

Knowledge, Attitude and Practices of HIV/AIDS among High School Students in Eastern Cape, South Africa

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KEYWORDS Abstinence. Adolescence. Condom. Infection. Misconception. Regression. Sex

ABSTRACT Millions of people are living with HIV worldwide, and more than half of these people are adolescent, aged between 12-25 years. Insufficient knowledge, bad attitudes and unsafe practices are major impediments in preventing the transmission of the virus. 420 students from grades 9-12 were selected through random sampling from different schools in Eastern Cape. The majority of students assessed (95.5%) were knowledgeable about the spread of the virus but 35.2 percent to 66.2 percent of them had misconceptions on its transmission. 63.1 percent perceived positive attitudes towards PLWH, 73.9 percent would continue to study in a class/school with them and 45.2 percent would allow a HIV positive teacher to continue teaching them. Logistic regression analysis result revealed that level of knowledge was statistically significant with attitudes (OR = 8.7, 95% CI = 4.3-16.4, $p < 0.002$). In spite of sufficient HIV/AIDS knowledge among respondents, misconceptions on routes of HIV/AIDS transmission were reported. Negative and undesirable attitudes to PLWH and unsafe practices were also found.

INTRODUCTION

HIV is a fastest growing epidemic in the world with more than one hundred million people living with the virus, and more than half of these people are youth between the ages of 12-30 years (World Health Organization 2015). Sub-Saharan Africa is a region densely affected by HIV/AIDS and southern Africa has high rates of infection (Oramasionwu et al. 2011). In South Africa, HIV/AIDS is a prominent health problem, and it is rated as the highest country with HIV/AIDS prevalence rate in the world (Simelela and Venter 2014; HSRC 2012). The virus has affected and is still affecting many South Africans. The disease affects every segment of society. The main way the virus is currently spreading is through sexual contact (Guindo et al. 2014).

A serious challenge faced today is the rate of infection rising among the adolescents in sub-Saharan Africa. Research conducted in South Africa reveals that the virus prevalence rate was 30.2 percent among the adolescents (Davhana-Maselesele et al. 2007), and the highest age group

found to be affected with the virus is 15 to 25 years (Guindo et al. 2014). However, it is not amazing that sex intercourse is still the main mode of HIV transmission in Africa, constituting for approximately ninety percent of all infections (Shitan and Nazrul 2015).

Young people are predominantly susceptible to the virus infection due to their social, physical, economical and psychological attributes of adolescence, which cumulate to increase HIV-risk behaviors more than single adversities (Cluver et al. 2016). Consequently, many infected individuals continue to have unprotected sex, perpetuating the spread of the virus (USAID Report 2010). Moreover, peer influence to acquire expensive items such as accessories, clothing, jewelry, makeup and pocket money prompt young people to engage in transactional sexual intercourse and social stigma can negatively affect the attitude of these adolescents towards prevention (Gargiani et al. 2016; Temin et al. 1999).

Lack of HIV/AIDS knowledge, awareness of sexual behaviors, cognitive thought, and abstract imaginations influence adolescents of ages 14-25 years (Giri et al. 2012). This age group has been identified as bearing half of the burden of HIV worldwide (Cadmus and Owoaje 2011). They are sexually active at an earlier age, while in some, age at first intercourse has been reported to be below 11 years (Olayiwole et al. 2009). They are more prone to unsafe sex practices and have poor access to contraceptives (Somba et al. 2014; Cadmus and Owoaje 2011). Risky sexu-

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al habits like unprotected sexual relationships, many partners, inconsistency use of condoms and drug abuse are putting them at extremely high risk to the virus and other sexually transmitted diseases (STDs) (Azeez et al. 2016; Olubayo-Fatiregun 2014; Ntumba et al. 2012; Cadmus and Owoaje 2011).

The objective of this study is to evaluate the knowledge, attitude and practices (KAPs) towards HIV/AIDS among high school students, to find out the risks character and practices among the students and to describe the relationship that exists between the economic situations and socio-demographic related to HIV/AIDS among the students.

METHODOLOGY

Study Design

A cross sectional study was conducted to measure HIV/AIDS' knowledge, attitude and prevention practices among high school students in Eastern Cape Province using self-administered questionnaires. The school authority as well as the students were informed prior to the study being conducted and encouraged to participate.

Study Population

The study sampled 450 high school students from four different schools in Nkonkobe Municipality of Eastern Cape, South Africa. A descriptive survey was adopted for the study using random sampling techniques of grades 9-12 high school students. These students were selected because most of them are adolescent and more likely to engage in sexual activities. The selection was done with respect to their age, gender, family economic-social status and religious status to ascertain level of their knowledge, attitude and preventive practices toward HIV/AIDS.

