KNOWLEDGE, ATTITUDE AND PERCEPTION OF TERTIARY EDUCATION STUDENTS TOWARDS PEOPLE LIVING WITH HIV/AIDS IN GOMBE STATE

MURTALA MUHAMMAD ABDU[1]* ADAMU D. BOJUDE[2], SALIHU ABDULLAHI[3], SHUAIBU SANI[4], DANLADI M UMAR[5].

[1]University Health Services, Gombe State University, Gombe State, Nigeria
[2]College of Medical Sciences, Gombe State University, Gombe State, Nigeria.
[3]Department of Economics, Faculty of Art and Social Sciences, Gombe State University, Gombe State, Nigeria
[4]Department of Statistics, Faculty of Science, Gombe State University, Gombe State, Nigeria.
[5]Department of Biological Sciences, Faculty of Science, Gombe State University, Gombe State, Nigeria.
*Corresponding author: alamin882005@gmail.com

ABSTRACT

Knowledge, attitudes and perceptions concerning HIV/AIDS is one of the fundamental steps in the fight against the illness. Young people such as students are most susceptible to the disease because they are most sexually active and engage in risky practices due to lack of adequate information. Therefore, assessing their knowledge, attitudes and perceptions will help in designing a suitable prevention strategy. The aim of this study is to explore the level of knowledge, attitude and perception of students in higher institutions of learning towards HIV/AIDS and people living with HIV/AIDS (PLWHA). Through a cross-sectional study and stratified random sampling, we administered a pilot-tested standard questionnaire to assess the HIV/AIDS knowledge, attitudes and perceptions of 356 tertiary education students aged 18-46 years in Gombe State, Nigeria. Data were analyzed using STATA 10 statistical software. Four hundred students were approached to complete the questionnaires, 44 did not return their questionnaires. The mean age of the 356 participating students was 23.09±4.86 years (SD=4.86). The male to female ratio was 2:1. Over 90% of the students were aware of HIV/AIDS, and mass media (39.6%) and teachers (38.5%) were their major sources of information about disease. More than half of the students (60.6%) were willing to live with PLWHA and about two third of the (69.5%) wouldn't like students living with HIV/AIDS (SLWHA) to be educated in a separate school and (80%) would want all students to go for annual mandatory HIV testing. Although, most of the students have satisfactory knowledge about HIV/AIDS, and positive attitude and perception towards PLWHA, some misconceptions still exist among the students about the source of acquiring the disease.Educational programs and strategies involving schools and youth's networks should be employed to overcome these misconceptions.

Keywords: HIV, Tertiary students, Knowledge, Attitude, Perception, Gombe.

INTRODUCTION

Acquired Immune-deficiency Syndrome (AIDS) is caused by a retrovirus the Human Immunodeficiency Virus (HIV), it was first discovered by a Venerologist Dr. Robert Gallo in the United States in 1981 [1]. AIDS is a fatal illness which refers to the last stage of HIV infection.And it can leadto a complete breakdown in the body's

immune system, leaving the victim susceptible to a host of life-threatening opportunistic infections, neurological disorders and malignancies. Since the first cases were diagnosed in North America, it has spread speedilyto many countries over the years and became a global health challenge. HIV/AIDS is ranked among the top five leading cause of death among adolescents and young adults aged 15-24 years in Africa[2]. The 2018UNAIDS) global estimate of People Living With HIV/AIDS (PLWHA) is put at about 40 million, with about 75% of whom live in the Sub-Saharan Africa (SSA).Although worldwide statistics indicates an overall waning in AIDS related deaths and new HIV infections,thanks to the concerted efforts of various stakeholders, the toll of HIV/AIDS continues to be harsh in developing countries particularly those in SSA. Worldwide, unprotected heterosexual activity is the predominant route of HIV transmission. Other modes of transmission include unprotected penetrative sex between men, injection drug use and unsafe blood transfusions and injections. [3]

Nigeria is a country with high population of youth with a median age of 18 years, the country contributes about 10% of the global burden of HIV/AIDS with a prevalence rate of 4.4% [3].The general population'sknowledge about HIV/AIDS among 15-24-yearOld's(males and females)were 34% and 24% respectively.And men were more knowledgeable about condoms use than women and perceptions of personal risk were found to increase with level of education [4].The most recent HIV prevalence in Gombe state is 3.6% and according to NDHS 2013 report, the proportion ofwomen and men aged 15-49 years old in Gombe Statewho heard of HIV were 79.4% and 93.9% respectively while the knowledge of preventive measures among women and men such as using condoms and limiting sexual intercourse to one uninfected partnerwere 40.1% and 52.1% respectively[4].

