

Knowledge and Screening on Sexually Transmitted Diseases among Adults in Maiduguri Metropolis of Borno State Northern-Eastern, Nigeria

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ABSTRACT

This study assessed the knowledge of adult on sexually transmitted diseases in Maiduguri metropolis of Borno State North-Eastern, Nigeria. In order to achieve this objective, one research objectives and one research question was formulated and three null hypotheses were tested. The theoretical frame work used for this study was theory of Health Belief Model developed by Stretcher and Rosentock. The Health Belief Model (HBM) is a theoretical framework used to understand health behaviours and possible reason for non-compliance with recommended health action. Related literature was reviewed under the following sub-headings: Concept of sexually transmitted infections, epidemiology/pathogenesis of sexually transmitted infections and Types of sexually transmitted infections. Survey research design was used for this study. The populations for this study was made up of ten thousand and-ten (10,010), INEC, 2019, and five hundred (500) respondents were sampled for the study using simple random sampling. Data were collected using questionnaire on knowledge and screening for sexually transmitted diseases among adult in Maiduguri metropolis (KSSTD). Five hundred respondents were sampled for this study and analyzed using descriptive statistics of frequency count and percentages to describe the demographic characteristics of the respondents and to answer research questions. While, inferential statistics of Chi-square test was used to test the research hypotheses at 0.05 alpha level of significant. The result of the finding revealed that adult in Maiduguri metropolis had good knowledge of sexually transmitted diseases. Also, the result of the findings revealed statistically that knowledge of sexually transmitted diseases in Maiduguri metropolis among adult of different educational background did not differ significantly ($p>0.05$). While, knowledge of sexually transmitted diseases between male and female in Maiduguri metropolis differed significantly ($p<0.05$), and knowledge of sexually transmitted diseases in Maiduguri metropolis among adult of different ethnic background did not differ significantly ($p>0.05$). It was concluded that adult in Maiduguri metropolis have the knowledge of sexually transmitted diseases. For example some respondents believed that sexually transmitted infections is a blood borne diseases, furthermore, some respondents believed that viruses and bacteria are the causative agent of most sexually transmitted infection, while some respondents believed that sexually transmitted infections can be transmitted during sexual intercourse, from mother to her unborn child through umbilical cord or from mother to her child during child birth. It was also found some that respondents strongly agreed that HBV, HPV and HIV were commonly caused by viral infection, while syphilis, gonorrhoea, trachoma and chlamydia are caused by bacteria. And majority of the respondents in Maiduguri metropolis believed that going for screening regularly and before marriage can prevent the spread of sexually transmitted infections like hepatitis B virus, human papilloma virus and HIV/AIDS. It was recommended that Government should embark on

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sensitizations workshops and public enlightenment campaigns to educate the general population of young adult on the sexually transmitted diseases and the importance of regular screening for sexually transmitted diseases. A well-organized health education campaigns and media (TV, radio and internet) are needed to improve public perceptions and understanding about sexually transmitted infections. Massive educational campaign that involves all stakeholders of society, including health care workers and community members, should be undertaking to make society more tolerant when it comes to issues of sexually transmitted diseases.

Keywords: Sexually transmitted diseases; Human Immunodeficiency Virus (HIV); Hepatitis B Virus (HBV); World Health Organisation (WHO)

INTRODUCTION

Background to the study

STDs have become worldwide phenomena and poses a substantial threat to public health in both developed and the developing nations of the world in which Nigeria is among [1]. WHO [2], estimated that 20% of persons living with HIV/AIDS are in their 20s and one out of twenty adolescents contract an STI each year? Each year, there are an estimated 376 million new infections with 1 of 4 sexually transmitted infections: chlamydia, gonorrhoea, syphilis and trichomoniasis [3]. Nearly more than seven of these sexually transmitted diseases are epidemic proportion in Nigeria. These are HIV, HBV, HPV, genital herpes, syphilis, gonorrhoea, and trichomoniasis. The greatest incidence of STDs in Nigeria is more prevalent in the populations of young adult ages between (15 to 35); this age group is least likely to seek counselling and guidance on preventive strategies, treatment and control, sexuality health education and reproductive health. Increased sexual urged by young adult and multiple sexual partners make these important sexually transmitted diseases particularly more difficult to prevent and control.

