



Original Article

## Knowledge about HIV and HIV Stigma Mechanism of Nursing Students in Southwestern Nigeria

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### Abstract

**Background:** HIV stigma contributes to the ongoing HIV epidemic especially in sub-Saharan Africa, where new infection rate is highest and the number of HIV-infected persons who commenced treatment is low. HIV stigma exists in community and social institutions including health institution. Most student nurses who enter into health-training institutions are members of the society and might exhibit stigma towards HIV-infected persons which could be due to poor knowledge about HIV. This study investigated the HIV stigma mechanism of student nurses as well as their knowledge about HIV across a state in Southwestern Nigeria.

**Methods:** A cross-sectional survey was conducted on 395 nursing students in their second and third year of study across four schools of nursing in a southwestern Nigerian state from December, 2016 to January, 2017. Data were analysed using frequency, percentage, and mean scores to explore demographic variables, knowledge about HIV, HIV stigma mechanism of prejudice, stereotyping and discrimination. Independent sample T-test was used to analyse the association of knowledge about HIV and HIV stigma mechanism between schools and levels of study.

**Results:** Of the 376 participants, 83.8% were female, with 44.4% being between the age range of 20-24 years, and 45.2% of the participants were in part two while 54.8% were in part three. The participants mean score for Knowledge about HIV was  $5.90 \pm 1.26$  out of 9.0, prejudice was  $17.97 \pm 4.07$  out of 21.0, stereotyping was  $13.84 \pm 3.34$  out of 18.0, while discrimination was  $10.47 \pm 3.22$  out of 15.0 reflecting moderate knowledge about HIV and existence of stigmatising tendencies. However, there was association [ $t(374) = 4.277$ ;  $p < 0.05$ ] between HIV stigma mechanism and level of study indicating that HIV stigma reduces with higher level of study; whereas, there was no association [ $t(374) = -0.551$ ;  $p < 0.05$ ] between knowledge about HIV and level of study.

**Conclusions:** Nursing students being members of the community showed stigmatising behaviours towards HIV-infected persons. However, it appears the experience of HIV stigma mechanism reduces with higher level of study but was not associated with their knowledge about HIV. There is need for further studies to explore HIV stigma mechanism among students in order to proffer HIV stigma reduction programmes that would work in sub-Saharan Africa.

**Keywords:** Stigma mechanism; student nurses; HIV; knowledge about HIV; Nigeria

## Background

In Nigeria, nursing students are enrolled either in schools of nursing or department of nursing science in the university where they undergo training to become staff nurses after graduation. Staff nurses are the largest group of caregivers that provide care round-the-clock. The nature of their work makes them very close to their patients. From the time a patient enters the healthcare system till he/she leaves either through discharge or death, nurses try to initiate and maintain a patient-nurse therapeutic relationship. However, studies have shown that nurses alongside other health care workers are indifferent to HIV-infected persons when it comes to providing care for them (Dahlu et al., 2015; Ekstrand, Ramakrishna, Bharat, & Heylen, 2013; Hossain & Kippax, 2010; Parsons, Bond, & Nixon, 2015); and it is contributing to the epidemic burden (dos Santos, Kruger, Mellors, Gustaaf, & van der Ryst, 2014; Parsons et al., 2015). For instance, in sub-Saharan Africa where studies have shown that health workers stigmatise HIV-infected persons (Farotimi, Nwozichi, & Ojediran, 2015; Feyissa, Abebe, Girma, & Woldie, 2012); there are an estimated 24.7 million persons infected with HIV (Awolaye & Thron, 2015), and 3.2 million of them are in Nigeria (Awolaye & Thron, 2015; NACA, 2014).

Acquiring adequate theoretical knowledge and practical skills are necessary to provide quality care to HIV-infected persons. However, character and attitude that reflect high level of professionalism is important as well. Data from studies involving student nurses and other health profession students indicate that despite showing good knowledge about HIV, some students still exhibit misconceptions about the disease (Abolfotouh, Al Saleh, Mahfouz, Abolfotouh, & Al Fozan, 2013; Dharmalingam, Poreddi, Gandhi, & Chandra, 2015; Lui, Sarangapany, Begley, Coote, & Kishore, 2014; Ouzouni & Nakakis, 2012), indicating that long held wrong beliefs could interfere with knowledge and cause nurses to stigmatise even when there is no basis for that. The misconceptions come in various forms ó