Ethical Considerations

The study proposal was approved by the Govan Mbeki Research and Ethical Committee of University of Fort Hare, Alice campus to conduct the study from the proposed area. Prior to the data collection, students were adequately informed about the respondents' rights to participate or refuse to participate in the study and

assured that all information is confidential. All respondents duly signed the consent form before the questionnaires were administered.

Questionnaire

The questionnaire was used to obtain needed statistics and facts from the students about their understanding on HIV-related KAPs, sources of HIV information and risk factors. The questionnaire was reviewed and compared with worldwide school-based health related survey and family health on HIV/AIDS deterrence in developing countries (Report On The Global AIDS Epidemic Annex 2007). The reviewed questionnaire has questions related to HIV knowledge, attitudes of the students towards PLHIV, and students' sexual practices. The questionnaire consisted of five sections. Section I contained social demographic information, which includes age, social economic status, residence, religion and routes of information about HIV/AIDS. Section II consisted of 20 questions related to HIV knowledge, which were subdivided into three parts with questions related to mode of transmitting, preventive practices and ways of controlling HIV. Section III consisted of five questions on students' assessment on knowledge and misconceptions about HIV/AIDS. Section IV comprised 15 questions on attitude towards people living with HIV/AIDS, and lastly, section V contained questions on students' preventive practice related to HIV/AIDS such as sexual involvement and everyday activities. The questions were easy and instructions were provided to help the respondents comprehend them easily. The questionnaires were written in English language and the questionnaires were pre-tested to know if it will be well understood, order and needed time to complete filling it. Pre-tested questionnaires were done on twenty students who were picked to test the questionnaire in order to ensure that the questions are easily understood (these 20 students are not part of the main research).

Analysis of Data

The data was analyzed using SPSS version 20 statistical software for Windows (IBM Inc.) Descriptive statistics were used to show the demographic information and HIV/AIDS KAPs. Frequencies and percentages were used to show

categorical data to determine the magnitude of KAPs and background variables. Mean and standard deviation were used for normally distributed continuous variables and median and interquartile range (IQR) for non-normal continuous variables. Odds ratios and ninety-five percent confidence interval (C.I) were calculated through binary Logit regression analysis to determine the significant relationship level of knowledge, attitudes and preventive practices. All tests statistic were 2-tailed at five percent significant level.

To evaluate the responses, respondents were asked to answer “Yes”, “No” or “Do not know” to each question on KAPs questions. For preventive practices, choices were “Yes” or “No” only. A grade of 1 was assigned to a correct response and 0 for incorrect response based on KAPs questions. Also, 1 was used for every positive response and 0 used for any negative responses. The grades were added together to produce a total grade for each of the respondents. The KAPs question levels were re-classified based on the overall frequency, mean and median grade. Appropriately, knowledge degree was classified as “low” for who students scored d” fifty-two percent, “moderate” for score between fifty-three percent and seventy-five percent, and “high” for score of e” seventy-six percent (Christiane et al. 2014). The attitude and preventive practices were classified in two divisions based on mean and median grade and scoring less than mean score were categorized as “negative” attitude and scoring more than or equal to mean scores were categorized as “positive” attitude. For preventive practices, as the data was not normally distributed, the median score was used as the cut-off point. Grades less than median scores are categorized as “risk” preventive practices, and scoring more than or equal to median grades were termed as “safe” preventive practices.

RESULTS

Socio-demographic Information

The mean age of 420 students participated in the study was 32.4 years (± 11.2), ranging from 15 to 20 years. 296 (70.4%) of the respondents were between the ages 16-18 years. Two-third (71.5%) of the respondents were female. 206 (49%) of the students were from families of

middle social class (average economic status. Majority (84.6%) of the students was Christian (Table 1). All participating students were living with parents, guardians or a member of their family.