Knowledge of STI and their complications is important for adequate prevention and treatment, as people who do not know the symptoms may fail to recognize their need and so may not seek help. Knowledge of other STIs apart from HIV/AIDS is low in the developing world [4,5]. In any effective preventive protocol, social acceptability is important. It has been observed that campaigns and health awareness for uncommon types of STDs have always been neglected by policy makers and more importantly, literatures on the awareness of STIs in Maiduguri Borno State, North-eastern Nigeria, are quite scanty if any. Hence, this study attempt to these gaps, in order to disclose any difficulties that policymakers may encounter in conducting compulsory or voluntary prevention strategies on sexually transmitted infections. It is against this background that this study was conducted to determine the level of knowledge of adolescents on sexually transmitted infections, and their willingness to attend screening in Maiduguri Metropolis of Borno State, North-eastern Nigeria.

Statement of the problem

Despite considerable efforts to identify simple interventions that can reduce risky sexual behaviour, but behaviour change

remains a complex challenge. STIs have a profound impact on sexual and reproductive health worldwide. More than 1 million STIs are acquired every day. In 2016, WHO estimated 376 million new infections with 1 of 4 STIs: chlamydia (127 million), gonorrhoea (87 million), syphilis (6.3 million) and trichomoniasis (156 million). More than 500 million people are living with genital HSV (herpes) infection and an estimated 300 million women have an HPV infection, the primary cause of cervical cancer. An estimated 240 million people are living with chronic hepatitis B globally. Both HPV and hepatitis B infections are preventable with vaccination.

People seeking screening and treatment for STIs face numerous problems. These include limited resources, stigmatization, poor quality of services, and little or no follow-up of sexual partners. In many countries, STI services are provided separately and not available in primary health care, family planning and other routine health services.

In many settings, services are often unable to provide screening for asymptomatic infections, lacking trained personnel, laboratory capacity and adequate supplies of appropriate medicines. The reason for lack of acceptability for premarital screening and counselling services may be due to lack of knowledge and psychological and social barriers; and people fear learning that they are infected with a disease that is fatal and stigmatizing. However, to avoid being part of this statistic, the best solution is to get premarital screening and counselling in it due time. Because it forms the gateway to it prevention, care, treatment, support interventions, and a vital component for the expansion of access to comprehensive care for people living with viral hepatitis and sickle cell anaemia.

Objectives of the study

The objectives of this study were to:

- Determine the knowledge of sexually transmitted infections among adult in Maiduguri metropolis

Research questions

The following research question was formulated to guide the conduct of this study:

- Do adults in Maiduguri metropolis knowledge of sexually transmitted infections?

Hypotheses

Ho1: Adults in Maiduguri metropolis have no significant knowledge of sexually transmitted infections.

Significance of the study

The rationale for this study is to have the proper understanding of knowledge and to ascertain if adult in Maiduguri metropolis have the knowledge of sexually transmitted infection and whether they are willing to accept screening for sexually transmitted infections, free of coercion. The result of this study would be of significant important to the government, non-governmental organizations, healthcare workers, religious institutions, researchers and the student of public health.

Scope of the study

This study was delimited to (adults' males and females) in Maiduguri Metropolis. The study was covered the variables like (knowledge of adult on sexually transmitted infection and how they relate to it screening and counselling) the study was also covered (12) twelve settlements of the (6) six Wards, namely: Bulabulin, Bolori, Fagoli, Mairi, Maimusari and Fezzan Ward of Maiduguri metropolis of Borno State, North-eastern Nigeria.

Operational definition of terms

The following terms was operationally defined:

Knowledge: Is general awareness or possession of information, fact, ideas, truths or principles. It helps an individual to get a clear information or fact about something or particular situation.

Screening: A medical assessment or test done by a doctor or laboratory scientist, at a laboratory or hospital to rule out any abnormalities.

Sexually transmitted infections: A diseases or infections that can be transmitted during sexual intercourse.

REVIEW OF THE RELATED LITERATURE

Concept of Sexually Transmitted Diseases (STDs)

Sexually Transmitted Infections (STIs) are those diseases that are contracted mainly through sexual intercourse. They include curable ones like gonorrhoea, syphilis, and chlamydia infection as well as incurable but modifiable ones like HIV, herpes simplex, Human Papilloma Virus (HPV), and hepatitis B infections [2] STIs are spread predominantly by sexual contact, including vaginal, anal and oral sex. Some STIs can also be spread through non-sexual means such as via blood or blood products. Many STIs including syphilis, hepatitis B, HIV, chlamydia, gonorrhoea, herpes, and HPV can also be transmitted from mother to child during pregnancy and childbirth. More than 1 million Sexually Transmitted Infections (STIs) are acquired every day worldwide [3].

