

## Urban-Rural Differentials in HIV/AIDS Knowledge of Nigerian Senior Secondary School Students

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### Abstract

Modification of risk behaviors remains an integral part of HIV prevention strategies. However, knowledge of the disease is an important prerequisite for behavior change. In this study, we assessed urban-rural differences in HIV/AIDS knowledge of senior secondary school students in Ekiti State, Nigeria. A cross sectional study of 372 students was conducted. Descriptive statistics were used to describe variables of interest and one-way analysis of variance was used to assess differences in the HIV/AIDS knowledge mean scores. Overall, the level of HIV/AIDS knowledge was relatively high. Nevertheless, the results revealed high level of misconceptions regarding preventive measures, modes of transmission and treatment. Our results showed significant urban-rural and gender differences in students' HIV/AIDS knowledge. Urban students had higher mean scores, indicating higher level of HIV/AIDS knowledge (M=14.1; SD=3.4 vs. M=11.4; SD=3.7;  $P < 0.001$ ). Urban female students had higher knowledge mean score (M=14.2; SD=3.1) compared with their male counterparts (M=13.8; SD=3.7) and both sexes in rural schools (Male: M= 10.6; SD=3.8; Female: M=12.0; SD=3.6). There were urban-rural differences in students' HIV/AIDS knowledge. The results suggest there is greater need in rural areas for programs focusing on the knowledge gap and clarifying areas of misconceptions both in rural and urban areas.

**Keywords:** HIV/AIDS, Urban, Students, Nigeria, Knowledge, Rural.

### 1.0 Introduction

Globally, efforts to combat the scourge of human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) have increased markedly, leading to extraordinary advances and remarkable successes. Nevertheless, HIV disease continues to be a serious health issue for parts of the world. In 2015, there were 2.1 million new HIV infections and an estimated 1.1 million AIDS- related deaths worldwide (The Joint United Nations Programme on HIV/AIDS [UNAIDS], 2016). Countries in sub-Saharan Africa remain the hardest-hit, accounting for 66 percent of all new infections with 25.8 million people living with HIV in 2015(UNAIDS, 2016).

In Nigeria, the HIV/AIDS epidemic is generalized, prevalent in both urban and rural areas with wide variations. There is a slightly higher HIV prevalence in the rural areas [3.6%] than in the urban areas [3.2%] (National Agency for the Control of AIDS [NACA], 2015).With a national prevalence rate of 3.4%, It is estimated that 3.4 million people were living with HIV in Nigeria while 227, 518 new HIV infections and 174,253 AIDS- related deaths were recorded in 2014 (NACA, 2015).

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Like in many other countries, young people (15-24years) in Nigeria are at the center of the epidemic. In 2014, 4.2% of young people aged 15-24years were living with HIV and the key drivers of the epidemic among young people include early initiation into sexual activity, socio-cultural pressures, high level of sexual activity, inadequate HIV/AIDS and Sex education, unprotected sex and inability to make accurate assessment of their own risk for HIV infection(NACA, 2015).

HIV/AIDS knowledge remains the most important weapon against the epidemic since no vaccine or cure has been developed. Lacking the necessary knowledge and skills, adolescents are less equipped to protect themselves from HIV. Adolescents aged 15-19 years have been found to demonstrate high awareness of HIV/AIDS but lack specific knowledge of the disease. In addition, misconceptions about HIV/AIDS are widespread among young people which vary from one culture to another (UNAIDS, 2002). In countries with generalized epidemics, less than half of adolescent boys and girls, aged 15-19 years, have a basic understanding of HIV. In sub-Saharan Africa, only 26% of adolescent girls and 36% of adolescent boys aged 15–19 years have a comprehensive and correct knowledge of HIV (Idele et al., 2014).In Nigeria, 24% of young women and men aged 15-24years correctly identified ways of preventing the sexual transmission of HIV and reject major misconceptions (NACA, 2015).The lack of comprehensive knowledge of HIV/AIDS and high levels of misconceptions have been demonstrated in studies(Adelakun & Malachy, 2011;Adeleke et al., 2015;Adeomi, Adeoye, Asekun-Olarinmoye, Abodunrin & Oladele, 2014;Bamise, Bamise & Adedigba, 2011; Odu & Akanle, 2008; Ugboma, Kooffreh & Nwauche,2011) conducted among Nigerian secondary school students. Thelack of specific HIV knowledge, array of misconceptions and beliefs held about the disease are associated and maintained by complex cultural and social processes many of which are indigenous (Adegoke, Fife &Corneille, 2011).

