

# KNOWLEDGE OF AWARENESS ABOUT HIV/AIDS AMONG THE PEOPLE OF LAKE CHAD BASIN OF BORNO STATE, NIGERIA

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## ABSTRACT

A cross sectional quantitative survey that obtained information on the behavioural characteristics of the general population and the vulnerable groups with respect to knowledge of awareness of HIV/AIDS in Lake Chad Basin of Borno State was carried out among 1,790 volunteers. The respondents, who had ever heard about HIV/AIDS, were disaggregated by target groups. 78.7% of prison inmates, 76.8% of commercial sex workers, 75.2% transporters, 64.5% of uniform service men/women and 58.7% of Island population have heard about HIV/AIDS, while the percentage among traders and Household stood at 56.4% and 45.5% each. On disaggregation by gender, 63.9% of males and 49.8% of the females have heard about HIV/AIDS. 60.4% of the urban and 59.3% of the rural communities reported to have heard about HIV/AIDS. On the knowledge of transmission of the HIV/AIDS, there was 45% awareness on unprotected sexual intercourse, 40% on blood and blood products, 6% on mother to child transmission, 1% on sharp objects while 8% does not know how the virus is transmitted. On HIV/AIDS prevention tools, 34% were aware of abstinence, 32% use of condoms, 13% faithfulness, 8% reported other methods while 13% did not know. The knowledge of awareness about HIV/AIDS though cut across both the general and vulnerable populations, there is need for more awareness to curb this dreaded disease.

**Keywords:** HIV/AIDS, Lake Chad Basin, Disaggregated, Refugees, Knowledge

## INTRODUCTION

The Lake Chad Basin Commission (LCBC) is a sub-regional institution comprising of five (5) nations namely Cameroon, Central African Republic (CAR), Chad, Niger and Nigeria with a population of two hundred and twenty-nine million five hundred thousand (229,500,000) people (National Population Commission and ICF Macro. 2009; Ahmed and Ovie, 2009). The current population estimates of the member countries is Nigeria 180 million, Cameroon 19 million, Niger 15 million, Chad 11 million and CAR 4.5 million (Ahmed and Ovie, 2009; Liman, A. M. 2010). Out of the total population of 229,500,000 million, about twenty-seven million, nine hundred and twelve thousand, seven hundred and sixty-eight (27,912,768) people constitute the Conventional Lake Chad Basin (Ahmed and Ovie, 2009; Liman, A. M. 2010). These countries whose boundaries were artificially imposed have important social, cultural and economic links. The landlocked situation of some member countries of LCBC and the natural linkage available through Lake Chad provides opportunities for economic operators of member states of LCBC to do commercial

exchange and use the ports of different countries to satisfy their economic needs. This situation brings about important migratory influx in between the boundaries of member countries of LCBC as well as other sub-regional countries as economic operators tend to spend long periods in other countries in search of economic opportunities. The high level of cross boarder movements and transitory nature of the population (very cosmopolitan) on the islands of Lake Chad make these populations mobile and vulnerable to sexual transmitted infections (STIs) especially HIV/AIDS due to constant social interactions among high risk groups. This situation and the economic consequences of STI/HIV/AIDS infections place a heavy burden on the member states of LCBC. This calls for life changing behaviour as well as political and attitudinal change at all levels.

Acquired immune deficiency syndrome (AIDS) caused by human immune deficiency virus (HIV) is a major health problem in many parts of the world and considered as a pandemic disease (Onoja *et al.*, 2016). Sub-Saharan Africa remains the most heavily affected region by HIV (Silassie *et al.*, 2016). In 2010 about 68% of people living with HIV resided in sub-Saharan Africa. It also accounted for 20% new HIV infections in 2010. Young people ages 15-24 represents 45% of all new HIV infections. In sub-Saharan Africa, nearly 3.3 million youths are living with HIV (Shiferaw *et al.*, 2011; Addis *et al.*, 2013; Tadesse and Menasebo 2013).

Although global statistics reveal a general decline in AIDS related deaths and new HIV infections as a result of the concerted efforts of various stakeholders, the toll of HIV/AIDS continues to be severe in developing countries particularly those in sub-Saharan Africa (Okonko *et al.*, 2012; NACA, 2015). As of 2012, 71% of people living with HIV worldwide were in sub-Saharan Africa which also accounted for 70% of new infections and approximately 74% of all deaths related to AIDS (Addis *et al.*, 2013). Worldwide, over 40% of new infections are among young people 15-25 (Tadesse and Menasebo 2013). The youth are much more prone to HIV infection as well as other sexually transmitted infections as a result of a lack of correct health information, engagement in risky behaviours, economic exploitation, regional and national conflicts and a lack of access to adequate reproductive health services (Shiferaw *et al.*, 2011).