misconception about HIV transmission, treatment and prevention. In a study carried out by Ouzouni and Nakakis (2012) in Greece, findings revealed that 39.8% of participants indicated that mosquito could transmit the virus while 38% said using same toilet with an HIV infected individual could also transmit HIV; whereas, 56.2% of students in the same study believed that there is a vaccine that protects against HIV. As opined by Dharmalingam et al. (2015), it seems students do not completely understand some aspect of HIV, and this could contribute to stigmatising attitudes among students. However, according to Fotedar, Sharma, Sogi, Fotedar, and Chauhan (2013), despite the prevalence of misconceptions among health profession students, knowledge about HIV tend to improve with higher level of study. This has been supported by findings made in other studies across the globe (Baytner-zamir, Lorber, & Hermoni, 2014; Lui et al., 2014; Mahat & Eller, 2009). Also, Ouzouni & Nakakis (2012) reported that being a female student and older in years are associated with increase knowledge about HIV.

Research on HIV stigma has also revealed that student nurses and other health profession students stigmatise HIV-infected persons in three different ways. First, prejudicial attitudes such as preventing women infected with HIV from getting pregnant as well as wearing double gloves when caring for HIV-infected persons (Abolfotouh et al., 2013; Farotimi et al., 2015); second, stereotypical attitudes and perceptions in the form of blaming HIV-infected persons for deserving what they got (Lui et al., 2014; Ouzouni & Nakakis, 2012; Rickles, Furtek, Malladi, Ng, & Zhou, 2016); and third, discriminating actions e.g. refusal to provide care for HIV-infected persons (Baytner-zamir et al., 2014; Hoffart et al., 2016; Kuete et al., 2016; Ouzouni & Nakakis, 2012).

The plethora of studies carried out involving student nurses and other health profession students in most countries across the globe indicate that reducing HIV stigma in health care facilities requires competent health care professionals and focusing attention on the students is one of the best

ways to ensure stigma-free health care facilities. Despite this health profession students being the focus of research elsewhere, there are few studies in Nigeria on HIV stigma targeting nursing students and other health profession students. The dearth of body of work in this area is hampering the fight against the HIV epidemic; because, scaling down the HIV epidemic require nurses who are competent with adequate knowledge and skills needed to prevent, treat and care for HIV-infected persons. Focusing HIV stigma studies on nursing students will only improve the care HIV-infected persons receives in the long run as it will pave way for development of programmes that could help reduce HIV stigma among nursing students and ultimately reduce the incidence in the hospital. When nursing students are properly equipped during their training on how to care, prevent and treat HIV-infected persons, it may help reduce prejudicial, stereotypical and discriminatory tendencies and promote respect for persons irrespective of HIV status, hence the need for this study.

### **Framework of HIV stigma mechanism**

The focus of many researchers and stakeholders in the field of HIV has been on the three forms of stigma HIV-infected persons mainly encounter ó prejudice, stereotyping and discrimination. Earnshaw and Chaudoir (2009) developed an HIV stigma framework in which they assert that HIV-uninfected persons stigmatise HIV-infected persons through a stigma mechanism that produces negative outcomes such as denial of healthcare services and social distancing, which contributes to the persistence of the HIV epidemic. According to the authors, HIV is a socially devalued disease as a result of its perceived deadly nature. The HIV-infected person is devalued and stripped of power whereas the HIV-uninfected person gains power which is used to promote resentment towards the former. The resentment, the authors assumed, is expressed through the stigma mechanism and in turn produces negative outcomes which have been prolonging the epidemic. The authors believed that HIV stigma is carried out by HIV-uninfected persons through three means, which they referred

to as mechanisms ó prejudice, stereotyping, and discrimination. According to them, prejudice is the expression of resentment towards HIV-infected persons by HIV-uninfected persons because prejudice is an attitudinal disposition that create a mind-set of -anger, ø -fear ø and -disgust ø towards persons with devalued attributes. It is therefore, mainly emotional (Earnshaw & Chaudoir, 2009, p. 1164). Stereotyping is both attitudinal and perceptual disposition; thus, it is guided by beliefs and values which form a person's disposition towards what is wrong and right as dictated by society. If persons deviate from what is right, they are grouped together and morally judged by the society. Discrimination is enacted by HIV-uninfected persons through behavioural responses that depict the expression of power. Discriminations, like prejudice and stereotyping, can, in a number of ways, affect the behavioural, psychological and health outcomes of both HIV-infected and óuninfected persons. Denying HIV infected individuals job opportunity, physical abuse, supporting discriminatory legislature and avoiding HIV-infected persons are some of the ways HIV stigma mechanism is expressed by HIV-uninfected persons (Earnshaw & Chaudoir, 2009).