Knowledge, attitudes and perceptions regarding HIV/AIDS is one of the fundamental steps in the fight against the disease. Adequate knowledge about HIV/AIDS is a powerful means of promoting positive attitudes and engaging in safe practices. Many prevention programs have focused on increasing knowledge on transmission so as to overcome misconceptions that could prevent behavioral change towards safe practices [5]and also reduce the stigma against PLWHA. Stigmatizing attitudes have been shown to be strongly associated with misconceptions on HIV transmission and are negative attitudes towards people living with HIV [6].

This study issurveyed the level of Knowledge, Attitude and Perception of students fromGombe State tertiary education towards HIV/AIDS and PLWHA. Findings of this study will serve as baseline for future HIV preventive efforts and further research targeting College and University students and youths in Gombe State.

MATERIALS AND METHODS

Study design, sampling and procedure

This cross-sectional study was conducted among college and undergraduate level students of tertiary education institutions

with total of more than 20, 000 students' population between March – May 2017in Gombe State. The state has three geographical zones namely North, Central and South. We purposely selected 3 institutions in Gombe capital city in the Northern zone because it contains the highest number of higher institutions and students, and one each from central and Southern zones. The five selected schools were: - Gombe State University, Gombe (Northern zone), College of Nursing Gombe (Northern zone); Federal College of Education (Technical) Gombe (Northern zone, NZ); Federal University Kashere (Central zone, CZ); College of Health Technology, Kaltungo (Southern zone, SZ). The minimum sample size was determined using the formula for measure of single proportion; n used by Durojaiye,2011[7]. $n = \frac{Z^2(P)(1-P)}{E^2}$

$$n = \frac{(1.96)^2(0.8)(1-0.8)}{0.05}$$

$$n = 12.29$$

Based on the calculatedaverage level 86%of awareness of HIV/AIDS among male (93.9%) and female (79.4%) aged 15-49 years in general population in Gombe State, 95% confidence level for Z score (*Z*-score value: 1.96) and 5% (0.05) precision level, the estimated minimum sample size was approximately 177. Keeping in mind the possibility of high non-compliance rate by respondentsbecause it is a sensitive issue, our aim was to recruit 400 respondents. To obtain our desired target of 400 participants, we decided to recruit 80 students from each school by choosing every 4th student through systematic random sampling. Students who were less than 18 years old and mentally or physically disabled were excluded. This is because a physically challenged person may not be readily sociable amongst his healthy cohorts.

The students were approached in their class rooms; they were informed about the purpose of the study and assured that their responses would be treated confidentially. They were also informed that their participation was entirely voluntary and that they were free to decline to answer any question that made them feel uncomfortable. Further, students were briefed about the technical terminologies used in the questionnaire and were given guidance on how to fill out the form. The students were selected in the classroom according to the sampling method to distribute the self-administered questionnaires over a periodof 15-20 minutes during class break. Written informed consent was obtained from all the students. Prior permission to administer the questionnaire was obtained from the Heads of the involved departments. Approval to conduct this research was granted by the Nigeria National Open University research committee.

Questionnaire

The data was collected using structured questionnaire following the method of Kushet*et al*, 2019[2]. The items were harvested from various standard instruments with few modifications and adapted to suit some uniqueness of the study population. Our ultimate questionnaire included questions relating to HIV knowledge, attitudes and perceptions toward PLWHA and their socio--demographic information. The questionnaire has four parts. Part I focused on the socio- demographic characteristics

of the respondents, included age, ethnic groups, residence, and religion and history of unprotected sex within the last six (6) months. Part II contained 11 knowledge-related items, with questions relating to definition of AIDS, source of knowledge, transmission, and prevention of HIV/AIDS. Here we included mainlypositively framed questions to assess their knowledge of HIV/AIDS. Part III comprised 7 questions on attitudes towards PLWHA, which again included both positively and negatively framed questions. Finally, Part IV comprised 4 questions about perceptions related to HIV/AIDS. Before data collection began, the questionnaire was then piloted on sixteen (16) students randomly selected in one of the schools outside the five sampled institutions, to test for clarity, feasibility and appropriateness for the students.