Nigeria has the second largest HIV epidemic in the world (NACA, 2015). Although HIV prevalence among adults is remarkably small (3.1%) compared to other sub-Saharan African countries such as South Africa (19.2%) and Zambia (12.9%), the size of Nigeria's population means 3.5 million people were living with HIV in 2015 (UNAIDS, 2016). An estimated 60% of new HIV infections in western and central Africa in 2015 occurred in Nigeria

(UNAIDS, 2016), together with South Africa and Uganda, the country accounts for almost half of all new HIV infections in sub-Saharan Africa every year. This is despite achieving a 35% reduction in new infections between 2005 and 2013 (UNAIDS 2018). Unprotected heterosexual sex accounts for 80% of new HIV infections in Nigeria, with the majority of remaining HIV infections occurring in key affected populations such as sex workers.

It is particularly important that regional groups like LCBC that is particularly vulnerable to HIV should have adequate knowledge about the disease so that they can help to protect themselves against possible risks (Haroun *et al.*, 2016). With limited access to treatment because of the topography of the land locked nature of the area it would be appropriate to find out the best strategies that can be used for sensitization and prevention programs as well as provision of care and support to those infected and affected by STI/ HIV/AIDS. Therefore, this study was aimed at assessing the level of awareness and attitudes towards HIV/AIDS among the residents of Lake Chad Basin of Borno State of Nigeria.

## MATERIALS AND METHODS

### Type of Survey

The study design was a cross sectional quantitative survey. It consists of sections that obtained information on the behavioural characteristics of the general population and the vulnerable groups with respect to STI and HIV/AIDS.

### Survey sites and target groups

The behavioural and sero-prevalence of HIV/AIDS survey was done in the following communities Madaji, Maiduguri, Shuwaran, Mari, KauKiri, Kangarwa, Kirenoa, Koloram and Boboshe all in Borno State.

The target group aged from 15 to 49 years old included the residential population, traders (hawkers, display sellers, fish sellers, lady sellers), Commercial sex workers, commercial transporters, men and women in uniform, the refugees/displaced people, the peninsular population of the Lake Chad and the prisoners.

### Sample size

For ease of application, the sample size determination was calculated separately for each target group. The methodology used for calculation of samples size does not take into account the size of the target population. To this effect, the whole sample depends on the precision searched and the reliability of the statistical analysis and not the size of the population that the sample was extracted from. To determine the sample size that can help to detect any change; the formula beneath was used (Estimation and Projection Package, 2009).

$$n = \frac{D (Z_{\alpha} + Z_{\beta})^2 \times (P_1 (1 - P_1) P_2 (1 - P_2))}{\Delta^2}$$

Where:

- D = design effect;
- P<sub>1</sub> = the estimated proportion at the time of the first survey;
- P<sub>2</sub> = the proportion at some future date such that the absolute quantity (P<sub>2</sub> - P<sub>1</sub>) is the size of the magnitude of change that is desired to be detected (5%);
- P = (P<sub>1</sub> + P<sub>2</sub>) / 2;
- Z<sub>1- $\alpha$</sub>  = z-score corresponding to the probability to detect the change P<sub>2</sub> - P<sub>1</sub>.
- Z<sub>1- $\alpha$</sub>  = z-score corresponding to the degree of confidence (power

of the study) with which it is desired to detect the actual and absolute change P<sub>2</sub> - P<sub>1</sub>.

$$\Delta = P_1 - P_2$$

$$\alpha = 0.05 (Z_{1-\alpha} = 1.96)$$

$$\beta = 0.20 (Z_{1-\alpha} = 0.84)$$

### Ethical issues

In line with the National Guideline for surveys involving human subjects, an ethical approval for the study was obtained from the University of Maiduguri Teaching Hospital. Respondents' informed consent was sought and obtained before the administration of questionnaires.