Table 1: Socio-demographic information of the study population (N=420)

Variable	Frequency	%
<i>Age</i>		
Mean \pm SD = 21.4 \pm 1.3 years		
Range = 15-20 years		
<i>Gender</i>		
Male	120	28.5
Female	300	71.5
<i>Social Status</i>		
Low class	46	11.0
Middle class	206	49.1
High class	168	39.9
<i>Religion</i>		
Christianity	355	84.6
Islam	22	5.2
No religion	43	10.2

Knowledge on Route of Transmission, Prevention and Control of HIV/AIDS

From the illustration in Table 2, 307 (73.1%) of all the respondents had information on knowledge of HIV/AIDS. The knowledge of students on the method of transmission was relatively high for certain parts and average for other parts. Therefore, 95.5 percent of the respondents were knowledgeable that HIV could be spread by sexual intercourse. More than two-third of the respondents (74.3%) were aware that HIV could be transferred by blood transfusion. Majority of the respondents were also knowledgeable that HIV can be transferred from mother-to-child and sharing of needles or syringes. Surprisingly, some respondents were confused on some routes of HIV transmission. For instance, only 60.9 percent of the respondents correctly responded to HIV can be spread by hand shaking with HIV-positive people and 66.2 percent of the respondents were also confused if HIV could be transmitted by hugging and kissing HIV positive people. Relatively more than half of the students thought erroneously that HIV could be spread by sharing toilet, eating and drinking from the same plates and cups, and wearing the same clothes or shoes as HIV positive people. More than one-quarter of all the respondents correctly answered that HIV cannot be transmitted through mosquito bites.

Table 2 also summarized the knowledge of respondents on HIV preventive practices. A reasonable high level of knowledge on HIV prevention was reported by respondents. Majority of the respondents (90.2%) said that HIV can be prevented by avoiding piercings and body tattoos. 365 (86.9%) of the respondents knew that HIV can be prevented by proper use of condoms and 388 (92.4%) of the students believed that HIV could be prevented by not sharing sharp objects and syringes. However, students' responses to knowledge on HIV control were also satisfactory except answer to question whether "HIV can be avoided by getting tested" where only 235 (55.9%) of the respondents replied "Yes". Appropriately, overall mean grade of knowledge of the respondents was 19.2 (\pm 6.9) from 20 knowledge-related questions. Accordingly, 24.1 percent of knowledge grade was classified as "low" for respondents scored d" fifty percent, 35.6 percent of knowledge grade was classified as "moderate" for grade between fifty-one percent and seventy-four percent, and 40.3 percent knowledge grade was classified as "high"

for grade of \geq seventy-five percent (Christiane et al. 2014).

Students' Attitude towards HIV/AIDS Infected People

The attitude of students towards HIV positive people is illustrated in Table 3. Majority of the respondents (74.8%) revealed positive attitudes to willingly taking care of the HIV-positive family members if they become sick, and 310 (73.9%) of the respondents said they would continue their friendship with HIV infected classmates. Conversely, relatively less than half of the respondents exhibited positive attitudes on questions such as, allowing HIV-positive teacher to continue teaching in the school (45.2%) and allowing HIV-positive students to continue studying in the school (48.2%). Only half of the respondents (51.6%) were willing to buy food items from a HIV-positive shopkeeper. For the total 15 questions that addressed students' attitudes towards HIV infected people, the mean score were 16.2 (\pm 4.6). Accordingly, if mean atti-

Table 2: Knowledge on route of transmission, prevention and control of HIV/AIDS (N=420)

<i>Questions with right options</i>	<i>Frequency (%)</i>
<i>Students' Knowledge on HIV Transmission</i>	
HIV can be spread through sexual intercourse (Yes)	403 (95.5)
HIV can be spread through blood transfusion (Yes)	312 (74.3)
HIV can be spread through birth-mother to child (Yes)	375 (89.3)
HIV can be spread by sharing needle or syringe (Yes)	387 (92.1)
HIV can be spread by sharing toilet with an infected person (No)	226 (53.8)
HIV can be transmitted by eating and drinking from the plate or cup of a HIV-positive person (No)	248 (59.1)
HIV can be transmitted by hand shaking (No) HIV can be transmitted by hugging and kissing (No)	256 (60.9)
HIV can be transmitted by wearing the same clothes or shoes with an HIV-positive person (No)	278 (66.2)
HIV can be spread through a mosquito bite (No)	239 (56.9)
<i>Students' Knowledge on HIV Prevention</i>	
HIV can be prevented by avoiding piercing and body tattoo (Yes)	148 (35.2)
HIV can be prevented by proper use of condoms (Yes)	379 (90.2)
HIV can be prevented by not sharing sharp objects and syringe (Yes)	365 (86.9)
<i>Students' Knowledge on HIV Control</i>	
HIV transmission can be avoided by getting tested (Yes)	388 (92.4)
HIV transmission can be controlled by remain faithful to a single sex partner (Yes)	235 (55.9)
HIV transmission can be controlled by abstain from sex before marriage (Yes)	362 (86.2)
	305 (72.6)

