




## ORIGINAL

# Exploring the awareness and potential HIV/AIDS transmission mode among women in Mbaise Imo state, Nigeria: A cross-sectional study

*Exploración del conocimiento y del modo de transmisión potencial del VIH/SIDA entre las mujeres del estado de Imo Mbaise, Nigeria: un estudio transversal*

**David Chinaecherem Innocent<sup>1</sup>** , **Cosmas Nnadozie Ezejindu<sup>2</sup>**,  
**Prince Ezenwa Onyemachi<sup>3</sup>**, **Stanley Chinedu Eneh<sup>4</sup>** ,  
**Angelica Chinecherem Uwaezuoke<sup>5</sup>** , **Valentine Nnchetam Unegbu<sup>6</sup>**

1. Department of Public Health, Federal University of Technology Owerri, Imo State Nigeria 2. Department of Public Health, Abia State University, Uturu, Abia State, Nigeria 3. Department of Community Medicine, Abia State University Uturu, Abia State, Nigeria 4. Department of Community Health, Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria 5. Department of Medicine and Surgery, University of Nigeria, Nsukka, Enugu State, Nigeria 6. Department of Biological Sciences, Spiritan University Nneochi, Abia State, Nigeria

## Corresponding author

David Chinaecherem Innocent  
E-mail: innocentdc1@gmail.com

Received: 23 - IX - 2022

Accepted: 26 - X - 2022

doi: 10.3306/AJHS.2023.38.01.73

## Abstract

**Background:** Globally HIV/AIDS is the leading cause of infectious disease mortality; surpassing tuberculosis and malaria. Understanding the perceived risk and knowledge of infection is imperative and needed particularly among women in rural communities. This study was carried out to explore the awareness and potential HIV/AIDS transmission mode among women in Mbaise Imo State, Nigeria.

**Methods:** A descriptive cross-sectional research design was adopted for the study. A structured questionnaire was used to obtain the information for this study. Potential participants were approached and interviewed at three local governments areas in Mbaise Imo State, Nigeria. The participants for this study were recruited through convenience sampling method as there was known to be no complete sampling frame. A sample of 240 participants was recruited and Statistical Package for Social Sciences (SPSS) version 23.0 was used in the analysis of the study.

**Results:** Respondents within the age bracket 25-29 had the highest 60 (25%) respondents while the least 20 (8.3%) respondents were 15-19 years age bracket. About 100 (41.7%) of the women heard about HIV/AIDs through mass media and majority 230 (95.8%) agreed that HIV/AIDs can be contacted through unprotected. Those who disagreed that kissing can lead to HIV/AIDs were 120 (50%) while 68 (28.3%) agreed. 154 (64.2%) of the respondents disagreed that living/working with a person who has AIDs can lead to transmission of AIDs while 42 (17.5%) agreed.

**Conclusion:** The study identified that women in Mbaise had Media as their potential source of information about HIV/AIDs. Sensitization through Media is an essential tool to make information available on the risk factors of HIV and how to reduce its spread.

**Key words:** Knowledge, perception, attitudes, perceived risk, HIV/AIDs.

## Resumen

**Antecedentes:** A nivel mundial, el VIH/SIDA es la principal causa de mortalidad por enfermedades infecciosas, superando a la tuberculosis y la malaria. Es imperativo y necesario comprender el riesgo percibido y el conocimiento de la infección, especialmente entre las mujeres de las comunidades rurales. Este estudio se llevó a cabo para explorar el conocimiento y el modo de transmisión potencial del VIH/SIDA entre las mujeres del estado de Mbaise Imo, Nigeria.

**Métodos:** Se adoptó un diseño de investigación transversal descriptivo para el estudio. Se utilizó un cuestionario estructurado para obtener la información para este estudio. Se contactó con los participantes potenciales y se les entrevistó en tres áreas de gobierno local del Estado de Mbaise Imo, Nigeria. Los participantes de este estudio fueron reclutados mediante el método de muestreo de conveniencia, ya que se sabía que no había un marco de muestreo completo. Se reclutó una muestra de 240 participantes y en el análisis del estudio se utilizó el Paquete Estadístico para las Ciencias Sociales (SPSS) versión 23.0.