Urban-rural residence has been identified as an important predictor of HIV/AIDS knowledge (Idele et al., 2014).Some recent studies (Adelakun & Malachy, 2011; Sunil & Arigela, 2014) have demonstrated that adolescents living in rural areas are less likely to have comprehensive knowledge about HIV and AIDS. Existing literature on disparities between urban and rural adolescents as they pertain to HIV/AIDS knowledge in Nigeria is limited. Ascertaining these disparities could be pivotal in identifying specific areas where ongoing and future HIV/AIDS education programs should be intensified. In view of the evolving social, physiologic, and psychologic needs associated with adolescents, HIV prevention efforts among this group are vital. In an attempt to fill gap in literature and inform prevention efforts, we assessed HIV/AIDS knowledge by urban-rural residence among senior secondary school students in Ekiti State, Nigeria.

## **2.0 Methodology**

### *2.1 Study Design And Sample*

This cross sectional study was conducted to assess HIV/AIDS knowledge among senior secondary school students in Ekiti State, Nigeria. Three hundred and seventy two students from eight secondary schools selected through a two-stage stratified random sampling technique from rural and urban communities voluntarily participated in the study. Rural-urban classification was based on the National Population Commission (NPC) classification according to the number of residents.

### *2.2 Measure*

This study utilized the HIV-K-Q Questionnaire for data collection. The HIV-K-Q questionnaire is a 45-item, self-administered questionnaire developed by Carey, Morrison-Beedy, & Johnson (1997) to assess knowledge needed for HIV prevention. The instrument requires respondent to answer "yes", "no", or "don't know" on the items listed in the questionnaire. A single summary score is obtained by summing the number of items correctly answered; don't know responses are scored incorrectly. The range of possible raw scores is 0 to 45, and raw scores are therefore transformed into percentage correct scores. Higher score indicates greater knowledge of HIV/AIDS. An average completion time of 4.12 minutes has been reported for the HIV-K-Q (Carey Morrison-Beedy & Johnson, 1997).

Reliability analyses of the HIV-K-Q Questionnaire have shown that the instrument is valid (internally consistent) with Cronbach alpha of 0.91 for subsamples using primary care patients, 0.83 using college students, and 0.93 using urban women (Chng Collins, Eaddy & Eke-Huber, 2005). The internal consistency of the entire scale has been reported among Nigerian university students with a Cronbach alpha of 0.81 (Chng et al., 2005).

### *2.3 Variables and Measurement*

#### *2.3.1 Demographic Variables*

Gender, age, and religion were demographic factors measured in the study.

#### *2.3.2 HIV/AIDS Knowledge:*

Participants' HIV/AIDS knowledge was measured using 20 questions adapted from the HIV knowledge Questionnaire (HIV-K-Q). The questions selected reflected the diverse subject matter covered by the 45-item instrument, and the scope of the subject covered in this study.

### *2.3 Data Analysis*

The study data was analyzed using SPSS version 22. Descriptive statistics were used to characterize the study participants. One Way ANOVA was used to test the mean differences between rural and urban students HIV/AIDS knowledge scores. Questions analysis was undertaken to identify those that were consistently answered correctly and/or wrongly. All statistical tests were two-tailed, and the significance level was set at  $\alpha = 0.05$ .

### *2.5 Ethical Considerations*

Approval was obtained from the Ministry of Education and participating schools. The consent forms outlined the complete anonymity and the right of the students to withdraw at any time. The questionnaire was self-administered in a classroom setting and no identifiers were required of the students. Seating arrangement was organized in a way that each participant had privacy when the questionnaire was administered. Informed consent was sought and obtained from participants before the survey questionnaire was administered. Before study participants completed the questionnaire, the objective, the purpose of the study, benefits and harms of participating in the study was explained. The voluntary nature of the study was further highlighted while confidentiality and anonymity was assured. The students returned the completed questionnaire in a sealed envelope dropped in a drop box provided in the classroom.

## **3.0. Results**

### *3.1 Socio-demographic Characteristics of Study Participants*

The study participants consisted of 43.5 male and 56.5 female with mean age of 17 years (SD=1.23). Urban students constituted 52.2% of the study population, 84.4% were Christians, 11.3% Muslims and 4.3% indicated other religious affiliations.

### *3.2 HIV/AIDS Knowledge of Study Participants*

The study participants overall HIV/AIDS knowledge score ranged between 2 and 20 on the 20 questions assessed with a mean knowledge score of 12.8 (SD= 3.78) and a median score of 14.0. Overall, there was no statistical significant difference observed between male and female participants' HIV/AIDS knowledge mean scores (M=13.23, SD=3.1 vs. M= 12.25, SD= 3.7;  $p=0.079$ ). Statistically significant differences were observed in HIV/AIDS knowledge of urban and rural student participants.