### Method of data collection

The data on the social demographical and behavioural characteristics of the respondents with respect to STI/HIV/AIDS were collected using the questionnaire by direct interview of eligible persons in their houses among the populations living in the ordinary households. The vulnerable population group (VPG) not living in the households were interviewed in their places of abode with discretion. The collected information was treated confidentially and third party assistance with interview was avoided. The uniform men were interviewed at their duty posts while prison inmates were interviewed in the prison.

### Questionnaires

Two questionnaires were used: the household questionnaire and the individual questionnaire. The household questionnaire counted the people living in that household and obtained key demographic characteristics such as lineage of family with the head of household, age, sex, and residential status, instruction level and main occupation. Based on data of age, the eligible people to be administered the individual questionnaire were identified. Each member of the household received a unique identification code that allowed matching the information which concerns him or her from the individual questionnaire. However, the traders Commercial sex workers, commercial transporters, men and women in uniform were interviewed using only the individual questionnaire.

### Data handling and analysis

In order to minimize data entry errors and to facilitate the data cleaning process, the data was typed using EPI DATA software which offered real possibilities of double typing and direct control by the data entry clerk. Each questionnaire was typed by two different data entry clerks. At the end of typing each target group, the files were paired and all the mistakes of typing were checked before the data cleaning program was executed. The data cleaning program for each file corresponding to each target group was also developed with the same software. Once data cleaning process was completed, all files were merged from the preliminarily codes attributed to each individual and the data exported to SPSS software for data analysis. An analysis plan and the tabulation plan were developed and validated for harmonization of the content and the shape of various countries report. Descriptive statistics, including means, standard deviations, frequencies and percentages, were calculated for variables as appropriate. Student t-tests were used to examine any differences in continuous variables between males and females, different target groups, between marital status as well as

between the type of community of residence. Chi-square statistics and logistic regression were used for categorical outcomes. Significance was set at  $P < 0.001$ .

**RESULTS**

The mean age range of the participants was 32.5 years (SD  $\pm$  2.21) ranging from 15 to 49 years. Table 1 presents the age and sex related distribution of survey respondents. In this study, 1,234 (68.9%) were males and 556 (31.1%) were females. The age intervals most represented among the males were the intervals of 20–24 years and 25 - 29 years with 255 (20.7%) respondents each,

While the age interval with the highest representation among the female respondents, was also 25–29 years with 131 (23.6%) respondents. The age interval least represented among female respondents was 40–44 years with 38 (6.8%) participants. On disaggregation by sex and age group, the study revealed that target group most represented among the male respondents, were transporters, while commercial sex workers were the most represented target group among the female population. This table further revealed that the target group with the highest respondents was household population and the least were prison

inmate respondents. The respondents were disaggregated by sex in urban and rural areas. The table indicates that 247 (20.0%) of male respondents were in urban areas, while 987 (80%) were seen in rural areas. For females, 104 (18.7%) were interviewed in urban areas, while 452 (81.3%) of the respondents were lived in rural areas. Overall, 351 (19.6%) of survey respondents were from urban areas, while the majority, 1,439 (80.4%) were in rural areas.

The distribution of survey respondents by nationality indicated that 91% of survey respondents were Nigerians, 6% were from Chad, while Cameroon, Niger and Central African Republic had 1% each. Disaggregation by marital status and gender, showed that the 1,093 who disclosed their marital status, 831 (76%) were males and 262 (24%) were females. Among the male respondents, 357 (43%) were bachelors, 334 (40.2%) were monogamous, 127 (15.3%) were polygamous, 6 (7%) were divorced, 4 (0.5%) were cohabiting, 2 (0.2%) were separated and 1 (0.1%) was a widower. Among the females, 81 (30.9%) were monogamous, 80 (30.5%) were singles, 37 (14.1%) were from polygamous marriages, 27 (10.3%) were cohabiting, 17 (6.5%) were separated, 16 (6.1%) were divorced and 4 (1.5%) were widows.