Table 3: Students' attitude towards HIV/AIDS infected people (N=420)

<i>Questions with right options</i>	<i>Frequency (%)</i>
Can you be willing to take care of a family member who is HIV-positive people if become sick?	315 (74.8)
Can you be positively allowed a teacher who is HIV-positive to continue teaching you in the school?	190 (45.2)
Can you still continue to be a friend with HIV-positive class mates?	310 (73.9)
If a student is HIV-positive, would he/she be permitted to continue studying in the school	202 (48.2)
If a food representative/shopkeeper is HIV-positive, would you be willing to buy items from him/her	217 (51.6)

tude score ≥ 58.9 percent of the students score were classified as “positive” attitude and if the mean attitude score is ≤ 41.1 percent is classified as “negative” attitude towards HIV-positive people.

Practices Exhibited by Students towards HIV/AIDS

Practices exhibited by students towards HIV/AIDS are illustrated in Table 4. It was shown that 244 (58.1%) of the respondents have had a history of sexual relationship. Out of these respondents, 39 (16.2%) have had sex experiences with men in form of oral sex, 205 (84.1%) had used condoms during regular sex, 145 (68.4%) used condoms in the last sex encounter with casual partners, 87 (41.3%) will not stop if a condom busts during sexual intercourse, and 89 (36.5%) of the respondents used to have sex under the influence of alcohol. 53.8 percent of the total students were reportedly using safe practices with greater than or equal to the median score 7.0 and interquartile range (IQR) of 3.5-12.5 from 8 questions on protected sex practices to avoid HIV/AIDS, and 48.7 percent of the respondents were using unsafe practices with less than the median grade.

Summary of Chi-square Analysis of Knowledge of HIV and Socio-demographic Data

From the χ^2 result, knowledge variables were analyzed in relation to respondents’ demographic characteristics (age, gender and socioeconomic status) in an effort to determine whether there is any significant between the response and predictors of different groups. Table 6 shows that the age was not statistically significant at the level of $\alpha=0.05$ with $\chi^2=34.65$ (age), $df=3$ and p value = 0.082. This indicated that age does not determine the level of understanding of the knowledge of students about HIV/AIDS. At the level of $\alpha=0.05$ with $\chi^2=22.03$ (gender), $df=4$

and p value = 0.065, this shows that gender does not determine the understanding the knowledge of the virus. At the level of $\alpha=0.05$ with $\chi^2=32.19$ (economic status), $df=3$ and p value = 0.015, this shows that family socioeconomic status determines knowledge of the students about HIV/AIDS.

Summary of Chi-square Analysis of Attitude towards PLWH and Socio-demographic Data

Chi-square was also used to analyze respondents’ attitude and demographic characteristics (age, gender and social status) in an effort to determine whether there is any significant difference between the groups. Results indicated in Table 5 show that age and gender were statistically significant at the level of $\alpha=0.05$ with $\chi^2=22.03$ (age), $df=3$ and p value = 0.000 and $\chi^2=34.23$ (gender), $df=4$ and p value = 0.001 respectively, while social status was not significant at the level of $\alpha=0.05$ with $\chi^2=26.61$ (social status), $df=4$ and p value = 0.325. This indicates that age and gender of the respondents contribute to the attitude of the students toward people living with HIV/AIDS and social status does not contribute positively to the attitude of students toward people living with the virus.

Table 5: Chi-square summaries of knowledge of HIV and attitude towards PLHIV with socio-demographic data

Variables	χ^2 -value	df	p-value
<i>Knowledge of HIV</i>			
Age	34.65	3	0.082
Gender	22.03	3	0.065
Social status	32.19	3	0.015
<i>Attitude towards PLHIV</i>			
Age	22.03	3	0.000
Gender	34.23	3	0.001
Social status	26.61	3	0.325

Significant level at de 0.05

Table 4: Practices related to HIV/AIDS

Practices	Frequency (%)	Total
Have you ever had sexual intercourse?	244 (58.1)	420
Have you ever had oral sex with men?	39 (16.2)	244
Do you use condom during sex?	205 (84.1)	244
Did you use condom in the last sex encounter?	145 (68.4)	212
Do you stop when a condom is busted during sex?	87 (41.3)	212
Do you have sex under the influence of alcohol?	89 (36.5)	244

Relationship of KAPS (Knowledge, Attitudes and Preventive Practices)