Statistical analyses

Data were entered on spread sheet and exported to Stata version 12 (21) for analysis. Descriptive statistics were used to describe demographic characteristics and knowledge, attitude and perceptions about HIV/AIDS. Numbers, percentages, mean (±standard deviation, SD), median, modeand tables were used to present the data.To assess knowledge, attitude and perception of the students, we asked them to answer "yes", "no" or "do not know" to the questions.

RESULTS

Socio-demographic characteristics

Four hundred students were approached to complete the questionnaires; 356students returned their questionnaires while 44 did not (response rate of 89%). The mean age of the 356 respondents was 24±4.864 (SD) years and their median and modal age were 23 years each. The modal age group was"21-25" years with a frequency of 172 (48.32%), closely followed by less than or "equals to 20" years age group with a frequency of 81 (22.76%) while age groups "36-40" and "41 years and above" have the least frequencies of 6 each (1.68%). Table 1 below shows the socio-demographic characteristics of the above students.

There were 243 (68.3%) males and 113 (31.7%) females. The mean age of males was 24±4.796 (SD) years and the mean age of females was 23±5.073 (SD) years. Both sexes have similar age range of 18-46years. Furthermore, majority of the students were single 271(76.12%), followed by the married 67(18.80%) and the students with an unknown marital status have the least frequency 2(0.56%). Widows, widowers and students living with partners were 5(1.40%),3(0.84%) and 8(2.21%) 4 (34.83%) respectively. Fulani students were the predominant ethnic group 124(34.83%), closely followed by Tangale 71(19.94%), Bolewa22(6.118%), Tera 21(5.90%), Hausa 17(4.65%) and other tribes 60(16.85%) respectively.The students belong to two major religious groups, Islam 244(34.83%) and Christianity 107(30.06%). Student with other religious faiths were 5(1.40%).

Most of the students that participated in the survey live on campus 189(53.09%), the remaining students live at own/family house 99(27.81%), in rented apartment 65(18.26%) and unknown residence 5(0.84%). About tenth of the students 46(12.96%) had unprotected sex, while the

remaining 309(87.04%) had no sex or a protected sex within last six (6) months.

Table 1: Socio-demographic Characteristics of Tertiary Educational Students in Gombe State.

Variables	Frequency	Percentage (%)
Sex		
Male	243	68.30
Female	113	31.7
Marital Status		
Single	243	68.30
Married	67	18.80
Widow	5	1.40
Widower	3	0.84
Living with partner	8	2.21
Others	2	0.56
Tribe		
Fulani	124	34.83
Bolewa	22	6.18
Hausa	17	4.65
Tera	21	5.90
Tangale	58	16.29
Others	60	16.85
Religion		
Islam	244	34.83
Christianity	107	30.06
Others	5	1.40
Living place		
Hostel residence	189	53.09
Own/family House	99	27.81
Rented apartment	65	18.26
Others	3	0.84
Had unprotected sex within the last six (6) months:		
Yes	46	12.96
No	309	87.04

Knowledge of HIV/AIDS

Table 2 below illustrates the level of knowledge of students about HIV/ AIDS. Almost all the students know the correct definition of what AIDS stand for329(92.94%). Media and teachers were the main source of knowledge of H1V/A1DS 140(39.06%)and 136(38.53%) respectively. Parents and Friends accounted for 69(19.55%) and 8(2.27%) separately. More than half of the students 188(53.71%) agreed AIDS can be treatedwhile 122(35.14%) did not agree. Majority of the students 298(83.71%) were aware that HIV cannot be transmitted through social contacts like sharing clothes, spoons, glasses and shaking hands. Again, majority of the students 272(76.84%) believed that unprotected sex, unscreened blood, occupational exposures and intravenous drugs use are the major sources of transmission of HIV/AIDS.