**Resultados:** El mayor número de encuestados en la franja de edad de 25 a 29 años fue de 60 (25%), mientras que el menor número fue de 20 (8,3%) encuestados en la franja de edad de 15 a 19 años. Alrededor de 100 (41,7%) de las mujeres habían oído hablar del VIH/SIDA a través de los medios de comunicación y la mayoría, 230 (95,8%), estaban de acuerdo en que el VIH/SIDA se puede contraer sin protección. 120 (50%) estaban en desacuerdo con que los besos puedan provocar el VIH/SIDA, mientras que 68 (28,3%) estaban de acuerdo. 154 (64,2%) de los encuestados estaban en desacuerdo con que vivir/trabajar con una persona que tiene el sida puede conducir a la transmisión del sida, mientras que 42 (17,5%) estaban de acuerdo.

**Conclusión:** El estudio identificó que las mujeres de Mbaise tenían a los medios de comunicación como fuente potencial de información sobre el VIH/SIDA. La sensibilización a través de los medios de comunicación es una herramienta esencial para dar a conocer los factores de riesgo del VIH y cómo reducir su propagación.

**Palabras clave:** Conocimiento, percepción, actitudes, riesgo percibido, VIH/SIDA.

## Introduction

HIV/AIDS is the most common cause of infectious illness death worldwide, surpassing tuberculosis and malaria<sup>1</sup>. In 2015, 18.6 million girls and women worldwide were living with HIV, with approximately one million girls and women becoming infected for the first time<sup>2</sup>. Women are always considered a vulnerable category to HIV/AIDS infection because of their innate susceptibility, decreased sexual autonomy, and men's sexual authority and privilege<sup>3</sup>. A vulnerability paradigm model supports this assumption, explaining the etiology and progression of women becoming the most vulnerable victims of the HIV epidemic<sup>4</sup>. The paradigm's central pillar emphasizes gender-based social disparities, such as women's lack of authority to defend themselves against HIV/AIDS, and men are more likely than women to infect their partners due to hazardous sexual and drug use habits. To put it another way, guys are active HIV transmitters but not HIV preventers<sup>4</sup>.

According to research, because they are exposed to infected fluids for longer periods of time during sexual intercourse, women are more vulnerable to HIV/AIDS infection via vaginal intercourse than men<sup>4,5</sup>. The vagina has a larger risk of tissue injury during sexual intercourse, allowing the virus to enter the vagina more easily. Younger girls are especially vulnerable because their immature mucosal surfaces are more easily ripped during sexual contact<sup>5</sup>. AIDS-related deaths decreased from 2.3 million (2.1 million–2.5 million) in 2005 to an estimated 1.7 million (1.6 million–2.0 million) in 2011. AIDS-related mortality increased from 14 000 (8600–28 000) in 2001 to 25 000 [17 000–35 000] in 2011 in the Middle East and North Africa<sup>4,6</sup>.

In Latin America, antiretroviral medication has helped reduce the annual number of people dying from AIDS-related causes to 57 000 (35 000–86 000) in 2011, down from 63 000 (35 000–105 000) ten years earlier<sup>7</sup>. In the Caribbean, an estimated 10,000 (8000–12000) people died from AIDS-related causes in 2011, nearly half as many as in 2001. In Western and Central Europe, as well as North America, antiretroviral medication has significantly reduced AIDS-related mortality, particularly in countries with the most severe epidemics. Over the last decade, the number of people dying from AIDS-related causes in these areas has remained largely stable, with an estimated 29 000 (26 000–36 000) in 2011<sup>7</sup>. However, the findings show that HIV continues to disproportionately afflict sex workers, men who have sex with men, and those who inject drugs. HIV prevention and treatment initiatives frequently overlook these critical demographics<sup>8</sup>. In terms of AIDS-related deaths, Asia, which has the highest number of deaths outside of Sub-Saharan Africa (about 330 000 (260 000–420 000) persons in 2011), has remained stable. In Eastern Europe and Central Asia, AIDS-related mortality continues to rise. A total of 90 000 (74 000–110 000) people died of AIDS-related causes

in 2011, up from 15 000 (11 000–26 000) in 2001. The number of persons newly diagnosed in the Russian Federation grew from 39 207 in 2005 to 62 581 in 2010<sup>7</sup>.

Newly reported HIV cases have been rising in Central Asia's smaller outbreaks since 2005. (Kyrgyzstan, Tajikistan and Uzbekistan). In this location, the use of contaminated injecting equipment is still the predominant mode of transmission. HIV-related tuberculosis (TB) continues to be a severe problem, as TB is still the top cause of death among HIV-positive people. Sub-Saharan Africa is home to more than 80% of HIV and tuberculosis patients<sup>7</sup>. Antiretroviral therapy is increasingly being recommended for the prevention of HIV transmission, according to scientific data. HIV transmission occurs solely between people who have HIV, and the viral load is the most important risk factor for transmission<sup>9</sup>. Lowering the viral load reduces the risk of transmission. Antiretroviral therapy reduces viral load substantially, and multiple observational studies have shown that it can prevent HIV transmission<sup>9</sup>. Antiretroviral therapy started early reduced HIV-1 sexual transmission and clinical occurrences, demonstrating that it has both personal and public health benefits<sup>10</sup>.