Logistic regression analysis results showed that the level of knowledge was statistically significant to attitudes and preventive practices of the students as summarized in the Table 6. It was discovered that those respondents that have high and medium level of knowledge were having a reasonable positive attitude (OR = 8.7, 95% CI = 4.3-16.4, $p < 0.002$; and OR = 12.6, 95% CI = 6.2-23.8, $p < 0.000$, respectively) and protected preventive practices (OR = 3.85, 95% CI = 1.9-6.7, $p < 0.023$; and OR = 2.70, 95% CI = 1.2-8.9, $p < 0.045$, respectively). The major sources of respondents' information regarding HIV/AIDS were electronic media such as television, radio and cable stations (61.8%), followed by print media such as newspapers and magazines (28.4%). More than one-fifth of the students were knowledgeable about source of HIV/AIDS information through peers (10.2%), school (6.9%), religious places (11.4%), hospitals (16.4%) and through family members (15.3%).

DISCUSSION

This study has findings that have three key messages for high school students' knowledge, attitude and practices of HIV/AIDS in South Africa, concerning the students' socio-demographic information and the misconceptions about prevention and control of HIV/AIDS.

Finding one revealed that specific socio-demographic information in two purviews of age and gender, independently does not determine the level of knowledge understanding of HIV/AIDS among the high school male and female ($P > 0.05$), while economic status showed a statistical significant in determining the level of students' understanding about knowledge of HIV/

AIDS ($P < 0.05$). In particular, students with low and middle social class showed significantly reduced knowledge about HIV/AIDS, which is a major factor that can lead to HIV risk practices among the students. With inadequate knowledge of students, it is most likely to be lower among students with less social status. Gender differences could bring disparity in knowledge of HIV/AIDS among segregated high school students. Similar studies showed that inadequate knowledge on HIV/AIDS was extremely high and associated to HIV counseling and testing, gender and economic inequalities (Oguegbu 2016; Terán Calderón et al. 2015; Mulu et al. 2014; Hasan et al. 2013).

In addition, misconceptions about the ways in which HIV/AIDS transmitted still remains. Majority of students had a good awareness on HIV/AIDS but there is still a need to acknowledge risks of misconceptions about the route transmission, prevention and control. Though, there was misunderstanding about importance of some route of transmission of HIV/AIDS, such as drinking and eating from the same plate or cup with HIV-positive people, along with hugging, kissing, shaking hands, sharing shoes or clothes and toilet with the HIV-positive people. Also, similar misconceptions were reported in other studies (Mekelle et al. 2013; Ikpeme et al. 2005; Giri et al. 2012; Wahed et al. 2013; Olubayo-Fatiregun 2014). Most of the students believe that HIV/AIDS can be prevented by proper use of condoms, avoid body piercing, tattoo and as well as sharing syringe and needle, which is consistent with studies from Asian (Maimaiti 2010) and other African countries (Ntumba et al. 2012; Olubayo-Fatiregun 2014; Peltzer and Promtusananon 2005).

Finding two discussed that combination of positive and negative attitude of students can have significant effects toward PLWH, indepen-

Table 6: Logistic regression analysis on knowledge with attitudes and practices

Knowledge ^b	Attitudes ^a				p	Protective practices ^c				
	+ve %	-ve %	OR ^c	95% CI ^d		Save %	Unsave %	OR	95% CI	p
Low	9.5	45.9	0.89	Referenced		17.6	27.1	0.90	Referenced	
Medium	23.8	32.5	8.7	4.3-16.4	<0.002	49.5	38.4	3.85	1.9-6.7	0.023
High	67.7	21.6	12.6	6.2-23.8	<0.000	32.9	34.5	2.70	1.2-8.9	0.045

a. Variable(s) entered on step : attitude^a, knowledge^b, preventive practices^c.
 b. P-value calculated by Binary logistic regression
 c. Significance level at de 0.05

dently of socio-demographic information. The findings showed that individually, age and gender were significantly affecting the students' attitude towards PLWH ($P < 0.05$) and social status was seen not to affect the students' attitude ($P > 0.05$). This may be due to incidence rates of cautious attitude of older male and female high school students who have insufficient knowledge about route of transmission, prevention and control of HIV/AIDS with the fact that the general population literacy rate was about sixty-five percent. Though most students may have been poorly informed that a cure or vaccine exists for HIV/AIDS is risk attitude factor for HIV infection. Lack of adequate knowledge could be from conflicting media programs about HIV/AIDS, treatment and cures, which may confuse students and give them wrong expressional attitudes about HIV/AIDS. Similar studies were reported that two-third of people lived away from home, negative public perceptions and socio-demographic characteristics associated with discriminatory attitudes towards PLWH (Kueté et al. 2016; Masoudnia 2015; Kanda et al. 2009).