Fifty students (14.08%) said HIV positive patients can donate blood, while, 288(81.13%) said they cannot donate blood, and 25(7.06%) do not know. About whether contact with faeces or urine can cause HIV infection 58(16.38%) students believed contact with faeces or urine can bring about HIV infection, 271(76.55%) do not believe so, while 25(7.06%) do not know. On whether HIV can spread from mother-to-child? 291(82.44%) students believed that HIV positive mothers can infect their babies, 54(15.29%) believed they cannot infect their babies. More than

half of the students 183(52.59%) said HIV is curable if diagnosed early. On the question whether condom can protect against HIV/AIDS infection?A total of 249(70.14%) correctly said that use of condoms can protect against HIV infection, while one fifth 80(22.54%) said it cannot protect against the disease. And majority of the students 282(80.80%) said that abstinence can protect against HIV infection. Overall, the students have a good knowledge of HIV/AIDS.

Table 2: Knowledge of Students of Tertiary Educational Institutions towards PLWHA

Variable	**Frequency (%)**		
What AIDS stand for?			
Acquiring information and development system	17 (4.82)		
Acquired immune deficiency syndrome	329 (92.94)		
Action in-distress syndrome	8 (2.26)		
What is your source of knowledge of HIV?			
Mass media	140 (39.66)		
Parents	69 (19.55)		
Teachers	136 (38.53)		
Friends	8 (2.27)		
	Yes (%)	No (%)	Don't know (%)
Is there treatment available for AIDS?	188 (53.71)	122 (35.14)	40 (11.14)
Can HIV be transmitted through social contacts e.g., sharing clothes, spoons, glasses, shaking hands etc?	40(11.24)	298(83.71)	18 (5.06)
Major sources of transmission are; unprotected sex unscreened blood, occupational exposures and intravenous drugs use?	272 (76.84)	62 (17.51)	20 (5.65)
Can HIV patient donate blood?	50 (14.08)	288 (81.13)	17 (7.06)
Contact with faces, urine, can cause HIV/AIDS?	58 (16.38)	271 (76.55)	25 (7.06)
Can HIV spread from mother to child?	291(82.44)	54(15.29)	8(2.27)
HIV is curable if diagnosed early?	183 (52.59)	122(35.06)	43(12.36)
Condom can protect against HIV AIDS?	249 (70.14)	80(22.54)	26(7.23)
Total abstinence can prevent HIV?	282(80.80)	36(10.32)	31(8.88)

Attitude towards PLWHA

Table 3 below presents the attitude of students towards HIV/AIDS patients. Almost two third of the students 213(60.68%) expressed their willingness to live in the same place with PLWHA while one third 126(35.89%) were unwilling.Nearly all the students 286(80.56%) have sympathytowards PLWHA; however, 107(31.19%) hate having physical contact with them while 218(63.56%) said they would not mind having physical contact. On whether students with HIV should be educated in separate schools? 94(26.40%) agreed, 244(69.39%) disagreed, while, 15(4.21%) do not know. This indicates that majority (69.39%) of the respondents have positive perception about HIV, while, almost (26.40%) of the students have a negative perception.Majorityof the students 320(90.14%) think that sexual promiscuity and prostitution are the major causes of HIV/AIDs.

When the respondents were asked whether sex education should be part of school's curriculum?Many; 252 (71 59%) agreed it should be contained in schools' curriculum while 85(25.45%) opposed its inclusion into schools' curriculum. And on whether, sex before marriage should be discouraged? 328(92.39%) agreed, 20 (5.63%) did not agree, while 7(1.79%) responded that they don't know.

Table 3: Attitude of Students towards People living with HIV/AIDS.

Variable	Yes (%)	No (%)	Do not know (%)
Are you willing to live in same place with PLWHA?	213(60.68)	126(35.89)	12 (3.42)
Do you feel sympathetic towards people living with HIV/AIDS	286(80.56)	60(16.90)	9(2.54)
Hate contact with people livingwith HIV/AIDS?	167(31.19)	218(63.56)	18(5.25)
HIV positive students should be educated in separate schools?	94 (26.40)	247 (69.39)	15(4.21)
Sexual promiscuity andprostitution are major causes of HIV/AIDS?	320(90.14)	24(7.04)	11(2.28)
Sex education should be part of school curricula?	252(71.59)	85(24.15)	15(4.26)
Sex before marriage should bediscouraged?	328 (92.39)	20 (5.63)	7(1.97)

Perception related to HIV/AIDS.