The prevention of HIV transmission from mother to child adds to the body of evidence that antiretroviral therapy works. Perinatal AIDS cases have virtually disappeared in the United States and Europe, owing to the implementation of guidelines for universal counselling, voluntary HIV testing, and ARVs for pregnant women and new-born infants<sup>10</sup>. In 2008, the majority of the 430 000 new paediatric HIV infections were in sub-Saharan Africa, where there is recent evidence that ARVs can be used to decrease transmission to 1 percent<sup>11</sup>. They may also develop negative attitude towards HIV positive people due to over emphasis of the dreadfulness of HIV infection. It may produce irrational behaviour in women toward those with HIV/AIDS. Hence, this study was carried out to assess the awareness and potential HIV/AIDS transmission mode among women in Mbaise Imo State, Nigeria.

## Methods

### Study Design and Sample Selection

A cross-sectional survey based on a questionnaire interview was used to obtain the information for this study. Potential participants were approached and interviewed at three local governments areas in Mbaise Imo State, Nigeria. The participants for this study were obtained using a convenience sampling method as there was known to be no complete sampling frame. A sample of 240 participants was recruited.

### Data/Statistical Analysis

Data was cleaned, entered and analysed using statistical packages for social sciences version 25.0. Frequency

and contingency table was used to show the distribution of data. Quantitative data was summarized using mean and proportion and percentages.

### Ethical Consideration

The study protocol and study tools were reviewed and approved by the Ethics committee of Abia State University. Before starting the data collection, approval and permission were gained from the Transitional Chairman of the three local government areas. Verbal consent was obtained from all the potential participants before the start of the interview. Participants were informed about the purpose and the benefits of carrying out the study and were also advised that participation was voluntarily, and the questionnaire was anonymous.

## Results

### Demographic Characteristics of Respondents

From **table I** the respondents within the age bracket 25-29 had the highest 60 (25%) respondents, followed by those within the age bracket 35-39 with 42 (17.5%). Those within 40 years and above had 36 (15%) respondents; 20-24 had 24 (10%) while the least respondents were 15-19 years age bracket with 20 (8.3%). Majority 228 (95%) of the respondents were Christians while 8 (3.3%) and 4 (1.7%) were traditionalists and Muslims respectively. A lot 124 (51.7%) had secondary certificates followed by 68 (28.3%) who were university graduates. The least 48 (20%) had primary certificates while 0 (0%) were illiterates. The urban 172 (71.7%) dwellers dominated while a few 68 (28.3%) were rural dwellers. According to the monthly income of the respondents, 106 (44.2%) earn 30,000-50,000 per month, followed by 92 (38.3%) who earn above 50,000 a month while few 42 (17.5%) earn less than 30,000 per month.

### Sources of HIV/AIDS Information

**Table II** showed that 100 (41.7%) of the respondents heard about HIV/AIDS through mass media such as television, radio and newspapers followed by those who got it from books 61 (25.4%). 55 (22.9%) heard about HIV/AIDS through health worker, those relatives taught on HIV/AIDS were 14 (5.8%) while 10 (4.2%) heard it from their friends.

### The Response of Modes of HIV/AIDS Transmission

**Table III** showed that majority 230 (95.8%) agreed that HIV/AIDS can be contacted through unprotected sex, 6 (2.5%) disagreed while 4 (1.7%) were neutral. Those who disagreed that kissing can lead to HIV/AIDS were 120 (50%) followed by 68 (28.3%) who agreed that it can lead to HIV/AIDS while 52 (21.7%) were neutral. Also 130 (54.2%) disagreed that HIV/AIDS can be transmitted through cough/sneeze, followed by 60 (25%) who were neutral while 50 (20.8%) agreed. 118 (49.2%) disagreed that HIV/AIDS can be transmitted through bites of flies/mosquitoes/other insects followed by 70 (29.2%) who agreed while 52 (21.7%) were neutral. A lot 152 (63.3%) of the respondents disagreed that HIV/AIDS can be