Students from urban schools had higher mean scores, indicating higher level of knowledge about HIV/AIDS ( $M=14.1$ ;  $SD=3.4$  vs.  $M=11.4$ ;  $SD=3.7$ ;  $p < 0.001$ ). An analysis of variance (ANOVA) on the mean scores again yielded significant variation among the location and gender groups [ $F(3,388) = 10.35$ ;  $P < 0.0001$ ]. Post hoc comparison using Tukey HSD test showed that mean scores for the urban ( $M=14.3$ ;  $SD=3.12$ ) and rural female students ( $M=13.8$ ;  $SD=3.71$ ) differed significantly from both urban [ $M=12.02$ ; ( $SD=3.55$ )] and rural [ $M=10.63$ ;  $SD=3.81$ ] male students,  $p < 0.0001$ . Female students in urban schools had statistically significant higher HIV/AIDS knowledge mean score compared to male students in both rural and urban schools. In addition, the urban female students had higher HIV/AIDS knowledge mean score compared to rural female students but there was no statistically significant difference observed.

**Table 1: HIV/AIDS Knowledge Mean Scores by Location and Gender**

Location/Gender Groups	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Rural Male	80	10.63	3.814	.603	9.41	11.84
Urban Male	98	12.02	3.550	.507	11.00	13.04
Rural Female	82	13.83	3.728	.582	12.65	15.01
Urban Female	112	14.29	3.120	.417	13.45	15.12

Further analysis of each question was carried out to ascertain which questions were consistently answered correctly and/or incorrectly. Generally, the results (Table 3) revealed high level of misconceptions on preventive measures, modes of transmission, care and treatment among the students. Moreover, statistically significant urban-rural disparities were also observed. About 82 % of the students believed that "a person can get HIV by giving blood" while 60.2 % did not know that some drugs have been made for the treatment of AIDS. Fifty-five percent of the students believed "there is a vaccine that can stop adults from getting HIV" and 36% of the respondents think coughing and sneezing do spread HIV. Further, 48.4% of the student respondents believed "people are likely to get HIV by deep kissing, putting their tongue in their partner's mouth, if their partner has HIV." Statistically significant urban-rural differences were observed in 12 out of 20 (60%) questions assessed in the study (Table 3).

**Table 2: Participants Responses to the HIV/AIDS Knowledge statements by Location**

Statements	Rural Schools(n=178)		Urban Schools (n=194)		P value
	%Wrong	% Correct	% Wrong	%Correct	
HIV and AIDS are the same thing	29.20	70.80	14.40	85.60	0.020
There is a cure for AIDS	42.70	57.30	25.80	74.27	0.020
A person can get HIV from a toilet seat	39.30	60.70	13.40	86.60	<0.001
Coughing and sneezing DO NOT spread HIV	39.30	60.70	33.00	67.00	0.445
HIV can be spread by mosquitoes	40.40	59.60	19.60	80.40	0.002
AIDS is the cause of HIV	53.90	46.10	41.20	58.80	0.106
A person can get HIV by sharing a glass of water with someone who has HIV	22.50	77.50	7.20	92.80	0.004
Eating healthy foods can keep a person from getting HIV	27.00	73.00	18.60	81.40	0.219
A pregnant woman with HIV can give the virus to her unborn baby	29.20	70.80	27.80	72.20	0.872
Using a latex condom or rubber can lower a person's chance of getting HIV	33.70	66.30	22.70	84.50	0.104
A person with HIV can look and feel healthy	38.20	61.80	15.50	84.50	<0.001
There is a vaccine that can stop adults from getting HIV	62.90	37.10	48.50	51.50	0.047
Some drugs have been made for treatment of AIDS	53.90	46.10	66.00	34.00	0.094
People are likely to get HIV by deep kissing ,putting their tongue in their partner's mouth, if their partner has HIV	51.70	48.30	45.40	54.60	0.389
You can usually tell if someone has HIV by looking at them	36.00	64.00	15.50	84.50	0.001
A person WILL NOT get HIV if she or he is taking antibiotics	43.80	56.20	20.60	79.40	0.001
Having sex with more than one partner can increase a person's chance of being infected with HIV	44.90	55.10	29.90	70.10	0.034
A person can get HIV by giving blood	84.37	15.70	79.40	20.60	0.450
A person can get HIV through contact with saliva, tears, sweat, or urine	41.60	58.40	24.70	75.30	0.015
Taking vitamins keeps a person from getting HIV	46.17	53.90	21.60%	78.40	<0.001