Table 4 below presents the perceptions of the students towards HIV/AIDS. On the question of whether the respondent is worried about acquiring HIV in my school? 242(68.75%) agreed that they are worried about acquiring the infection in school, 182(23.29%) disagreed, while 28(7.96%) do not know. On whether AIDS is the price of immoral life? Again majority 256 (73.14%) of the students agreed it is the ultimate price of immoral life, only few 66(18.86%) did not agree. This means that the majority 73.14% of the students have negative attitude about the HIV as a price of immoral life.On whether initial HIV testing should be conducted on all students admitted into schools? 310(88.32%) agreed, 39(11.11%) disagreed and only 2(0.57%) respondents said they do not know. This indicates that majority (88.32%) of the respondents have a positive perception about initial HIV testing in schools and will also agree to annual mandatory HIV screening.

Table 4: Perception of Students related to HIV/AIDS.

Variables	Yes (%)	No (%)	Don't know (%)
AIDS is the price of immoral life?	256(73.14)	66(18.86)	28 (8.0)
I worry about acquiring HIV in my school.	242(68.75)	82(23.29)	28(7.96)
Initial HIV test should be conducted to all students admitted into schools.	310(88.32)	39 (11.11)	2 (0.57)
All students must go for annual mandatory HIV testing	278(80.85)	54 (15.21)	14 (3.94)

DISCUSSION

Given the current stage of HIV/AIDS epidemic in Nigeria, knowledge, attitudes and perception studies are valuable steps prior to any intervention to assess the extent to which individuals or communities are ready to adopt risk-free behaviors [8]. Since the mid-1980s, extensive awareness campaigns on HIV/AIDS have been conducted locally, nationally and globally, including in the last two decades by the Nigerian government through the National Agency for the Control of HIV/AIDS (NACA) and its development partnerswhich would have increased the HIV and AIDS knowledge of students. In our study, we found that the mean age of the students was 24 (SD±4.864) and their modal age group was 21-25 years accounting for about half of the population 48.32%. This mean age of 24 years is one year higher than the mean age of 23 years reported by Durojaiye*et al* among University students in Lagos [7] and Oppong*et al* from Ghana [9]. Similarly, the modal age of our respondents 21-25 years is comparable to the national age group 19-24 years reported to be at the highest risk of HIV/AIDS in Nigeria [4].

Our study found that 92.40% of the responding students were aware of

HIV/AIDs and have defined HIV/AIDS correctly. This finding is almost similar with a report of about 94% of the proportion of men and women in general population aged 15-49 years who have heard of HIV/AIDS in Nigeria [4]. Tertiary education students are supposed to be more educated and enlightened, hence should report a higher level of awareness than the general population. Higher level of awareness of HIV/AIDS of about 97% was reported among University students in Southern, Nigeria[10][11]and Ghana [9].

Our result suggest that majority of students receive HIV/AIDS information from both print and electronic media (e.g. television, radio, newspaper/magazines) and their teachers but few had received same from their parents. Consistent with findings in Nigeria[12, 13], Ghana [14], and other countries [15][16]. Tertiary education students, especially, University students in Nigeria appear to rely on both print and electronic media as the major source of HIV/AIDS information. Mass-media campaigns utilizing television radio, posters and billboards have been shown to be more effective for addressing specific issues[17]. They have also been proven to be effective in increasing knowledge, improving self-worth to use condoms, influencing social norms, increasing the amount of interpersonal communication and raising awareness of health services[17]. Themedia therefore have an important role to play in raising HIV/AIDS awareness among young adults including students of higher institutions of learning. Discussion of sexual issues between parents and their children are rare in Nigeria since the Nigerian culture has a more conservative, religious and traditional beliefs on issues of sexuality, condom usage and marriage [18]. It is also possible that the older generation had not received any information on sex education, making it difficult for them to approach the issue as parents themselves. Furthermore, residential pattern and family structure might reduce the opportunity to discuss sensitive topics like sex. Parents should discuss reproductive and sexual issues with their children and young adults, because a strong adult protective shield for young people has been shown to decrease their risk of HIV infection[19].