### **Methods**

This study employed a descriptive cross-sectional design; with the objective of investigating the knowledge about HIV and HIV stigma mechanism of student nurses in Osun State, Nigeria. The study included 396 student nurses who were in their second and third year of study. They were sampled from the four schools of nursing located within the state. Two of the four schools sampled, Obafemi Awolowo University Teaching Hospital, Ile-Ife and Wesley Guild Hospital, Ilesha were federal institutions, while the other two, State School of Nursing, Osogbo and Seventh-Day Adventist School of Nursing, Ile-Ife, were state and private run, respectively. Only students in schools of nursing in the state who were either in their second year or third year of study were included in the study. First year students in schools of nursing and all nursing students in department of nursing science in the universities offering the bachelor of

nursing science (BNSc) degree in the state were excluded from the study. The former were excluded due to their limited clinical experience; while, the latter was in order to control for difference in curriculum which could act as a confounding variable that could influence the outcome of the study.

For this study, a questionnaire was modified from the Healthcare Provider HIV/AIDS Stigma Scale instrument (Wagner, Hart, Mcshane, Margolese, & Girard, 2014). The validated instrument measures three variables that make up the HIV stigma mechanism: prejudice, stereotyping and discrimination. The lead author was contacted who gave us permission to use the instrument. It included variables such as socio-demographic characteristics (gender, age, marital status, religion, ethnicity, school and level of study), knowledge about HIV (9 items), the HIV stigma mechanism variables of prejudice (8 items), stereotyping (6 items) and discrimination (5 items).

Each item of the knowledge about HIV variable had 'Yes' or 'No' responses. A correct response could either be 'Yes' or 'No'. For instance, the correct response to item one on the knowledge about HIV variable, 'Saliva from an HIV infected individual can transmit HIV to the caregiver?' is 'No'. A correct response was assigned 1 while an incorrect response 0. The sum of scores of all items ranged from 0 to 9. A score of <3.0 reflected poor knowledge about AIDS, 3.1 to 6.0 indicated moderate knowledge about HIV, and 6.1 to 9.0 reflected good knowledge about HIV.

The variable of prejudice had 8 items, each having 4-point Likert-type rating scale, Strongly Disagree (assigned 0), Disagree (assigned 1), Agree (assigned 2) and Strongly Agree (assigned 3). The sum of scores of all items ranged from 0 to 24. A mean score that is <8.0 reflected lack or non-experience of prejudice, while a mean score that is >16.0 indicated presence or experience of prejudice. The variable of stereotyping had 6 items, each having 4-point Likert-type rating scale, Strongly Disagree (assigned 0), Disagree (assigned 1), Agree (assigned 2) and Strongly Agree

(assigned 3). The sum of scores of all items ranged from 0 to 18. A mean score that is <6.0 reflected lack or non-experience of stereotyping, while a mean score that is >12.0 indicated presence or experience of stereotyping. The variable of discrimination had 5 items, each having 4-point Likert-type rating scale, Strongly Disagree (assigned 0), Disagree (assigned 1), Agree (assigned 2) and Strongly Agree (assigned 3). The sum of scores of all items ranged from 0 to 15. A mean score that is <5.0 reflected lack or non-experience of discrimination, while a mean score that is >10.0 indicated presence or experience of discrimination.

The study proposal was sent alongside a written permission for ethical clearance to Babcock University Health Research and Ethical Committee (BUHREC) in September 2016 and on 30 November, 2016 we were given approval to proceed to the field for data collection. Since the schools were four and spread across the state, we trained four research assistants (each one of the assistant was first year student from each of the four schools) regarding the data collection procedure. After the training, we then fixed four days (9 January to 12 January, 2017) to proceed to the field. On the first day (9 January, 2017) we visited Seventh-Day Adventist School of Nursing, Ile-Ife. After taking necessary permission from the school head, we approached the study participants to obtain their consent before administering the instrument to them. The same procedure was repeated on the second, third and fourth day at Obafemi Awolowo University Teaching Hospital, Ile-Ife, Wesley Guild Hospital, Ilesha and School of Nursing, Osogbo respectively.

