012 3(1), 24 - 30.
- [24] Tung W.C., Ding K.,Farmer S. Knowledge, attitudes, and behaviour related to HIV and AIDS among college students in Taiwan. *Journal of the Association of Nurses in AIDS care*. 2008; 19(5): 397-408.
- [25] Seloilwe E. S. Factors that influence the spread of HIV/AIDS Among students of the University of Botswana. *Journal of the Association of Nurses in AIDS care*, Vol. 16, No 3, 3-10.
- [26] Ga czak M., Barss P., Alfaresi F., Almazrouei S., Muraddad A., Al-Maskari F. Break the Silence: HIV/AIDS Knowledge, Attitudes and Educational Needs among Arab University Students in United Arab Emirates. *Journal of Adolescent Health* 40 2007; 572.e1-572.e8
- [27] Hansson M., Stockfelt L., Urazalin M., Ahlm C., Andersson R. HIV/AIDS awareness and risk behaviour among students in semey, Kazakhstan: a cross-sectional survey. *BMC Int Health Hum Rights*. 2008; 8:14.
- [28] Tan X., Pan J., Zhou D., Wang C., Xie C. HIV/AIDS Knowledge, attitudes and behaviours assessment of

- Chinese students: a questionnaire study. *Int J Environ Res Public Health*. 2007; 4:248-53.
- [29] Kamala B.A., Aboud S. Knowledge, attitudes and practices on HIV prevention among secondary school students in Bukoba rural, Kagera region Tanzania. *Dar es Salaam Med students J*. 2006; 14:14-18.
- [30] Abruquah H.H., Bio F.Y. HIV/AIDS: Knowledge, attitudes and practices of school adolescents in the Kwaebirem district of Ghana. *J. Sci Tech*. 2008; 28:10-8.
- [31] Peltzer K., Promtussananon S. HIV/AIDS knowledge and sexual behaviour among junior secondary school students in South Africa. *J Soc Sci*. 2005; 1:1-8.
- [32] Detels R. HIV/AIDS in Asia: Introduction. *AIDS Educ Prev*. 2004; 16:1-6.
- [33] Lema M, Adih W. K. HIV/AIDS in Africa. *Journal of Adolescent Health*. 1988. 63-72.
- [34] Araoye E. HIV/AIDS Knowledge, Attitudes, and Opinions among Adolescents in the River States of Nigeria. *Joint National Medical Association*. 2008; 20-29.
- [35] Central Statistical Office (CSO), Ministry of Health (MOH), Tropical Diseases Research Centre (TDRC), University of Zambia, and Macro International Inc., (2014). *Zambia Demographic Health Survey 2013/14*. Calverton Maryland, USA and Macro International Inc.