Majority of the students demonstrated acceptable level of knowledge of transmission and prevention of HIV infection. However, misconceptions about means of transmission such as the belief that infection could be transmitted by social contacts (11.24%)e.g., sharing clothes, spoons, glasses, shaking hands, that unprotected sex and unscreened bloodare not the major sources of transmission (17.51%), HIV positive person can donate blood (14.08%), condom (22.54%) and abstinence (10.32%) cannot protect against HIVrespectively were observed among a small proportion of participants. These misconceptions could result in risky behaviors such as unprotected sex, multiple sexual partners, encouraging receiving blood donation from HIV infected persons etc, which may expose them to infection. These findings show the need for reinforcement of educational interventions particularly in the secondary school curriculum.

We observed that (18.80%) of the students were married and(12.96%) reported history of having unprotected sex in the last 6 months which could be from among the married students. Among married couples, unprotected sexwith faithful partners only should be encouraged.

With respect to attitude towards PLWHA, students exhibited mixed attitudes displaying positive attitudes on some of the issues and negative attitudes on others. For example, only (60.68%) of students were willing to live in same area with PLWHA, sexual promiscuity/prostitution (90.14%) and sex before marriage (92.39%) should be discouraged because these are high risk behaviors that increases the risk of people getting infected with HIV.Most students (71.59%) said they would like to see sex education included in secondary schools'curriculum. Discriminatory attitudes were also present in a considerable proportion (39.32%) of the studentswho were not willing to live with PLWHA including about one third (31.19%) who hate body contact with PLWHA and (26.76%) who feel that students living with HIV (SLWHA) should be educated in a separate school. However, a greater majority of students (80.56%) sympathize with PLWHA and accepted that HIV positive students PLWHA should not be educated in a separate school (69.50%). Discriminatory attitudes towards PLHIV might be an obstacle for the efficient propagation of awareness programs, and voluntary counselling and testing for HIV. Therefore, sustained education of young people on HIV/AIDS is crucial to the elimination of discriminatory attitudes towards PLWHA.

However, other studies by Danjin and Onajole (2009) conducted in secondary schools in Gombe concluded that although, HIV/ AIDS awareness among secondary students is high (98.4%), they perceive the risk of infection as low (30.8%) [20]. So also is the work conducted by Durojaiye (2011), he asserts that knowledge and awareness of HIV/ AIDS among tertiary education students is high in Lagos, Nigeria. But he said that the riskperception is low with high risk sexual behaviour and he concluded that the failure to perceive HIV/ AIDS as a personal risk hasprevented commitment to behaviour change [7].

Concerning perceptions towards PLWHA, their responses were generally positive:worries of acquiring HIV in school (68.75%) is a good perceived risk behaviour that will encourage students to adopt risk free lifestyle and HIV testing should be conducted on all admitted students (88.85%), and annual mandatory HIV testing(80.85%) to be recommended for all students. Few negative perceptions still exist amongst the students, negative perceptions towards PLWHA lead to discrimination and stigmatization.

CONCLUSION

The level of knowledge regarding HIV/AIDS transmission, prevention and the views and feelings of the students towards PLWHA and SLWHA were satisfactory. Nevertheless, some misconceptions about HIV transmission, risky behaviors and discriminatory attitudes were observed

among the students that call for concern and need tobe addressed promptly. HIV/AIDS and sexual and reproductive health education should be reinforced in schools to correct the misconceptions and to raise the level of positive attitudes and perceptions towards PLWHA. It will also encourage safe practices regarding HIV/AIDS. Regular workshops and seminars on HIV/AIDS should be organised in schools in addition to immense public education campaign to enhance awareness about the disease.

The Strength and limitation of the study

The study involved students from five (5) tertiary education institutions from all the zones across Gombe State. This thus increases the general ability of the study findings to Universities in other regions. The finding is limited by the lack of detailed data on practice of students regarding HIV/AIDS and multivariate statistics comparing knowledge, attitude and perception amongst male and female students, younger and older students and between schools. Although HIV knowledge is very important, it may not necessarily be the primary factor in explaining HIV transmission among young people. Many young people have adequate knowledge about HIV but fail to act on it due to a wide variety of social, cultural and economic constraints or just out of pure negligence. Future studies that investigate all these possible constraints could greatly help to improve our understanding of HIV transmission especially among young people. Finally, because the questionnaire was self-administered, social desirability bias may have occurred. However, the anonymity of the questionnaires hopefully encouraged students to be honest in their responses. Despite all these limitations, we believe this study might be a reasonable source of information for researchers and policymakers.