Moreover, the third finding showed that hypothesis was subjected to Logistic regression analysis, the result revealed that high and medium level of knowledge was statistically significant and contributed positively to the students' attitudes ($OR = 8.7, P < 0.0002$) and significantly good preventive practices among the students ($OR = 3.87, P < 0.0023$). This finding showed the aperture of knowledge concerning HIV transmission, prevention and control, together with unfriendly and intolerant attitudes toward PLWH may be due to the students' perspectives of differences in knowledge and attitude that stigmatize PLWH. Similar studies indicated that higher levels of stigma and discrimination against PLWH were associated with lack of in-depth knowledge on HIV and people living with HIV should be respected, valued, supported and show more compassion in the society (Pretorius et al. 2016; Feyissa et al. 2012).

Good preventive practices were revealed, which may be as a result of jingles on media and volunteers going to schools to sensitize students on preventive practices with adequate free testing and counseling to them as well as involving religious leaders striving to lessen social stigma towards HIV people through sermons, teaching and spiritual care. Two-third of high school students have had sexual contact in one

way or the other, and most of them had it at the age of 15 years, similar to other findings (Bakhom et al. 2014), that the mean age of respondents was 28.63 ± 6.27 years and ranged from 15 years and above.

However, relatively half of the students used condoms steadily during their last sexual intercourse. This was the same with other surveys (Mavhandu-Mudzusi and Asgedom 2016; Mulu et al. 2014; Ntumba et al. 2012; Mulumba 2008). Young, able and unmarried individuals buying condoms can be a very impressionable concern. High school students might be uncomfortably nervous, ashamed and scared of purchasing condoms with fear that the shop attendants might report to their guardians or perhaps teachers. Even though condoms might be widely available in pharmacy shops, public toilets, and guesthouses and are not expensive, its affordability might still be an issue followed by its inconsistent use by some adolescents. The findings explained further that inaccessibility of condoms is a major hindrance to HIV stoppage, as only 34.2 percent of students said that they have right to use condoms (Beck Sagué et al. 2014). For some of the respondents, it is not cozy using condoms during sex because they felt it might decrease their libido and sexual pleasures (Christiane et al. 2014). These misconceptions may be factors that increase the likelihood of HIV transmission.

In South Africa, same-sex practices are legalized, which is bind by law. Gay and bisexual relationships are gradually reducing because is not totally accepted by all. This subject is still beyond the comprehension of many concerned authorities in dealing with HIV/AIDS. The result of this study might offer some insightful points to kindle required measures to be taken to avert the virus. Young people should be more focused on HIV related and opportunistic infections because they become sexually active and experimental at this age group. Precise HIV background knowledge will help the adolescents in making decisions that are going to affect their lives positively. Presently, South Africa's health department has introduced many programs such as jingles and dramas on HIV, both on television and radio, which is a good platform to propagate the messages.

The limitation to the study was that the study was conducted only in one province, the findings cannot be generalized to all the young peo-

ple, other provinces and the country at large, and did not include out of school youth in the study. Also, knowledge is important and essential, and it may not be one of the leading factors that explain HIV/AIDS' understanding among the school students. Gender inequalities may be part of attributable segregation among high school students. Many students have sufficient knowledge about HIV but most of them do not act according to it due to some constraints such as social, economic and cultural disparity. However, a large survey, using many provinces, municipality and locations may provide further insights and identify some high HIV prevalence areas. Finally, the study did not cover some areas like the students' circumcision and multiple sexual relationships, which are risk factors of HIV transmission.

CONCLUSION

The students' focus class chats provided awareness into high school students' rational knowledge about HIV/AIDS, and numerous opinions appeared, that need to be unified into a well-designed program to deal with some misconceptions about HIV transmission, negative attitudes, discrimination towards PLHIV, and risky sexual practices. Intensifying the perception of HIV risks among the students and emphasizing the connections of sexual behavior, STDs and HIV infections for control programs.

This class chat discussion helped the study understand reasons the students entangle in a sexual affair at a young age, and why they practice unsafe sex even with their awareness about the risks. The students expressed their concerns about social economic status, which motivated them in having sexual relationships. HIV-related programs with specific interventions to change students' orientations, practices, along with knowledge and attitudes should be organized time-to-time. Future research involving nationally representative samples of out-of-school adolescents could contribute substantially to HIV/AIDS prevention and intervention.