### Data analysis

Data generated were first cleaned before being analysed with Statistical Package for Social Sciences (SPSS), V.24.0. The socio-demographic characteristics were analysed using frequency and percentage. The other variables were analysed with mean and standard deviation. Independent sample T-test was used to check for difference in knowledge about HIV and HIV stigma based on

school and level of study. The statistical cut-off point was set at  $p < 0.05$ .

## Results

### Demographic characteristics

The response rate for this study was 95.2% as only three hundred and seventy-six (376) respondents completed the research instrument against the three hundred and ninety-five (395) respondents sampled.

Of the total study respondents, 44.4% were aged between 20 to 24 years, representing the major age group in the study while those aged between 30 years and above were just 8.0%, representing the least age group. Concerning the variable of gender, at 83.9% females had the majority with the remaining 16.2% being male respondents. As regards marital status, 89.9% of respondents were single while the remaining 1.1% were either married or divorced.

On religion, 84.0% were of the Christian faith while 15.4% belonged to the Muslim faith, the remaining 0.5% claimed other faiths. With regard to ethnicity, the Yoruba ethnic group had the highest representation at 82.2%, followed by the Igbo ethnic group, who constituted 11.4%. When grouped based on level of study, those in third year of study were 54.8% compare to 45.2% who were in second year of study. See table 1.

Table 2 displayed the distribution of the respondents according to school and level of study further. School of Nursing, Osogbo had the highest representation with 15.7% and 14.9% respondents representing second and third year students from the institution, respectively. With 13.0% and 13.8% of respondents in second and third year of study, respectively, Seventh-Day Adventist School of Nursing, Ile-Ife had the second highest representation. Next is Wesley Guild School of Nursing, Ilesha with 8.2% and 13.8% respondents in second and third year of study, respectively; and at 8.8% and 11.7% representation for second and third year level of study, Obafemi Awolowo University Teaching Hospital, Ile-Ife had the least representation in the study, respectively.

### Knowledge about AIDS

The overall percentage mean score of the variable of knowledge about HIV of the study respondents was  $5.90 \pm 1.26$  indicating a moderate knowledge about HIV (see table 3), while the overall percentage mean score of respondents according to level of study in the four schools revealed that respondents in third year of study had a higher percentage mean score of  $5.94 \pm 1.25$ , compare to  $5.86 \pm 1.28$  for second year students. See table 4. On the percentage mean score according to individual school and level of study, the analysis as shown in table 5 revealed that Seventh-Day Adventist School of Nursing second and third year students had the highest and the second highest mean scores of 6.22 and 6.06, respectively; compare this to second year respondents of School of Nursing, Osogbo and Wesley Guild Hospital, Ilesha that had the lowest mean scores of 5.68.

However, when the overall percentage mean score based on the level of study was compared using independent sample T-test to see if any association existed between level of study and knowledge about HIV. The result revealed that second year and third year students did not differ from one another in knowledge about HIV [ $t(374) = -0.551$ ;  $p < 0.05$ ]. See Table 4.

Despite the moderate knowledge about HIV of the respondents, misconceptions about HIV transmission was noticed among the respondents. For instance, 84.6% of respondents believed that the risk of HIV transmission following a splash of blood to non-intact skin or mucus membrane is high compare with another 51.3% that believed that standard sterilisation procedures on instruments used on HIV-infected persons are not sufficient to prevent the transmission of the virus. See Table 6.

### HIV stigma mechanism

The HIV stigma mechanism of the respondents was measured using three variables of prejudice, stereotyping and discrimination. The overall percentage mean scores of the three variables revealed that prejudice, stereotyping and

discrimination were  $10.61 \pm 4.07$ ,  $13.84 \pm 3.34$  and  $10.47 \pm 3.22$ , respectively indicating presence of HIV stigma mechanism among the respondents. The three variables were also analysed according

to respondents' level of study and the result revealed that second year nursing students mean scores across the three variables were higher than those of third year nursing students. See Table 4.