REFERENCES

Gottlieb, M.S., et al., Pneumocystis carinii pneumonia and mucosal candidiasis in previously healthy homosexual men: evidence of a new acquired cellular immunodeficiency. New England Journal of Medicine, 1981. 305(24): p. 1425-1431.

Kusheta, S., et al., Adolescent-parent communication on sexual and reproductive health issues and its factors among secondary and preparatory school students in Hadiya Zone, Southern Ethiopia: institution based cross sectional study. BMC pediatrics, 2019. 19(1): p. 9.

UNAIDS, UNAIDS Data 2018. Accessed on 21.12.2018. Available at http://www.unaids.org/sites/default/files/media_asset/unaids-data-2018_en.pdf2018.

NDHS, National Population Commission (NPC) [Nigeria] and ICF International. 2014. Nigeria Demographic and Health Survey 2013. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF International. . 2013.

Plautz, A. and D. Meekers, Evaluation of the reach and impact of the 100% Jeune youth social marketing program in Cameroon: findings from three cross-sectional surveys. Reproductive health, 2007. 4(1): p. 1.

Herek, G.M., J.P. Capitanio, and K.F. Widaman, HIV-related stigma and knowledge in the United States: prevalence and trends,

1991–1999. American journal of public health, 2002. 92(3): p. 371-377.

Durojaiye, O.C., Knowledge, attitude and practice of HIV/AIDS: Behavior change among tertiary education students in Lagos, Nigeria. Annals of Tropical Medicine and Public Health, 2011. 4(1): p. 18.

Committee, N.A.C., The impact of HIV and AIDS in Cameroon through 2020. Central Technical Group, 2010: p. 1-30.

Adu-Oppong, A., Social and behavioral determinants of consistent condom use among female commercial sex workers (FCSWs) in Ghana. 2005, The University of Texas School of Public Health: Ann Arbor. p. 59.

Abiodun, O., et al., Knowledge of HIV/AIDS and predictors of uptake of HIV counseling and testing among undergraduate students of a privately owned university in Nigeria. BMC research notes, 2014. 7(1): p. 639.

Aluede, O., et al., Assessing Nigerian university students' knowledge about HIV/AIDS. Journal of Social Sciences, 2005. 11(3): p. 207-213.

Oyo-Ita, A., et al., Knowledge of HIV/AIDS among secondary school adolescents in Calabar–Nigeria. 2005.

Nwokoji, U.A. and A.J. Ajuwon, Knowledge of AIDS and HIV risk-related sexual behavior among Nigerian naval personnel. BMC Public Health, 2004. 4(24).

Sallar, A.M., Correlates of misperceptions in HIV knowledge and attitude towards People Living With HIV/AIDS (PLWHAs) among in-school and outof-school adolescents in Ghana. African health sciences, 2009. 9(2).

Ungan, M. and H. Yaman, AIDS knowledge and educational needs of technical university students in Turkey. Patient Education and Counseling, 2003. 51(2): p. 163-167.

Li, X., et al., HIV/AIDS knowledge and the implications for health promotion programs among Chinese college students: geographic, gender and age differences. Health promotion international, 2004. 19(3): p. 345-356.

Karim, Q.A., et al., HIV Incidence Rates in Vulindlela and Durban: A Prevention Preparedness Study1.

Asante, K.O. and P.N. Doku, Cultural adaptation of the condom use self efficacy scale (CUSES) in Ghana. BMC Public Health, 2010. 10(1): p. 227.

Petersen, I., A. Bhana, and M. McKay, Sexual violence and youth in South Africa: The need for community-based prevention interventions. Child abuse & neglect, 2005. 29(11): p. 1233-1248.

Danjin, M. and Onajole, A., HIV/ AIDS risk behavioural tendencies among secondary school students in Gombe, Nigeria. The internet Journal of Health.2009 Volume 11 Number 1.