**Table I:** Demographic Characteristics of Respondents.

Variables	Frequency (n=240)	Percentage
15-19	20	8.3%
20-24	24	10%
25-29	60	25%
30-34	58	24.2%
35-39	42	17.5%
40 and above	36	15%
<b>Religion</b>		
Christianity	228	95%
Muslim	4	1.7%
Traditionalist	8	3.3%
<b>Educational qualification</b>		
Illiterate	0	0%
Primary	48	20%
Secondary	124	51.7%
Tertiary	68	28.3%
<b>Resident</b>		
Rural	68	28.3
Urban	172	71.7
<b>Monthly Income</b>		
>30,000	42	17.5
30,000 – 50,000	106	44.2
<50,000	92	38.3

**Table II:** Sources of HIV/AIDS Information.

Variables	Frequency (n=240)	Percentage
Mass media (TV, Radio, etc.)	100	41.7%
Relatives	14	5.8%
Books	61	25.4%
Health worker	55	22.9%
Friend	10	4.2%
<b>Total</b>	240	100%

**Table III:** The Response of Modes of HIV/AIDS Transmission.

Way of Transmission	Frequency (n=240)		
	Disagree	Agree	Neutral
Sex contact without proper protection (heterosexual or homosexual)	6 (2.5%)	230 (95.8%)	4 (1.7%)
Kissing	120 (50%)	68 (28.3%)	52 (21.7%)
Cough/sneeze	130 (54.2%)	50 (20.8%)	60 (25%)
Bites of flies/mosquitoes/other insects	118 (49.2%)	70 (29.2%)	52 (21.7%)
Sharing foods or drinks	152 (63.3%)	48 (20%)	40 (16.7%)
Sharing clothing	168 (70%)	22 (9.2%)	50 (20.8%)
Sharing utensils (e.g., spoon, cup, fork, etc.)	148 (61.7%)	42 (17.5%)	50 (20.8%)
Pregnancy	32 (13.3%)	166 (69.2%)	42 (17.5%)
Living/working with a person who has AIDS	154 (64.2%)	42 (17.5%)	44 (18.3%)
Skin contact (hug or shake hands)	204 (85%)	16 (6.7%)	20 (8.3%)

gotten through sharing food or drinks, followed by 48 (20%) who agreed while 40 (16.7%) were neutral. More so, 168 (70%) of the respondents disagreed that sharing of clothing can lead to transmission of HIV/AIDs while 22 (9.2%) and 50 (20.8%) agreed and disagreed respectively. More 148 (61.7%) of the respondents also disagreed that sharing utensils such as spoons, cup and fork can lead to transmission of HIV/AIDs, 50 (20.8%) were neutral while 42 (17.5%) agreed. Majority 166 (69.2%) believed that HIV/AIDs can be transmitted through pregnancy, 42 (17.5%) were neutral while 32 (13.3%) disagreed. Furthermore, 154 (64.2%) of the respondents disagreed that living/working with a person who has AIDs can lead to transmission of AIDs, 44 (18.3%) were neutral while 42 (17.5%) agreed. Nevertheless, 204 (85%) disagreed that HIV/AIDs can be transmitted through skin contact like hug or hand shake, 20 (8.3%) were neutral while 16 (6.7%) agreed.

## Discussion

This study aimed to determine the knowledge, perceptions, attitudes and personal perceived risk of HIV/AIDS among women in Mbaise Imo State, Nigeria. The finding discovered that women in Mbaise Imo State, Nigeria are adequately knowledgeable about the modes of HIV/AIDS transmission. This finding is similar to a study, which they found that females were more knowledgeable than males about general HIV/AIDS knowledge<sup>12</sup>. However, some misconceptions exist, wherein some surveyed respondents still believe that HIV/AIDS can be transmitted through mosquito bites, sharing utensils, foods or drinks and clothing. The significant increased awareness and knowledge about HIV/AIDS among women have given credit and supported efforts done by various parties such as the government, NGOs and the media in which they have successfully reached their target messages out to this population.

Previous research have shown that stigma and discrimination related to HIV/AIDS have had profound effect on the lives of people living with HIV/AIDS, and acted as an obstacle to effective HIV prevention and treatment among these people<sup>13</sup>. The present study found that moderate, rather than clear-cut positive perceptions and a discriminatory attitude towards PLHIV exist within women respondents who are reasonably knowledgeable about the modes of HIV/AIDS transmission. Essentially, women respondents think that people living with HIV/AIDS should be blamed for bringing the disease into the community. As a result of this blame-the-victim stigma, many refuse to come forward for treatments.