**Table 1. Demographic characteristics**

Demographic Variables	Frequency	%
<b>Age</b>		
15-19 years	53	14.1
20-24 years	167	44.4
25-29 years	126	33.5
30 years and above	30	8.0
Total	376	100
<b>Gender</b>		
Male	61	16.2
Female	315	83.8
Total	376	100
<b>Marital Status</b>		
Married	34	9.0
Single	338	89.9
Others	4	1.1
Total	376	100
<b>Religion</b>		
Christians	316	84.0
Muslims	58	15.4
Others	2	.5
Total	376	100
<b>Ethnicity</b>		
Hausa	8	2.1
Igbo	43	11.4
Yoruba	309	82.2
Others	16	4.3
Total	376	100
<b>Level of Study</b>		
Second year	170	45.2
Third year	206	54.8
<b>Total</b>	<b>376</b>	<b>100</b>

**Table 2. Distribution of respondents' school and level of study**

School & Level of study	Frequency	%
Seventh-Day Adventist, Ile-Ife, second year	49	13.0
Seventh-Day Adventist, Ile-Ife, third year	52	13.8
OAUTHC, Ile-Ife, second year	33	8.8
OAUTHC, Ile-Ife, third year	44	11.7
Wesley Guild, Ilesha, second year	31	8.2
Wesley Guild, Ilesha, third year	52	13.8
School of Nursing, Osogbo, second year	59	15.7
School of Nursing, Osogbo, third year	56	14.9
<b>Total</b>	<b>376</b>	<b>100</b>

**Table 3. Mean scores of study variables**

Variables	Mean	Maximum Point Scale	Standard Deviation
Knowledge	5.90	9.0	1.26
Prejudice	17.97	24.0	4.07
Stereotyping	13.84	18.0	3.34
Discrimination	10.47	15.0	3.22

**Table 4: Distribution of Variables by Level of Study**

	Level of study				T	df	Sig.
	Second year		Third year				
	Mean	SD	Mean	SD			
Knowledge	5.86	1.28	5.94	1.25	-0.551	374	.582
Prejudice	18.45	3.70	17.57	4.31	2.127	373	.034
Stereotyping	14.36	3.14	13.41	3.44	2.790	374	.006
Discrimination	10.96	3.10	10.07	3.27	2.709	374	.007

**Table 5: Distribution of knowledge, perception, prejudice, stereotyping, and discrimination**

School & Level of study	Knowledge	Prejudice	Stereotyping	Discrimination
	Mean	Mean	Mean	Mean
SDA, Ile-Ife, second year	6.22	17.92	14.04	10.90
SDA, Ile-Ife, third year	6.06	17.37	13.21	9.87
OAUTHC, Ile-Ife, second year	5.91	16.67	13.64	10.45
OAUTHC, Ile-Ife, third year	5.84	18.93	13.70	9.61
Wesley Guild, Ilesha, second year	5.68	19.48	13.10	12.45
Wesley Guild, Ilesha, third year	5.94	18.12	13.90	10.69
School of Nursing, Osogbo, second year	5.68	19.41	15.73	10.64
School of Nursing, Osogbo, third year	5.86	16.07	12.84	9.87
<b>F</b>	<b>1.006</b>	<b>4.729</b>	<b>4.188</b>	<b>2.941</b>
<b>Sig.</b>	<b>.426</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>

**Table 6. Frequencies of knowledge about HIV/AIDS**

Knowledge about HIV/AIDS Items	No		Yes		Total		Remark
	f	%	f	%	f	%	Correct Response
Saliva from an HIV infected individual can transmit HIV to the caregiver.	264	70.2	112	29.8	376	100	No
HIV can be transmitted from mother to child during pregnancy & labour.	24	6.4	352	93.6	376	100	Yes
The risk of HIV transmission following a splash of blood to non-intact skin or mucus membrane is very high	58	15.4	318	84.6	376	100	No
HIV treatment prolongs the life expectancy of HIV-positive patients.	42	11.2	334	88.8	376	100	Yes
HIV treatment does not decrease the chances of infection after a prick from an infected needle.	181	48.1	195	51.9	376	100	No
There is a vaccine against HIV.	307	81.6	69	18.4	376	100	No
Standard sterilization procedures are insufficient when sterilizing instruments used on an HIV-positive client.	193	51.3	183	48.7	376	100	No
Reducing the number of sexual partners may protect from HIV.	48	12.8	328	87.2	376	100	Yes
Use of condom reduces the chance of contracting HIV.	47	12.5	329	87.5	376	100	Yes