Epidemiology of Sexually Transmitted Infections (STIs): Sexually Transmitted Infections (STIs) are a growing health problem worldwide. STIs have a profound impact on sexual and

reproductive health worldwide. More than 1 million STIs are acquired every day. In 2016, WHO estimated 376 million new infections with 1 of 4 STIs: chlamydia (127 million), gonorrhoea (87 million), syphilis (6.3 million) and trichomoniasis (156 million). More than 500 million people are living with genital HSV (herpes) infection and an estimated 300 million women have an HPV infection, the primary cause of cervical cancer. An estimated 240 million people are living with chronic hepatitis B globally [6]. However, both HPV and HBV infections are preventable with vaccination yet it still affecting a significant portion of the young adult population and may be transmitted from mother to her developing fetus (unborn) through umbilical cord, during child birth (vertical transmission) or to a newborn child through breast feeding in case of Human Immunodeficiency Virus (HIV) and Hepatitis B (HBV) [7].

Pathogenicity: According to World Health Organization the common etiological agents of most STDs are bacteria, parasite and viruses. More than 50% different pathogenic micro-organisms are known to be transmitted through sexual contact. Eight of these pathogens are linked to the greatest incidence of sexually transmitted disease. Of these eight infections, four are caused by bacteria and are currently curable: syphilis, gonorrhoea, chlamydia and trichomoniasis. The other four are viral infections which are completely incurable: hepatitis B, Herpes Simplex Virus (HSV or herpes) HIV, and Human Papillomavirus (HPV). Complication or disorder due to the incurable viral infections can be reduced or modified through treatment and it can be prevented with vaccination (e.g. HBV and HPV) vaccines.

Prevention and control of Sexually Transmitted Diseases (STDs): Many young adults' peoples in Nigeria have problems getting the required information, services, and supplies they need to avoid STIs. They may also experience difficulties in accessing STI prevention services because they do not know where to find them, do not have transportation to get there, or cannot pay for the services. Even if they can obtain STI prevention services, they may not feel comfortable in places that are not youth friendly [8]. Sexually transmitted diseases are significant societal problems that can be controlled only when individual assume responsibility for their behaviours. Immunization to prevent sexually transmitted diseases including HIV is no longer feasible. The use of condoms and other safe sex practices are the only control method available now. These diseases can be controlled only by public education, public responsibility and a greater awareness of the problem.

However, WHO develops global norms and standards for STI treatment and prevention, strengthens systems for surveillance and monitoring and leads the setting of the global research agenda on STIs. These include: comprehensive sexuality education, sexually transmitted infections pre and post-test counselling, safer sex and risk-reduction counselling including condom promotion. These interventions are targeted to key populations, such as sex workers, men who have sex with men and people who inject drugs. Moreover, these interventions protocol can improve people's ability to recognize the symptoms of sexually transmitted infections and increase their willingness to adhere or take-up-take the screening and counselling and to

encourage their intimate partner as well. Unfortunately, lack of confidentiality, knowledge and public awareness, health workers' attitude, and people fear learning that they are or about to infect with a disease that is fatal and stigmatizing have adversely remained a major obstacle and challenge to greater and more effective use of these interventions.

Types of Sexually Transmitted Diseases (STDs)

- Chlamydia
- Genital Herpes (HSV)
- Hepatitis B Virus (HBV)
- Trichomoniasis
- Human Immunodeficiency Virus (HIV)
- Human Papilloma Virus (HPV)
- Syphilis
- Gonorrhoea
- Chancroid

Chlamydia: Chlamydia results from an infection with *Chlamydia trachomatis*. It is a common infection that can spread through anal, vaginal, and oral sex. A pregnant woman can also transmit it to the baby during delivery.

Chlamydia does not usually produce symptoms, but it can result in infertility and other complications if a person does not receive treatment for it. It is easy to cure with early treatment. Chlamydia can also affect the rectum, if the infection occurs as a result of anal sex or if the infection spreads from another area. This can lead to: rectal pain, bleeding and discharge. In those who do develop symptoms, these will usually appear 7-21 days after exposure.