This study found that majority of the respondents does not think that they are at risk of HIV/AIDS infection. According to the Health Belief Model of behaviour change, individuals must perceive themselves to be at risk of the health threat, before they take actions to reduce risky behaviours or to

engage in healthy alternative behaviour. Hence, a study suggested that adolescents who report high perceived risk for HIV/AIDS practise safer sexual behaviours, whereas those who perceive low risk for contracting HIV/AIDS report practising unsafe sexual behaviours<sup>14</sup>. This study, therefore, provides base information and insight into outlining strategic communication plans to tackle this group who thinks they are not vulnerable to HIV/AIDS infection. While publicly promoting condom use in HIV/AIDS prevention is seemed to be contentious in Mbaise the finding shows that high proportion of the surveyed respondents want to use condoms to protect themselves or their partners from contracting HIV/AIDS infection. This study found that majority (51.7%) had secondary school certificate followed by University graduates (28.3%). Those with primary school certificates were 20% while none of the respondent is an illiterate. Here also the urban dwellers (71.7%) were more knowledgeable than the rural dwellers (28.3%). This study also confirmed that majority of the participants earn a reasonable amount on monthly basis. The findings showed that the overall score of HIV/AIDS and socioeconomic factors indicate that the HIV/AIDS-related knowledge and attitudes was significantly higher in respondents with higher educational levels, higher wealth indices, identified as Christian and who were exposed to communication media (radio, TV) one or more times a week. Findings also indicate that while rural dwelling women scored lower than their urban counterparts in knowledge and attitude scores. A study in Congo as well had the same findings among rural-urban dwellers<sup>15</sup>.

Studies in a SSA context reported similar responses and attributed the observed rural-urban differences to illiteracy and the inaccessibility of HIV/AIDS interventions such as condom use and counselling in rural areas<sup>16</sup>. Beyond the African context, studies examining urban-rural differences in HIV knowledge in India and Canada reported similar observations<sup>17</sup>. Furthermore, accurate knowledge on HIV transmission was significantly higher in respondents with post-secondary education. Similar observations have been reported in Botswana<sup>18</sup>. Girl's school attendance was shown to increase their knowledge of HIV and consequently reduce their risk of infection by 11.6%. Christian women had significantly higher scores in knowledge of and attitudes towards HIV/AIDS than women of Islamic or other religion. Contrasting studies in Tanzania report a positive association between Christianity and HIV stigma towards people living with HIV/AIDS<sup>19</sup>. In this study, wealth index was a strong predictor of HIV knowledge and attitudes among women. Consistent results were reported in Ghana and Ethiopia<sup>19</sup>. Studies also indicate that women of high socioeconomic status in Nigeria and DRC had positive attitudes towards people living with HIV/AIDS compared with women in low economic brackets<sup>20</sup>. Furthermore, results indicate a relationship between the frequency of media use and respondents' HIV/AIDS-related knowledge and attitudes. This is consistent with cross-sectional data pooled from

SSA countries. Media use across 13 SSA countries was shown to moderate safe sex behaviour, and the effects of mass media campaigns against HIV transmission was shown to be effective<sup>18,19</sup>. It is noteworthy that the study highlights a positive association of media use with wealth index and suggests that media use benefits individuals of higher SES than those of lower SES across SSA.

Furthermore, mass media was shown to minimize HIV related stigma, indicating that interventions made on HIV knowledge has the potential to positively improve attitudes towards HIV as well. The relatively lower contribution of education to the variance in knowledge and attitude scores, on the other hand, imply the occurrence of factors that are more likely to be rooted to the belief system and perception of the problematic<sup>4</sup>. This indicated the necessity for strategic interventions aimed at identifying and addressing the structural issues influencing women's knowledge and attitude towards this epidemic. Findings of this study have important research and policy implications. Hence, these findings contribute to the understanding of the factors that may affect or improve women's awareness regarding HIV transmission, including mother-to-child transmission.

## Conclusion

The study identified women's gaps in HIV knowledge and their attitudes towards individuals with HIV/AIDS. This study also discovered some factors such as education, age, religion, high social status coupled with media use were significantly associated with women's HIV/AIDS-related knowledge and attitudes towards infected individuals.

## Ethics Approval and consent to Participate

Not Applicable.

## Consent to Publish

Not applicable.

## Availability of Data and Materials

The Data set from the study are available to the corresponding author upon request.

## Competing Interests

Authors have declared that they have no competing interests.