Table 5 showed further analysis of the variables of HIV stigma mechanism based on school of study; accordingly, second year nursing students of Wesley Guild, Ilesha had the highest mean score of 19.48 for prejudice, followed by second year nursing students of School of Nursing, Osogbo with a mean score of 19.41. However, third year nursing students of School of Nursing, Osogbo had the least mean score of 16.07 for prejudice with second year nursing students of OAUTHC, Ile-Ife at 16.67 mean score being the second group with the least prejudice. For the variable of stereotyping, second year nursing students of School of Nursing, Osogbo scored the highest mean of 15.73 with second year nursing students of SDA, Ile-Ife coming second highest with a mean score of 14.04. On the other hand, again, third year nursing students of School of Nursing, Osogbo had the least stereotyping mean score at 12.84 and at 13.10 respondents in their second-year level of study at Wesley Guild, Ilesha had the second least mean score of stereotyping. However, concerning the variable of discrimination, second year nursing students of Wesley Guild, Ilesha had the highest mean score at 12.45 with third year nursing students of Seventh-Day Adventist (SDA), Ile-Ife and School of Nursing, Osogbo scoring the least mean score of 9.87.

When the three HIV stigma variables of prejudice, stereotyping and discrimination were compared with respect to the level of study, result of the analysis revealed that there were significant differences in the groups of respondents with respect to prejudice [ $t(373) = 2.127$ ;  $p < 0.05$ ]; stereotyping [ $t(374) = 2.790$ ;  $p < 0.05$ ]; discrimination [ $t(374) = 2.709$ ;  $p < 0.05$ ] and overall stigma mechanism [ $t(374) = 4.277$ ;  $p < 0.05$ ]. Also, the results showed that part two students scored higher in all significant dimensions of HIV stigma mechanism when compared to their counterparts in part three. This implied that the part two students experience more of the HIV stigma mechanisms compared to the part three students. See Table 5.

## Discussion

A large proportion of the sampled respondents for this study responded with a 95.2% response rate. The knowledge about HIV of student nurses as well as other health profession student has been of interest to researchers in past studies; this study was no exception. However, while most of these past studies findings revealed good HIV knowledge among students sampled, findings from this study revealed a moderate level of knowledge about HIV. For instance, in a study carried out in India involving undergraduate nursing students, 77.6% of the respondent had good knowledge about HIV (Dharmalingam et al., 2015). Similar findings were reported in Southwest Nigeria (Farotimi et al., 2015), Fiji involving nursing and medical students (Lui et al., 2014), and another Indian study involving dental students (Fotedar et al., 2013).

This study also explored the association between level of study and knowledge about HIV in order to find out if level of study influences knowledge about HIV. Other studies also explored the association between demographic variables and knowledge about HIV. Ouzouni and Nakakis (2012) reported that student nurses in Greece who scored high in knowledge about HIV were older and female. Also, Baytner-zamir et al., (2014) reported in their study involving premedical students in Israel that increase in HIV knowledge was associated with higher level of study. Findings of this nature were also made in India among dental students (Fotedar et al., 2013), Nepal (Mahat & Eller, 2009), and a study in Fiji (Lui et al., 2014). However, in our current study, there was no statistical difference between second year and third year students [ $t(374) = -0.551$ ;  $p < 0.05$ ] with regards to knowledge about HIV.

The concerted efforts that is being aimed at reducing HIV stigma across all walks of life has led to development of frameworks that can be used to design HIV stigma studies. One of such frameworks developed by Earnshaw and Chaudoir (2009) served as a guide for this study. The

framework was designed in a way that HIV stigma could be measured in three ways of prejudice, stereotyping and discrimination. Findings in this study revealed that the three mechanisms measured exist among student nurses with the mean scores for prejudice, stereotyping and discrimination being  $10.61 \pm 4.07$ ,  $13.84 \pm 3.34$  and  $10.47 \pm 3.22$ , respectively.

Abolfotouh et al., (2013); Farotimi et al., (2015); and (Suominen et al., 2015) reported findings similar to this study on the mechanism of prejudice. In their respective studies, the researchers reported that student nurses had prejudicial attitudes towards HIV-infected individuals. Even studies involving pharmacy students (Rickles et al., 2016) and premedical students (Baytner-zamir et al., 2014; Chew & Cheong, 2013) also reported similar prejudicial findings.