Genital Herpes (HSV): Herpes Simplex Virus (HSV) is a common virus that affects the skin, cervix, genitals, and some other parts of the body. HSV-1 usually affects the mouth. People can contract it through saliva or if there is a herpes-related sore around their partner's mouth. It can pass to the genital area during oral sex.

HSV-2 can affect the genital area, the anal area, and the mouth. It transmits through vaginal, oral, and anal sex. A person cannot contract herpes from utensils, toilet seats, swimming pools, soaps, or bedding. However, if a person touches a body part where herpes is present and then touches another part of their body, they can spread it to that area.

The main symptom is a blister around the mouth, anus, or genital area. These blisters can break, causing a painful sore that takes a week or longer to disappear. However, many people will never develop symptoms. A person might never know that they have the herpes virus, but they can still transmit it to others. There is currently no cure, but medication can help relieve any symptoms. Daily antiviral medications can help prevent the spread of herpes. Wearing a condom will not completely prevent the transmission of herpes.

Hepatitis B Virus (HBV): Hepatitis B can cause a long-term infection and result in liver damage. Once a person has the virus, it can remain in their semen, blood, and other bodily fluids.

Transmission is possible through: body contact with sweat, using of non-sterile equipment for injections puncturing the skin with a sharp object where the virus is present. A woman may pass this infection to the baby during pregnancy or delivery. As long as the nipples are not cracked, the risk of transmitting the virus through breast milk is negligible.

Trichomoniasis: Trichomoniasis, or trich, can affect both males and females, but females are more likely to experience symptoms. *Trichomonas vaginalis* is the cause of this infection. In females, it is most likely to affect the vagina. In males, the infection can develop in the urethra.

Transmission can occur through penetrative sex and vulva-to-vulva contact. Many people do not experience any symptoms. If symptoms do occur, they may include: unusual discharge, pain during urination and ejaculation or discomfort during sex.

Human Immunodeficiency Virus (HIV): HIV is a virus that attacks the immune system. Sexual contact is one way of transmitting HIV, but it can transmit in other ways, too. HIV leaves a person more prone to certain other infections. People with HIV also have a higher risk of having other STIs.

Without treatment, this susceptibility to infection worsens and may lead to life threatening complications. Once a person has HIV, the virus will be present in their bodily fluids, including semen, blood, breast milk, and vaginal and rectal fluids. If these fluids enter another person's body, that person can also develop HIV. This can happen through sexual contact, sharing needles, through broken skin, giving birth, breastfeeding, and so on.

Human Papillomavirus (HPV): Human papilloma virus refers to a group of viruses that affect the skin and mucous membranes, such as the throat, cervix, anus, and mouth. There are various types, and some pose a higher risk than others.

HPV is common. It affects around 79 million people in the United States. Nearly everyone who is sexually active will have HPV at some point in their lives, unless they have a vaccination to prevent it. Many people experience no symptoms, but they can still pass on the virus to others. Some types of HPV can lead to genital warts. These types tend to be low risk. Having HPV can also increase the risk of cervical and throat cancer. HPV can spread through: vaginal and anal sex, oral sex, genital-to-genital contact and from a pregnant woman to the fetus, though this is very rare times.

Syphilis: Syphilis stems from an infection with the bacterium *Treponema pallidum*. It is a potentially serious infection, and early treatment is necessary to prevent permanent damage and long-term complications. There are usually four stages.

Some of the signs and symptoms of syphilis especially in the first stage, a person may notice a round, firm sore at the site of the infection, usually around the genitals, anus, rectum, or mouth. It tends to last for 3-6 weeks. The sore may not be visible, since it is often painless and may be hidden, for example, in the vagina. A person can pass on the bacterium at any point during the infection. Syphilis can also pass from a woman to the fetus during pregnancy.

Gonorrhoea: Gonorrhoea is a common infection caused by the bacterium *Neisseria gonorrhoea*. It is highly contagious and, without treatment, can lead to life threatening complications. A person can transmit gonorrhoea during oral, vaginal, or anal sex. If they touch an infected area of the body and then touch their eye, gonorrhoea can also lead to pink eye. A pregnant woman can also pass the infection to the baby during delivery. *N. gonorrhoea* thrive in warm, moist parts of the body, such as the vagina, penis, mouth, rectum, and eye.