**Table1:** Socio-demographics of survey respondents

Target Group	Number of Responses	Percentage Responses (%)
Household	393	46.8
Island Population	307	73.1
Traders	358	41.33
Road Transporters	346	41.68
CSW	142	17.1
Men in Uniform	172	20.84
Prisoners	69	12.54
<b>Target Group classified by Gender</b>		
Household		
Male	261	21.2
Female	132	23.7
Island Population		
Male	258	20.9
Female	49	88
Traders		
Male	242	20.9
Female	116	22.0
Road Transporters		
Male	271	22.0
Female	75	13.5
CSW		
Male	0	0
Female	142	25.5
Men in Uniform		
Male	139	11.3
Female	34	6.1
Prisoners		
Male	61	4.9
Female	8	1.4
<b>Age classification by Gender</b>		
15-19		
Male	92	7.4
Female	70	12.6

20-24	Male	255	20.7
	Female	130	23.4
25-29	Male	255	20.7
	Female	131	23.6
30-34	Male	220	17.8
	Female	104	18.7
35-39	Male	152	12.3
	Female	44	7.9
40-44	Male	123	9.9
	Female	38	6.8
45-49	Male	137	11.1
	Female	39	7.0
<b>Classification by Nationality</b>			
	Cameroun	13	1
	CAR	12	1
	Chad	118	6
	Niger	18	1
	Nigeria	1,629	91
<b>Classification by Marital Status and Gender</b>			
Bachelor	Male	357	43
	Female	80	30.5
Married Monogamy	Male	334	40.2
	Female	81	30.9
Married Polygamy	Male	127	15.3
	Female	37	14.1
Cohabiting	Male	4	0.5
	Female	27	10.3
Widow/Widower	Male	1	0.1
	Female	4	1.5
Divorced	Male	6	7.0
	Female	16	6.1
Separated	Male	2	0.2
	Female	17	6.5
<b>Classification by Marital and Residential Status</b>			
Bachelor/Single	Urban		
	Rural	63	47.7
Married Monogamy		274	39.9
	Urban		
	Rural	49	36.4
Married Polygamy		367	38.2

	Urban		
	Rural	15	11.4
Cohabiting		149	15.5
	Urban		
	Rural	3	2.3
		28	2.9
Widow/widower			
	Urban		
	Rural	0	0
Divorced		5	0.5
	Urban		
	Rural	3	2.3
Separated		19	2.0
	Urban		
	Rural	0	0
		19	2.0
<b>Classification by Educational Status and Gender</b>			
No form of Education			
	Male		
	Female		
		29	3.6
Primary Education		4	1.6
	Male		
	Female		
Junior Secondary Education		386	48
	Male	150	60.2
	Female		
Senior Secondary Education		168	20.9
	Male	52	20.9
	Female		
Higher Education		153	19.0
	Male	26	10.4
	Female		
Informal Education		35	4.4
	Male	15	6.0
	Female		
<b>Classification by Educational Status and type of residential</b>			
		33	4.1
		15	6.0
No form of Education			
	Urban		
	Rural		
Primary Education		4	3.2
	Urban	29	3.1
	Rural		
Junior Secondary Education		41	32.5
	Urban	495	53.4
	Rural		
Senior Secondary Education		26	20.6
	Urban	194	20.9
	Rural		
Higher Education		35	27.8
	Urban	144	15.5
	Rural		
Informal Education		7	5.6
	Urban	30	3.2
	Rural		
		13	10.3
		35	3.8

Respondents were also disaggregated by marital status in urban and rural areas covered in this study. In urban areas, the bachelors/singles represented the highest proportion of respondents with 63 (47.7%), followed by monogamous respondents with 49 (36.4%). Polygamous respondents were 15 (11.4%), those cohabiting and divorced were 3 (2.3%), while widows/widowers and separated were not represented (0). In rural areas, bachelors/singles were the dominant group with 374 (39.9%), while monogamous and polygamous respondents came next with 367 (38.2%) and 149 (15.5%) respectively. Other types of relationships including cohabiting had 28 (2.9%), divorcees and separated respondents had each 19 (2.0%), while only 5 (0.5%) respondents in rural areas identified as widows/widowers.

The distribution of survey respondents disaggregated by level of education and gender reveals that among males, 386 (48%) had received at primary education level at the time of the survey, followed by 168 (20.9%) who had been exposed to junior secondary education, 153 (19%) respondents reported they had had senior secondary education, while 35 (4.4%) had received higher education. Others, including those who reported exposure to informal education or no form of education at all, stood at 33 (4.1%) and 35 (4.4%) respectively. The distribution of survey respondents disaggregated by education level in urban and rural areas indicated that in urban areas, respondents who had had primary education exposure were 41 (32.5%). This was followed by 35 (27.8%) respondents who had received senior secondary education, then 26 (20.6%) who had junior secondary education, 13 (10.3%) reported other (informal education) forms of education and 7 (5.6%) respondents were found to have had higher education, while 4 had no form of education at all. In rural areas, 495 (53.4%) of respondents had primary education, 194 (20.9%) had junior secondary education, 144 (15.5%) reported they had received senior secondary education, 35 (3.8%) had informal education, 30 (3.2%) reported exposure to higher education, while 29 (3.1%) said they had no form of education at all.