The other form of HIV stigma noticed among respondents in the study is stereotyping. Most students expressed this form of stigma through passing blames and being unsympathetic to the plight of HIV-infected persons. Stereotyping has also been reported in other studies (Balfour et al., 2010; Baytner-zamir et al., 2014; Fotedar et al., 2013; Lui et al., 2014; Mahat & Eller, 2009; Ouzouni & Nakakis, 2012; Suominen et al., 2015).

Interestingly, these studies reported that stereotyping is directed at key population living with HIV such as commercial sex workers, people who inject drug and homosexuals. Lui et al. (2014) reported that 60.0% of nursing and medical students were of the opinion that key populations such as injection drug users, commercial sex workers, and homosexuals are responsible for the spread of the disease. Similarly, Russian nursing students held stereotypical views against key populations. Suominen et al. (2015) reported that about 90% of Russian student nurses were very critical of injection drug users who had HIV, compared to HIV infected individuals whose cases were due to blood transfusion, and 64% would be less sympathetic towards commercial sex workers

compared to those who got infected via blood transfusion.

The findings in this study indicated that discrimination as a form of HIV stigma is common among student nurses; and according to various studies, most students discriminate either by refusing to care for HIV-infected persons or indicating unwillingness to provide care. In a Chinese study involving Chinese and foreign medical students, both set of students had intentions to not provide care to HIV-infected persons with the Chinese medical students expressing more intentions compared to their foreign counterparts (Kuee et al., 2016).

Similarly, a Russian study involving nursing students revealed that 80% of Russian nursing student are unwilling to render service to HIV-infected persons (Suominen et al., 2015). However, unwillingness to provide care to HIV-infected persons seems to be subtler now compared to the past as revealed by a Canadian study involving medical students. In the study, researchers measured the willingness of medical students in Canada to provide service to HIV-infected persons and their HIV-associated attitudes 12 years apart. Their findings revealed that compare to 12 years ago, medical students were more willing to provide services to HIV-infected individuals, though unwillingness to provide still exists among the study participants (Hoffart et al., 2012).

The HIV stigma mechanism (measured as prejudice, stereotyping and discrimination) was associated with the level of study in this study as there was significant difference [ $t(374) = 4.277$ ;  $p < 0.05$ ] indicating that the higher the level of study the subtler the experience of HIV stigma. This finding is in line with an earlier finding in a study that described and compared nursing students' attitudes in three Baltic Sea countries of Finland, Estonia and Lithuania and to explore how attitudes towards HIV/AIDS correlated with background variables, findings from the study revealed that students with more clinical exposure showed more negative general attitude toward HIV infected individuals, (Suominen et al., 2009).

## Conclusions

The burden of the HIV epidemic is enormous especially in sub-Saharan Africa where poor economic reality, ignorance and low level of education are common. In clime like this, stigma is a flammable fuel that has been used to fuel the epidemic indirectly. To make head ways, stigma, like the other contributing factors, has to be reduced. Student nurses being part of the future health care workforce are in better position to receive HIV stigma reduction intervention. Studies have shown that misconceptions concerning the transmission, prevention and treatment of HIV exist among student. At the same time, students exhibit stigmatising tendencies towards HIV-infected persons. While these findings have been reported globally, few studies have been replicated in Nigeria focusing on student nurses; hence, the design of this study. The findings of this study, indeed, revealed that misconception about HIV knowledge as well as HIV stigma exist among student nurses in Nigeria. Efforts should now be focused on planning HIV stigma reduction intervention. However, there is need for further study using a broader study design focusing on the same group of persons.

## Limitations

Although this study was designed to measure knowledge and stigma levels of student nurses, limitations were noticed in the design. Firstly, this study did not check for any association between knowledge and HIV stigma. This could have revealed whether a relationship exist between both variables and the nature of the relationship. Future study in Nigeria involving health profession students should incorporate this into the design. Secondly, this study only checked for association between level of study with HIV stigma and knowledge about HIV. Other demographic variables such as age, marital status, previous contact with HIV-infected persons were not analysed. Despite these shortcomings in the study design, this study attempted to fill a gap as far as HIV stigma literature in Nigeria is concern. We

believe this should spur more studies with rigorous design in the future.

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