Major sign and symptoms of gonorrhoea are: pain during urination, discharge, swelling of the genitals, bleeding between periods. If it affects the rectum, it can lead to: anal itching, pain during bowel movements. The infection can lead to pelvic inflammatory disease. Males may experience an inflammation of the epididymis, which is the tube that stores sperm. Both conditions can affect fertility. As soon as a person has gonorrhoea, the bacteria can spread to other people and to other parts of the body through physical contact.

Chancroid: Chancroid is a rare bacterial infection caused by *Homophiles ducreyi*. It causes painful sores on the genitals. The only way to transmit and contract it is through sexual contact. Symptoms include a painful, genital ulcer. Chancroid can also increase the risk of HIV, and it can make HIV harder to treat or control.

Many STIs will not cause symptoms, so a person should not wait until symptoms appear before seeing a doctor. Instead, people should seek medical advice if they think they have had exposure to an STI, or if they have a sexual partner who has or may have an STI. A doctor can test for STIs to confirm whether or not an infection is present. Treatment for bacterial infections is with antibiotics. However, some STIs-such as gonorrhoea-appear to be developing a resistance to antibiotics that doctors commonly prescribe to treat them. It is essential to complete any type of antibiotic treatment, even if the symptoms disappear. Stopping treatment early may allow remaining bacteria to grow again, and symptoms may return. At this stage, the infection can become harder to treat.

METHODOLOGY

Research design

The research design use for this study was descriptive Survey method. According to researchers [9] survey design seeks to determine the present practice or opinions of a specified

population on some phenomena. Researchers explained that descriptive survey is use to gather data at a particular point in time with the intention of describing the existing conditions and identifying standard against which existing condition can be compared [10]. According to Scientists purpose of survey research design is to describe systematically the facts, qualities or characteristics of a given population, event or area of interest concerning the problem under investigation [8]. Therefore, survey design is appropriate for this study as it seek to determine the knowledge of sexually transmitted infections and screening among adult in Maiduguri Metropolis of Borno State North-eastern, Nigeria.

Population and sample

The target population for this study was comprised of both males and females' respondents in the selected six wards of Maiduguri Metropolis. Stratified sampling was used for this study to select both males and females' respondents. Stratified sampling is the sampling techniques where different groups within a population are used as a sample. Multi-stage sampling technique was employed to select the sample at different phases, phase one: simple random sampling technique was employed to select fifteen wards of Maiduguri Metropolis, phase two: Six wards was selected from the fifteen wards of Maiduguri Metropolis using simple random sampling technique. Phase three: Two settlements from each ward was selected, using simple random sampling technique, making twelve settlements from the six selected wards. $2 \times 1 \times 6=12$. Thus, the sample respondents were 500 male and female from selected settlement of the six wards namely: Bolori, Bulabulin, Maimusari, Gwange I, Mairi, Fezzan and Fogoli wards of Maiduguri Metropolis of Borno State, North-eastern, Nigeria.

Convenient sampling technique was employed for this study to select the sample of five hundred males and females' respondents using simple random sampling technique. Convenient sampling technique is a form of non-probability sampling procedure in which the researcher chooses a number of respondents or those elements he can easily reach or those that are readily available at the time of study. Sample size for this study was determined by taking the 5% of the population in each selected two settlement of a ward. According to Altunışık, Coşkun, Bayraktaroğlu Yıldırım sample size between 30 and 500 at 5% confidence level is generally sufficient for many researchers Table 1 [11].

Table 1: Distribution of population and sample size of the respondents in 12 settlements of the six selected wards of Maiduguri Metropolis.