#### 4.0 Discussion

Our study revealed significant urban-rural gap in HIV/AIDS knowledge of senior secondary students in Ekiti State, Nigeria. Overall, urban students had significantly higher knowledge mean scores than the rural students. In addition, individual question analysis showed significant urban-rural differences in 60% (12 out of 20) of the items used to measure students' HIV/AIDS knowledge. Students from rural schools were significantly less knowledgeable about modes of transmission, preventive measures, and treatment. Consequently, secondary students resident in rural areas are less likely equipped to protect themselves from HIV. The observed urban-rural differential in students' HIV/AIDS knowledge may be attributed to differences in availability and better access to health information. Our observation is consistent with the findings of Adekunle and Malachy (2011). However, Ojong, Akpan, Alasia, & Nlumanze (2014) reported otherwise. However, their study only assessed awareness of STI and HIV prevention among other outcomes measured in the study. It is very important to take into consideration the existence of these rural-urban differences when planning intervention programs.

Remarkably, 45% of the rural students compared to 29.9 percent of the urban students believed that having sex with more than one partner does not put them at risk of HIV infection. This finding is particularly worrisome due to the high level of sexual activities among adolescents. Perceived vulnerability is critical to individual's precautionary behavior (Smoak, Scott-Sheldon, Johnson, and Carey, 2006). It is therefore very critical that students are educated in assessing their individual risks of HIV infection and safe sexual practices. Thirty eight percent of rural students were unaware that a person with HIV can look and feel healthy, this observation is of vital implication for HIV prevention efforts targeting the study population. Accurate assessment of their partners or potential sex partners' HIV status may therefore be a subject of concern since the only way to accurately determine if an individual is infected with HIV is through the knowledge of their HIV serostatus. Educational programs aimed at reducing risky sexual behaviors should help students understand that the only way to identify their partners' HIV status is by knowing their HIV serostatus.

Gender analysis of the differences between urban and rural students showed that urban females scored higher than their rural female counterparts did. However, there was no statistical significant difference observed. Urban males had significantly higher HIV/AIDS knowledge mean compared to the rural male students. This finding is consistent with the results of Adekunle and Malachy (2011). Their study assessed the influence of school location on the level of awareness of secondary school students about HIV/AIDS. The study revealed that females in urban schools had good knowledge of HIV/AIDS preventive measures than urban males and both sexes in rural schools. These findings suggest that urban-rural residence could possibly be an influencing factor in gender differences in HIV/AIDS knowledge.

Another noteworthy aspect of our findings was the striking similarities observed among urban and rural students in their lack of specific knowledge of HIV/AIDS and levels of misconceptions. Eighty four percent of rural students and 79% of urban students believed an individual can get HIV by giving blood. High percentage of the rural (51.7%) and urban (45.5%) students believed people are likely to get HIV by deep kissing, putting their tongue in their partners' mouth, if their partner has HIV. Additionally, over 30% of the students did not know that HIV cannot be spread by coughing and sneezing. Previous studies (Adelakun & Malachy, 2011; Adeleke et al., 2015; Adeomi, Adeoye, Asekun-Olarinmoye, Abodunrin & Oladele, 2014; Bamise, Bamise & Adedigba, 2011; Odu & Akanle, 2008; Ugboma, Kooffreh & Nwauche, 2011) conducted among Nigerian secondary school students have reported similar findings. Lack of specific knowledge and misconceptions about HIV have been strongly associated with HIV related stigma and discrimination and with high rates of HIV risk behaviors (Nubec & Akoachere, 2016). Our finding suggests the need to provide students with full and specific knowledge about HIV transmission and prevention. According to Adegoke et al. (2011), the beliefs and misconceptions held about HIV/AIDS are associated and maintained by complex cultural and social processes many of which are indigenous. Consequently, sustainable and reliable interventions that are sensitive to traditional, socio-cultural, and economic factors should be developed and implemented.

#### 4.1 Limitation

This study is limited. First, the sample size is relatively small considering the number of senior secondary school students in Ekiti state. Therefore, generalizability of the study results could have been more enhanced if we had included more students. Second, this is a self-report survey, whether the student responses were true or not could not be ascertained. Nevertheless, this study has major implications for developing effective educational programs to enhance prevention efforts not only in this study population but generally.

#### 5.0 Conclusion

Our study demonstrated high levels of misconception and lack of specific HIV/AIDS knowledge among senior secondary school students in Ekiti State, Nigeria. The findings underscore the need for ongoing comprehensive prevention efforts that focus on helping students clarify the misconceptions held about HIV/AIDS and equipping them with specific knowledge of the disease. Further, increased gender-specific HIV education and skill building programs should also be developed and implemented. We identified that urban-rural gap exists in HIV/AIDS knowledge of senior secondary school students in Ekiti State. This finding reinforces the need for location and population specific HIV/AIDS information, education and communication programs. Developing infrastructure in rural communities and enhancing their capacity would improve health information availability and accessibility.

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