#### HIV/AIDS knowledge and awareness

Knowing that a person living with the HIV virus and appear healthy without outward sign of illness is an important knowledge that is required for an individual's preventive behaviour. Respondents were therefore asked if a healthy looking person could be HIV positive: The survey revealed that overall; knowledge of asymptomatic transmission was fairly high. Table 2 provides comparison of HIV/AIDS knowledge scores by group. About 78.7% of prisoners had heard about HIV/AIDS, 76.8% of commercial sex workers reported that they had heard about HIV/AIDS, 75.2% transporters had heard about HIV/AIDS, 64.5% of uniform service men/women had heard about HIV/AIDS, 58.7% of island population said they had heard about HIV/AIDS, while the percentage among traders and Household stood at 56.4% and 45.5% each. Respondents were disaggregated by who had heard about AIDS disaggregated by gender. This figure reveals that the proportion of respondents who reported to have heard about AIDS at the time of the survey was significantly ( $P < 0.001$ ) higher among males (63.9%) than females (49.8%). The study also determined the proportions of respondents who had heard about AIDS disaggregated into urban and rural areas. The result reveals that the proportion of respondents who reported to have heard about AIDS at the time of the survey was significantly ( $P < 0.001$ ) higher in urban areas (60.4%) than in rural areas (59.3%).

**Table 2:** HIV/AIDS knowledge and awareness

Variables	N	%
<b>Knowledge of awareness of HIV/AIDS</b>		
Household	179	45.5
Trader	202	56.4
Transporter	260	75.2
Uniform service men	112	64.5
Island Population	180	58.7
CSW	109	76.8
Prisoners	54	78.7
<b>Knowledge of Awareness by gender</b>		
Male	788	63.9
Female	277	49.8
<b>Awareness in Urban and Rural settings</b>		
Urban	212	60.4
Rural	853	59.3
<b>Modes of Transmission of HIV/AIDS</b>		
Infected blood	494	40
Unprotected sex	555	45
Mother to child	74	6
Sharp or sullyng objects	171	9.5
Don't know	99	8
<b>Awareness of HIV prevention</b>		
Abstinence	420	34
Use of condoms	395	32
Faithfulness	160	13
Others	99	8
Don't know	160	13

Responding to how they thought a person could get the virus that causes AIDS. The most reported mode of transmission of HIV among respondents was unprotected intercourse (45%), followed by contact with infected blood (40%), mother to child was reported by 6% of respondents, use of contaminated sharp objects stood at 1%, while 8% of the respondents did not know any way by which HIV/AIDS could be contracted. The study result also indicated the distribution pattern of HIV/AIDS prevention knowledge among respondents. Abstinence was reported as the major prevention tool (34%) among respondents, followed by condom use (32%), 13% of respondents reported they knew no prevention method, 13% of respondents employed the faithfulness in couple strategy, while 8% reported other methods.

#### Knowledge of STI

Table 3 illustrates the proportion of respondents who have ever contracted an STI and often share sharps disaggregated by target groups. This table shows that 15.1% of prisoners ha an STI followed by 13.9% of uniform service men, 13.6% of transporters, 6% of household populations, 5.6% of commercial sex workers, 5.3% among island populations and 4.1% of traders. Concerning the frequency of sharing of sharps, this table indicates that the proportion of respondents who reported sharing sharps often was highest among commercial sex workers (16.4%), followed by 10.8% among household, 10.6% among uniform service men, 9.7% among transporters, 9.3% among traders, 6.7% among prisoners, 5.5% island population.