S/N	Wards	Settlements	Populations	Sample-selected per-settlement	Total 5%
1	Bulabulin ward	Goni Abdussalam Street	1010	50	73
		ALH. Garba Satomi Street	460	23	
		ALH. Bulama Modu (I) Street	440	22	
2	Bolori I ward	ALH. Bulama Modu (II) Street	400	20	42

		Layin Gidan Banda	500	25	
3	Maimusari ward	TJ Cinema/Street	1000	50	75
		Gen. Mamman Shuwa Street	500	25	
4	Gwange ward (I)	ALH. Mugeeratom Street	500	25	50
		Shettima Ali Kedaji Street	1000	50	
5	Fagoli ward	ALH. Aja Bukar Street	1000	50	100
		Mairi Central	1100	55	
6	Mairi ward	Mairi Kuwait	2100	105	160
Total	6	12	10,010	500	500

Inclusion criteria:

- Adults from age 18-45 years and above, who was readily present at the time of the study
- Must be from the selected ward and settlement of the Maiduguri Metropolitan Council
- Must have the willingness to participate in the study

Exclusion criteria: Respondents will be excluded from the study when they are not from the study area Maiduguri Metropolis, selected Ward or specific settlement selected and when they are below the age of 18 or when they are willing to withdraw.

Research instrument

The instrument use for this study was self-developed questionnaire on Knowledge and Screening for Sexually Transmitted Infections Questionnaire (KASTIQ). The questionnaire was comprised of two sections (A and B). Section 'A' seek demographic information about the respondents and section 'B' is on knowledge and screening for sexually transmitted infections. The questionnaire contains sixteen item statements with modified 5-point likert type scale of Strongly Agree (SA)=5, Agree (A)=4, Undecided (U)=3, Disagree (D)=2 and Strongly Disagree (D)=1. To ensure the validity of the instrument, copies of the instrument was given to the expert and research specialist in health profession to assess the questionnaire for content and face validity. Split-half method was used for evaluating the internal reliability of the instrument, by administering 20 copies of the questionnaire to 20 adults in lamisla ward which have the same characteristics with the study area. Spearman Brown prophecy formula was used and obtained the reliability index of 0.94.

Procedure for data collection

Introductory/inform consent letter was presented to the communities' heads, youth leader and religious leaders of the twelve selected settlement of Maiduguri metropolis to obtained permission to conduct the research. When permission was given, the researcher then, employed the services of twelve males and females youth within the community who assisted the

researcher in getting contact with his respondents' and also assisted with the administration and retrieving of the questionnaires. For easy understanding and accurate responses general instructions concerning the completion of the questionnaire was presented to the respondents.

However, time series data collection technique was used to reach the respondents at their convenient days or time. Time series data collection technique is a form of survey design in which equivalent samples of the population are taken at different points of time and data collection are usually done by administering questionnaire or interviewing sample members. One week was used for the administration of the questionnaire in each of the selected wards, day one to five was used for familiarization exercise with the youth leader and the other community youths who was assist in identifying the target respondents (adult between the ages of 18-41) and day six to seven was used for the administration and retrieving of the questionnaire therefore, six weeks was used for the administration and retrieving of the questionnaire in the six selected wards and the completed questionnaire was collected on the spot from the respondent present at the moment of administration of the questionnaire while, those who was absent at the time of the retrieving of the questionnaire were later collected by the research assistants (community youths).

Method of data analysis

Data collected for this study was analyzed using descriptive statistics of percentages and frequency counts to describe the demographic information of the respondents and answered research questions. And presented in tabular form for discussion. Inferential statistic of Chi-square (χ^2) test was used to test hypotheses 1-3 at 0.05 alpha levels of significance. Data was analyzed using SPSS software version 21.

DATA ANALYSIS AND RESULT

This study was aimed to determine the explicit knowledge, screening and counselling on sexually transmitted diseases among adult in Maiduguri metropolis of Borno State, Nigeria.

Data collected were analyzed using descriptive statistics of frequency counts and percentages to describe the demographic information of the respondents and to answered the research questions, while chi-square test was used to test the hypotheses at 0.05 level of significance. The results were presented in tables and discussed accordingly.

Table 2 above shows the demographic characteristics of the respondents. Six variables were displayed on the table namely age, educational qualification, gender, marital status, ethnicity and location/settlement of the respondents. Breakdown of the age groups shows that there were 136 (27.2%) of the respondents are 18-23 years of age, 133 (26.6%) of the respondents were age 24-29 years and those between the age bracket of 36-41 years were 117 (23.7%). This means that most of the respondents 136 (27.2%) were between the age of 18 to 23 years.

Table 2: Demographic Information of the Respondents n=500.