ACKNOWLEDGEMENTS

The authors acknowledge the effort of the school and the supervisors from the Department of Biostatistics and Epidemiology, University of Fort Hare, South Africa for their tireless support

for this research. They thank the cooperation of the participating students and their respective teachers of all the schools studied. Lastly, this study was partly supported by Govan Mbeki Research Centre of University of Fort Hare under the grant of supervisor-linked bursary.

REFERENCES

- Azeez A, Yongsong Q, James N 2016. Risky sexual behavior and knowledge of HIV / AIDS among high school students in Eastern Cape South Africa. *Journal of Human Ecology*, 53(3): 194–204.
- Bakhom AY, Bachmann MC, El Kharrat E, Talaat R 2014. Assessment of knowledge, attitude, and practice of risky sexual behavior leading to HIV and sexually transmitted infections among Egyptian substance abusers: A cross-sectional study. *Advances in Public Health*, 2014: 1–8.
- Beck SC, Black C, Morse SA, Schmid G 2014. Women and children first: The Impact of sexually transmitted infections on maternal and child health. *Journal of Sexually Transmitted Diseases*, 8(6): 1–3.
- Cadmus E, Owoaje E 2011. Knowledge about complications and practice of abortion among female undergraduates in the University of Ibadan, Nigeria. *Annals of Ibadan Postgraduate Medicine*, 9(1): 19–23.
- Christiane NA, Roger ZM, Masika J, Zhang Y 2014. HIV / AIDS prevalence, knowledge, attitudes and related behaviors among young people in Libreville, Gabon. *Journal of Humanities and Social Science*, 19(1): 59–65.
- Cluver LD, Orkin MF, Yakubovich AR, Sherr L 2016. Combination social protection for reducing HIV-risk behavior amongst adolescents in South Africa. *Journal of Acquired Immune Deficiency Syndromes (JAIDS)*, 72(1): 96–104.
- Davhana-Maselesele M, Lalendle L, Useh U 2007. Knowledge, attitudes and practices related to HIV/AIDS among learners in Vhembe district of Limpopo Province. *Curationis*, 7(1): 15–22.
- Feyissa GT, Abebe L, Girma E, Woldie M 2012. Stigma and discrimination against people living with HIV by healthcare providers, Southwest Ethiopia. *BMC Public Health*, 12(1): 522.
- Gargiani N, Verzuri A, Nante N 2016. Sexually transmitted diseases: How much do adolescents know? *Austin Journal of Public Health and Epidemiology*, 3(2): 1035.
- Giri P, Hiremath R, Kasbe A 2012. Sexual behaviour, knowledge, attitude and practices regarding HIV/AIDS amongst female sex workers (FSWs) in red light area of Mumbai city. *International Journal of Medical Science and Public Health*, 1(2): 131–137.
- Guindo OM, Liu A, Haba K 2014. Knowledge, attitudes and practices of youth towards HIV/AIDS in Mali, West Africa. *International Journal of Advanced Physiology and Allied Sciences*, 2(1): 12–23.
- Hasan AH, Hassan R, Khan ZR, Nuzhat E, Arefin U 2013. Influence of socio-demographic factors on awareness of HIV/AIDS among Bangladeshi garment workers. *SpringerPlus*, 2(1): 174.