**Table 3.** Proportion of respondents who have ever contracted an STI. (n=146)

Target Group	Ever had an STI	
	N	%
Household	24	6.0
Trader	15	4.1
Transporter	47	13.6
Uniform service men	24	13.9
Island population	16	5.3
CSW	8	5.6
Prisoners	10	15.1
Total	146	8.2

**Knowledge on access to HIV testing, and other care and support services**

Table 4 shows group's correct responses to the knowledge on access to HIV testing services, the most reported medium of information about HIV/AIDS, as well as treatment services, disaggregated by target groups. In terms of access to HIV testing services, 46.9% of transporters said they knew where to get tested for HIV, followed by 43.9% uniform service men, 36.7% among prisoners, 34.7% among traders, 33.3% among commercial sex workers and 33.5% for household. Overall, only 37.8% of respondents knew where to get tested for HIV in the study area. As the most common source of information about HIV/AIDS, radio was reported by 36.5% of commercial sex workers, 35.7% among Island populations, 34.5% for transporters, 33.3% for uniform service men, 33.3% among traders, 26.7% among household and 21.6% among prisoners. Again 61.8% of transport workers' population knew where to get access to treatment, 50.9% for uniform service men, 52.6% among prisoners, 50.2% among commercial sex workers, 41.6% for traders and 37% among both island populations and 36% among household groups.

**Table 4.** Knowledge assessment on access to testing, information and treatment disaggregated by target groups.

Target Group	Access to HIV Testing		Access to the most common source of information about AIDS (radio)		Access to treatment	
	N	%	N	%	N	%
Household	132	33.5	105	26.7	141	36.0
Trader	123	34.7	119	33.3	149	41.6
Transporter	162	46.9	119	34.5	214	61.8
uniform service men	76	43.9	58	33.3	88	50.9
Island Population	109	35.6	109	35.7	114	37.0
Commercial Sex Worker	47	33.3	52	36.5	71	50.2
Prisoners	25	36.7	15	21.6	36	52.6
<b>Total</b>	<b>676</b>	<b>37.8</b>	<b>579</b>	<b>32.3</b>	<b>815</b>	<b>45.5</b>

**Knowledge of HIV Status**

Table 5 shows Proportion of respondents who already knew their HIV status disaggregated by target group, sex and type of residence. The result illustrates that the proportion of respondents who already knew their HIV status was significantly ( $P < 0.001$ ) higher in males (80.7%) than in females (19.3%). Considering the respondents who already knew their HIV status disaggregated by urban and rural areas, the proportion of respondents who already knew their HIV status was significantly higher in rural areas (87.4%) than in urban areas (12.6%). In terms of knowledge of HIV status, 18.6% of uniform service men reported that they knew their HIV status followed by 17.3% among prisoners, 16.5% among island population, 12.5% among household, 11.4% among commercial sex workers, 8.8% among transporters and finally 6.5% among traders.

**Table 5.** Proportion of Respondents on Knowledge of HIV Status

	Number of Responses	Percentage Responses (%)
Knowledge of HIV status by target group		
Household	49	12.5
Traders	23	6.5
Transporters	30	8.8
Uniform men	32	18.6
Island population	51	16.5
CSW	16	11.4
Prisoners	12	17.3
Knowledge of HIV status by gender		
Male	174	80.7
Female	41	19.3
By type of residence		
Urban	188	87.4
Rural	27	12.6

**Knowledge assessment on access to HIV counselling, male and female condoms**

Access to condoms remains an important indicator of condom use among people engaged in high risk sexual activities. Table 6 gives the knowledge assessment on access to HIV counselling, male and female condoms stratified by target groups. In terms of access to HIV counselling, 34.5% of prisoners reported knowing where to access HIV counselling, followed by 30.6% among transporters, 25.4% among uniform service men, 25.1% among commercial sex workers, 11.1% among traders, 11.5% for household and 7.8% of island population also stated they knew where to get HIV counselling. About access to male condoms, the highest proportion of respondents who reported knowledge of access to male condoms was found among prisoners (78.1%). Next to this group were commercial sex workers with 74.2%, then 73.2% among transporters, 66.1% among island populations, 62.2% among uniform service men, 56.1% among traders and 45.5% for household populations. For the female condoms, commercial sex workers recorded the highest proportion of respondents, who knew where to get access to it 37.7%, followed by prisoners 27.1%, 24.7% among uniform service men, 16.4%

among transporters, 12.1% among traders, 11.5% among household groups and 8.7% in the island population.