S/No	Variables	Responses	Respondents	Percentages (%)
1	Age	18-23	118	23.8
		24-29	132	26.4
		30-35	116	23.2
		36-41	134	26.8
		Islamic education	80	16
2	Education qualification	Primary certificate	133	26.6
		Sec, sch, cert	161	32.2
		Diploma	41	8.2
		Degree	85	17
		Male	220	44
3	Gender	Female	280	56
		Single	351	70.2
4	Marital Status	Married	149	29.8
		Kanuri	121	23
5	Ethnicity	Marghi	115	21
		Shuwa	108	19

6	Wards/ Settlements	Babur/Bura	40	19.6
		Hausa/Fulani	38	6.2
		Maffa	39	9
		Mandara	39	2.2
		Mairi	160	32
		Fagoli	100	20
		Gwange I	50	10
		Maimusari	75	15
		Bolori II	4	8.4
		Bulabulin	73	14.6

With regards to educational background of the respondents the table revealed that 80 (16.0%) of the respondents had attended Islamiyah and acquired Islamic education, 133 (26.6%) of the respondents had primary school certificate, 161 (16.0%) of the respondents had secondary school certificate, 41 (8.2%) of the respondents had diploma and 35 (17.0%) of the respondents had degree. With regards to gender of the respondents, the table revealed that 283 (56.6%) of the respondents were males, while 217 (43.4%) of the respondents were females. Therefore, majority of the respondents (56.6%) were males. The result also revealed that 283 (56.6%) of the respondents were single, while 217 (43.4%) of the respondents were married.

With regards to ethnicity of the respondents, the result also revealed that 121 (24.2%) of the respondents are Kanuri, 115 (23.0%) of the respondents are Marghi, 108 (21.6%) of the respondents Shuwa, 39 (7.8%) of the respondents are Babur/Bura, 40 (8.0%) of the respondents are Hausa/Fulani, 39 (7.8%) of the respondents are Maffa and 39 (7.6%) are Mandara. This means that majority of the respondents (24.2%) are kanuri and (23.0%) were Marghi respectively. With respects to the location/settlement of the respondents, the result also revealed that 160 (32.0%) of the respondents were residence of Mairi, 100 (20.0%) of the respondents were in Fagoli, 50 (10.0%) of the respondents are in Gwange i.e. 75 (15.0%) of the respondents are in Maimusari, 42 (8.4%) of the respondents were in Fezzani, and 73 (14.4%) of the respondents were residing in Bulabulin. This implied that majority of the respondents were from Mairi ward Jere local government area.

Table 3 above revealed the respondents' knowledge on Sexually transmitted diseases of adult in Maiduguri Metropolis.

Table 3: (Research Question 1) Does adults in Maiduguri Metropolis of Borno State, North Eastern Nigeria. Have explicit knowledge of sexually transmitted diseases n=500.

S/No.	Items	SA	A	UD	D	SD
1	Sexually transmitted diseases are a blood borne diseases caused by viruses and bacteria.	150 (30.0%)	212 (42.0%)	36 (7.2%)	50 (10.0%)	52 (10.4%)
2	Hepatitis B virus, genital herpes human papilloma virus and human immunodeficiency virus is a common type of sexually transmitted diseases caused by viruses.	169 (33.8%)	160 (32.0%)	40 (8.2%)	60 (12.0%)	70 (14.0%)
3	Syphilis, gonorrhoea and chlamydia is a common type of sexually transmitted diseases caused by bacteria	40 (8.0%)	40 (8.0%)	130 (26.0%)	130 (26.0%)	160 (32.0%)
4	Some sexually transmitted disease like HBV, HIV and Syphilis can be transmitted from mother to her child during child birth, breastfeeding and to unborn child through umbilical cord.	80 (16.0%)	20 (4.0%)	140 (28.0%)	130 (26.0%)	130 (26.0%)
5	Sexually transmitted disease caused by HBV, HIV and HPV can lead to serious complication and frequent hospitalization.	10 (2.0%)	25 (5.0%)	80 (16.0%)	180 (36.0%)	205 (41.0%)
6	Sexually transmitted disease can be tested at laboratory or hospitalization	320 (64.0%)	112 (22.4%)	20 (4.0%)	28 (5.6%)	20 (1.0%)
7	Regular screening for STDs can prevent the spread of the diseases	310 (62.0%)	80 (16.0%)	40 (8.0%)	50 (10.0%)	20 (1.0%)
8	Screening for sexually transmitted disease can also be done before marriage	300 (60.0%)	90 (18.0%)	40 (8.0%)	30 (6.0%)	40 (8.0%)
9	I got the information/knowledge about sexually transmitted disease from my friends, family, radio, television and internet.	30 (6.0%)	130 (26.0%)	0 (0.0%)	260 (52.0%)	80 (16.0%)
10	I got the information about screening STD from school, health education, radio or TV.	330 (66.0%)	130 (26.0%)	10 (2.0%)	20 (4.0%)	10 (2.0%)