- HSRC 2012. *South African National HIV Prevalence, Incidence and Behaviour Survey, 2012 Cape Town, South Africa*.
- Ikpeme BM, Etokidem AJ, Offor JB, Okokon EO, Etuk SJ 2005. Knowledge of HIV/AIDS among secondary school adolescents in Calabar, Nigeria. *Annals of African Medicine*, 4(1): 2–6.
- Kanda K, Obavashi Y, Ditangco RA, Matibag GC, Yamashina H et al. 2009. Original article knowledge, attitude and practice assessment of construction workers for HIV / AIDS in Sri Lanka. *J Infect Dev Ctries*, 3(8): 611–619.
- Kuete M, Huang Q, Rashid A, Ma X, Yuan H et al. 2016. Differences in knowledge, attitude, and behavior towards HIV / AIDS and sexually transmitted infections between sexually active foreign and Chinese medical students. *BioMed Research International*, 50(3): 10.
- Maimaiti N, Khadijah S, Anwar A, Nurungul T, Rena M 2010. Knowledge, attitude and practice regarding HIV / AIDS among university students in Xinjiang. *Global Journal of Health Science*, 2(2): 51–60.
- Masoudnia E 2015. Public perceptions about HIV/AIDS and discriminatory attitudes toward people living with acquired immunodeficiency syndrome in Iran. *SAHARA-J: Journal of Social Aspects of HIV/AIDS*, 12(1): 116–122.
- Mavhandu-Mudzusi AH, Asgedom T 2016. The prevalence of risky sexual behaviours amongst undergraduate students in Jigjiga University, Ethiopia. *Health SA Gesondheid*, 21(2): 179–186.
- Mekelle Tadese A, Menasbo B 2013. Knowledge, attitude and practice regarding HIV / AIDS among secondary school students in. *African Journal of AIDS and HIV Research*, 1(1): 1–7.
- Mulu W, Abera B, Yimer M 2014. Knowledge, attitude and practices on HIV /AIDS among students of Bahir Dar University. *Science Journal of Public Health*, 2(2): 78–86.
- Mulumba M 2008. *Knowledge, Attitude and Prevention Practices of HIV/AIDS among Primary and Secondary School Teachers in Zambia*. MSc Thesis, Unpublished. South Africa: University of South Africa.
- Ntumba A, Scott V, Igumbor E 2012. Knowledge, attitude and practice study of HIV in female adolescents presenting for contraceptive services in a rural health district in the north-east of Namibia. *African Journal of Primary Health Care & Family Medicine*, 4(1): 1–7.
- Oguegbu A 2016. Investigation of relationship between sociodemographic factors and HIV Counseling and Testing (HCT) among young people in Nigeria. *Advances in Infectious Diseases*, 6(3): 24–31.
- Olayiwole O, Awodele O, Anisu D, Kolawole S, Akande T 2009. Study of sexuality among adolescent students of a secondary school in Ilorin, Nigeria. *African Journal of Biomedical Research*, 12(2): 89–94.
- Olubayo-Fatiregun MA 2014. Knowledge of HIV/AIDS and risk behaviour among students of Colleges of Education in Edo State, Nigeria. *Journal of Educational and Social Research*, 4(6): 251–258.
- Oramasionwu CU, Daniels KR, Labreche MJ, Frei CR 2011. The environmental and social influences of HIV/AIDS in Sub-Saharan Africa: A focus on rural communities. *International Journal of Environmental Research and Public Health*, 8(7): 2967–2979.
- Pretorius JB, Greeff M, Freeks FE, Kruger A 2016. A HIV stigma reduction intervention for people living with HIV and their families. *Health SA Gesondheid*, 21(18): 187–195.
- Shitan M, Nazrul IM 2015. HIV/AIDS epidemic in Malaysia: Trend analysis from 1986–2011. *Southern African Journal of Demography*, 16(1): 37–56.
- Simelela NP, Venter WDF 2014. A brief history of South Africa's response to AIDS. *South African Medical Journal*, 104(3): 249–251.
- Somba MJ, Mbonlle M, Obure J, Mahende MJ 2014. Sexual behaviour, contraceptive knowledge and use among female undergraduates' students of Muhimbili and Dar es Salaam Universities, Tanzania: A cross-sectional study. *BMC Women's Health*, 14(1): 94.
- Temin MJ, Okonofua FE, Omorodion FO, Renne EP, Coplan P, Heggenhougen HK, Kaufman J 1999. Perceptions of sexual behavior and knowledge about sexually transmitted diseases among adolescents in Benin City, Nigeria. *International Family Planning Perspectives*, 25(4): 186–195.
- Terán C, Carolina GU, Dorian GB, Cristina AF, Belen RR, Oriana BM et al. 2015. Knowledge, attitudes and practices on HIV/AIDS and prevalence of HIV in the general population of Sucre, Bolivia. *The Brazilian Journal of Infectious Diseases*, 19(4): 369–375.
- Thanavanh B 2013. Knowledge, attitudes and practices regarding HIV/AIDS among male high school students in Lao People's Democratic Republic. *Journal of International AIDS Society*, 16(1): 1–7.
- USAID 2010. Report on HIV/AIDS in South Africa. The impact of HIV/AIDS in South Africa. *WHO Report Fact File 2010*, Geneva.
- USAIDS/WHO 2007. HIV and AIDS Estimates and Data, 2007 and 2011, *WHO Report Fact File 2010*, Geneva.
- Wahed T, Kaukab ST, Saha NC, Khan IA, Khanam F, Chowdhury F et al. 2013. Knowledge of, attitudes toward, and preventive practices relating to cholera and oral cholera vaccine among urban high-risk groups: Findings of a cross-sectional study in Dhaka, Bangladesh. *BMC Public Health*, 13(1): 242.
- World Health Organization 2015. *Global AIDS Response Progress Reporting, WHO Report Fact File 2010*, Geneva.