**Table 6.** Knowledge assessment of access to HIV counselling, male and female condoms disaggregated by target groups

Target Group	Access to HIV Counselling		Access to male condoms		Access to female condoms	
	N	%	N	%	N	%
Household	45	11.5	179	45.5	206	11.5
Trader	40	11.1	201	56.1	43	12.1
Transporter	106	30.6	253	73.2	57	16.4
uniform service men	44	25.4	108	62.2	43	24.7
Island Population	24	7.8	202	66.1	27	8.7
Commercial Sex Worker	36	25.1	105	74.2	54	37.7
Prisoners	24	34.5	54	78.1	19	27.1
<b>Total</b>	<b>317</b>	<b>17.8</b>	<b>1102</b>	<b>61.7</b>	<b>449</b>	<b>25.2</b>

The respondents were stratified by gender and into urban and rural areas and compared on their knowledge of use of male and female condoms (table 7). The analysis showed that male condom use was significantly ( $P < 0.001$ ) higher in rural areas than in urban areas. However, there was no significant difference in female condom use, though the proportion of female condom use was marginally higher in rural areas than in urban areas. On disaggregation by target groups, the knowledge on use of male condoms was higher ( $P < 0.001$ ) among the household respondents than the use of female condom. The knowledge of use of male condom was higher among the target groups than the female condoms, while the uniform men has the highest knowledge on use of both the male and female condoms.

**Table 7.** Proportion of Respondents on Knowledge on use of male and female condoms

Use of Male and Female condom by gender	Number of Responses	
	Male condoms	Female condom
By type of residence		
Urban	45 (18.2%)	37 (35.6%)
Rural	112 (11.3%)	25 (5.5%)
By target groups		
Household	49 (12.5%)	15 (0.9%)
Trader	23 (6.5%)	8 (0.4%)
Transporter	30 (8.8%)	23 (1.8%)
Uniform men	32 (18.6%)	26 (7.2%)
Island population	51 (16.5%)	19 (1.2%)
CSW	16 (11.4%)	11 (0.4%)
Prisoners	12 (17.3%)	5 (0.01%)

#### Knowledge on common misconception about HIV/AIDS

Table 8 describes the knowledge assessment on common misconception about HIV/AIDS. This table reveals that 24.6% of prisoners believed mosquitoes bite could transmit HIV/AIDS, this was followed by 18.5% among transporters, 10.3% among uniform service men, 9.7% among commercial sex workers, 6.5%

among household, 4.9 % among traders and 4.1% of island populations also believed same. In terms of sharing food, 23.8% of prisoners believed that one can contract HIV by sharing food with someone who is infected. This was followed by 20.0% among transporters, 8.5% among commercial sex workers, 8.1% among uniform service men, 7.5% among household, 7.1% among traders and 3.5% among island populations. Furthermore, 14.1% of prisoners also believed that HIV can be transmitted through witchcraft, followed by 8.1% among commercial sex workers, 7.3% among transporters, 5.6% among uniform service men, 3.5% among household populations, 2.8% among traders and finally 1.8% among island populations.

**Table 8.** Knowledge assessment of common misconception about HIV/AIDS disaggregated by target groups.

Target Group	HIV can be transmitted by mosquitoes bite		Can get HIV by sharing food with someone who is infected		HIV can be contracted through witchcraft	
	N	%	N	%	N	%
Household	26	6.5	29	7.5	14	3.5
Trader	18	4.9	25	7.1	10	2.8
Transporter	64	18.5	69	20.0	25	7.3
uniform service men	18	10.3	14	8.1	10	5.6
Island Population	13	4.1	11	3.5	6	1.8
Commercial Sex Worker	14	9.7	12	8.5	12	8.1
Prisoners	17	24.6	16	23.8	10	14.1
<b>Total</b>	<b>170</b>	<b>9.4</b>	<b>176</b>	<b>9.8</b>	<b>87</b>	<b>4.9</b>

#### DISCUSSION

Knowledge, attitudes and practices (KAP) studies are very useful tools prior to any intervention to assess the extent to which individuals or communities are ready to adopt risk-free behaviours [Nubed and Akoachere, 2016]. Many studies have been carried out in different parts of the world among diversified groups. There were also studies on knowledge of awareness about HIV among high risk populations such as uniform men, long journey travellers, CSW, prisoners, and even in general population. This study is the first study carried out on specific groups and general population of Lake Chad Area.

The analysis of responses from the participants in this study, when disaggregated into urban and rural areas showed that the knowledge of awareness of HIV is higher among the urban dwellers than the people living in the rural communities. This is an indication that the people of the urban residence have more access to information and education facilities considering the ease of assessing these rural communities as a result of the land locked topography of the region. This is in contrast with the report of Carolina *et al.*, (2015) where only 61.5% of the urban communities has knowledge of HIV/AIDS and 93.9% of the rural communities did.