## Funding

No funds were received for this study.

## Acknowledgements

Not Applicable.

## References

1. Holmes MD, Charles B. Use of Generic Antiretroviral Agents and Cost Savings in PEPFAR Treatment Programs *Journal of the American Medical Association* 2010; 304(3).
2. Joint United Nations Programme on HIV/AIDS, 2017.
3. Mondal MNI, Shitan M. HIV/AIDS epidemic in Malaysia: Vulnerability and risk of women. *Asian Journal of Humanities and Social Studies* 2013; 1(5): 274-83.
4. Sern TJ. The Knowledge, Perceptions, Attitudes, And Perceived Risk in Hiv/Aids among Women in Malaysia: A Cross-Sectional Study, *International Journal of Asian Social Science* 2018; 8 (9).
5. Ho DD, Huang Y. The HIV-1 Vaccine Race. *Cell* 2002;110(2):135-8. doi:10.1016/S0092-8674(02)00832-2
6. Kim JH, Supachai RK, Excler JL, Michael NL. HIV vaccines: lessons learned and way forward. *Current Opinion in HIV & AIDS* 2010; 5(5):428-34.
7. Castilla J, Del Romero J, Hernando V. Effectiveness of highly active antiretroviral therapy in reducing heterosexual transmission of HIV. *Journal Acquired Immune Deficiency Syndrome* 2005; 40:96-101.
8. Pharris IA, Noori T, Likatavicius G, Van de Laar G. Poster Presentation From assessment to action: HIV in migrant populations in Europe, XIX Int'l AIDS Conference, July 2012 at <http://pag.aids2012.org/abstracts.aspx?aid=17385>.
9. Bunnell R, Ekwaru JP, Solberg P. Changes in sexual behavior and risk of HIV transmission after antiretroviral therapy and prevention interventions in rural Uganda. *AIDS* 2006; 20:85-92
10. Cohen MS, Chen YQ, McCauley M, Gamble T, Hosseinipour MC, Kumarasamy N, et al. Prevention of HIV-1 infection with early antiretroviral therapy. *N Engl J Med*. 2011 Aug 11;365(6):493-505. doi: 10.1056/NEJMoa1105243.
11. Granich R, Crowley S, Vitoria M, Smyth C, Kahn JG, Bennett R, et al. Highly active antiretroviral treatment as prevention of HIV transmission: review of scientific evidence and update *Current Opinion in HIV and AIDS* 2010; 5:298-304.
12. Wong LP, Chin CK, Low WY, Jaafar N. HIV/AIDS-related knowledge among Malaysian young adults: findings from a nationwide survey. *Medscape J Med*. 2008 Jun 24;10(6):148.
13. Naing CM, Hakim M, Yee DA, Mun KR, Yung TC, Jian KK, Kuan SS. HIV/AIDS-related knowledge, attitudes and perceptions: a cross-sectional household survey. *Southeast Asian J Trop Med Public Health*. 2010 Jul;41(4):952-60.
14. Ndegwa I, Wanderi P, Mwisukha A. Factors influencing behavior change for the prevention of the spread of HIV/AIDS among students in Githunguri Division, Githunguri District, Kiambu County, Kenya. *International Journal of Business and Social Science* 2012; 3(16): 313-24
15. Gebremedhin SA, Youjie W, Tesfamariam EH. Predictors of HIV/AIDS knowledge and attitude among young women of Nigeria and Democratic Republic of Congo: cross-Sectional Study. *Journal AIDS Clinical Research* 2013; 8:8-14.
16. Deribew A, Abebe G, Apers L, Jira C, Tesfaye M, Shifa J, et al. Prejudice and misconceptions about tuberculosis and HIV in rural and urban communities in Ethiopia: a challenge for the TB/HIV control program. *BMC Public Health*. 2010 Jul 6;10:400. doi: 10.1186/1471-2458-10-400.
17. Hazarika I. Knowledge, attitude, beliefs and practices in HIV/AIDS in India: identifying the gender and rural-urban differences *Asian Pac Journal Tropical Medicine* 2010; 3:821-7.
18. Majelantle RG, Keetile M, Bainame K, Nkawana P. Knowledge, opinions and attitudes towards HIV and AIDS among youth in Botswana. *Journal Global Economics* 2014; 2:3-7.
19. Nketiah-Amponsah E, Aful-Mensah GA. A review of HIV/AIDS awareness and knowledge of preventive methods in Ghana. *African Journal Reproductive Health* 2013; 17 69-82.