STIs pose a major public health challenge as they affect hundreds of millions of people globally with far reaching health, social and economic consequences. Although, a single sexual encounter may have low probability of transmitting HIV, factors such as frequency of intercourse and multiple sex partners can increase the risk of infection. Among those factors are the present of an STI and unprotected sex. The current study tried to find out if the respondents ever had an STI. Various target groups showed varied incidence of STIs with uniformed men reporting the highest



incidence of STIs (13.9%). In general, 8% of the respondents have ever had STI which is lower than 16.9% reported by Addis *et al.*, (2013) and far less than 56.1% by Duncan *et al.*, (2014).

The respondents demonstrated some level of knowledge on the correct modes of transmission of HIV/AIDS. The analysis of the result indicated weak knowledge about modes of transmission which only 40% of the respondents are aware that HIV/AIDS can be transmitted through infected blood. A very small proportion of our study respondents are aware of mother to child transmission of HIV/AIDS. The result also showed a weak knowledge of transmission of infection through infected sharp and sullyng objects. About 8% of the population are not aware of any modes of transmission of HIV/AIDS. This however calls for a great concern and a concerted effort from the stakeholders to mitigate the spread.

On access to HIV counselling, male and female condoms, 17.8% responded to having knowledge of how to access HIV counselling, 61.7% to male condoms and 25.2% to female condoms. This is however, lower than the result of by Akoachere *et al.*, (2016).

With respect to attitude towards HIV/AIDS patients, only 14.3% and 44.3% of the rural populations have ever seen HIV/AIDS patient. This is however comparable to 33.8% among the University students in Xinjiang (Namaitijiang *et al.*, (2010).

In relation to methods of preventive measures, the most popular means of prevention from the result of the survey was by abstinence which is closely followed by condom use. There were a good number of respondents who claimed ignorant of methods of prevention of infection. This is much lower than the findings of Thanavanh *et al.*, (2013) where the knowledge of preventive measures ranged from 52.3% to 91.3% among high school children in Lao people's democratic republic. This also calls for awareness intervention in this region.

The knowledge to access to HIV testing was also found to be low in the study area. The respondents were disaggregated by the target groups and 46.9% of the transporters, though 61.8% of the transporters had knowledge to access to treatment. Among the uniform men, 43.9% has knowledge of access to HIV testing, 50.9% of them has knowledge of access to treatment.

The most common means of access to information from the finding of this study is via radio. This may be due to difficulty in having access to the people of the island communities.

As much as it is useful to know about the effective ways to avoid HIV/AIDS, it is also useful to know the incorrect beliefs about HIV/AIDS. The existence of misconception about HIV transmission could affect how it is perceived and as such undermine prevention efforts aimed at curbing the spread of the disease. Misconception can also lead to increased level of stigma and discrimination against people with HIV/AIDS. These misconceptions include transmission by mosquitoes, sharing of foods, toilets and kissing. The youths in Sub-Saharan Africa and indeed in other parts of the world still harbours misconception about HIV/AIDS (Cohall *et al.*, 2001). The result of our survey revealed varied misconception on the knowledge of transmission of HIV/AIDS. 9.4% of the population believed that mosquitoes can transmit the infection, 8% believed that it can be transmitted by sharing foods while 4.9% believe that witchcraft can transmit the infection. In a related study by Thanavanh *et al.*, 2013, 50% of the respondents believed that HIV can be transmitted by sharing food. Also in another study by Azeez *et al.*, 2016, it was reported that 25% of high School students in Eastern Cape, South Africa

agreed that HIV can be transmitted through mosquito bite. In a related study in Northern Uganda, 18.2% of the male respondents and 15.8% of the female respondents believed that HIV can be transmitted by sharing food. 25.5% males and 5.3% females believed that it can be transmitted through witchcraft, 25.5% male and 35.5% females believed that HIV can be transmitted through mosquito bite. Though the level of misconception is low in this study compared to the studies carried out in other parts of the world it is worth to note that misconception has its attendant consequences in infection control and there is need for total eradication of misinformation.

This study has shown that the knowledge of awareness of HIV/AIDS is high among the people of urban settlements but low among the people of rural communities, however there is generally low risk perception which may prevent sexual behavioural change. Therefore, interventions can influence risk perception is very important to the people of Lake Chad Basin. Studies on sexual behavioural pattern leading to suggestions on behavioural change towards sex and risk for low risk perception is recommended.

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