Keys: SA=Strongly agree, A= Agree, UD=Undecided, D=Disagree and SD= Strongly disagree

Item 1 above shows that 150 (30.0%) of the respondents strongly agreed that sexually transmitted diseases is a blood borne diseases caused virus and bacteria, 212 (42.0%) of the respondents agreed with the statement, 36 (7.2%) of the respondents were not decided, 50 (10.4%) of the respondents disagreed with the statement, while 52 (10.4%) of the respondents were strongly disagreed with the statement. This means that majority of the respondents know that sexually transmitted diseases are caused by viral and bacterial infections.

Item 2 on the table above revealed that 169 (33.8%) of the respondents strongly agreed that hepatitis, human immunodeficiency virus, genital herpes and human papilloma virus are the common type of sexually transmitted diseases caused virus, 160 (32.0%) of the respondents agreed with the statement, 40 (8.0%) of the respondents were not decided, 60 (12.0%) of the respondents disagreed with the statement, while 70 (14.0%) of the respondents were strongly disagreed with the statement. This means that majority of the respondents know

that hepatitis, human immunodeficiency virus, genital herpes and human papilloma virus are the common type of sexually transmitted diseases are caused by viral infection.

Moreover, item 3 on the table above revealed that 40 (8.0%) of the respondents strongly agreed that syphilis, gonorrhoea and chlamydia are the common type of sexually transmitted diseases caused by bacteria, 40 (8.0%) of the respondents agreed with the statement, 130 (26.0%) of the respondents were not decided, 130 (26.0%) of the respondents disagreed with the statement, while 160 (32.0%) of the respondents were strongly disagreed with the statement. This means that majority of the respondents were on the opinion that syphilis, gonorrhoea and chlamydia are caused by bacterial infection.

Similarly, Item 4 on the table above shows that 80 (16.0%) of the respondents strongly agreed that some sexually transmitted diseases can be transmitted from mother to unborn her child through umbilical cord, during child birth and breast feeding, 20 (4.0%) of the respondents agreed with the statement, 140 (22.0%) of the respondents were not decided, 130 (26.0%) of the respondents disagreed with the statement, while 130 (26.0%) of the respondents were strongly disagreed with the statement. This implied that majority of the respondents were not decided whether sexually transmitted diseases can be transmitted from mother to her unborn child through umbilical cord, during child birth and breast feeding.

Item 5 on the table above shows that 10 (2.0%) of the respondents strongly agreed that diseases spread through sexual intercourse like hepatitis B virus, human immunodeficiency virus and human papilloma virus, can caused serious health problem and frequent hospitalization, 25 (5.0%) of the respondents agreed with the statement, 80 (16.0%) of the respondents were not decided, 180 (36.0%) of the respondents disagreed with the statement, while 205 (41.0%) of the respondents were strongly disagreed with the statement. This implied that majority of the respondents were not aware that sexually transmitted diseases like hepatitis B virus, human immunodeficiency virus and human papilloma virus, can caused serious health problem and frequent hospitalization.

Item 6 on the table above shows that 320 (64.0%) of the respondents strongly agreed that test for sexually transmitted diseases can be done at laboratory or hospital, 112 (22.4%) of the respondents agreed with the statement, 20 (4.0%) of the respondents were not decided, 28 (5.0%) of the respondents disagreed with the statement, while 20 (4.0%) of the respondents were strongly disagreed with the statement. This implied that majority of the respondents were aware that sexually transmitted diseases like hepatitis B virus, human immunodeficiency virus, gonorrhoea, syphilis, chlamydia and human papilloma virus, test/screening can be done at laboratory or hospital.

Item 7 on the table above shows that 310 (62.0%) of the respondents strongly agreed that regular screening for sexually transmitted diseases can prevent the spread of the disease, 80 (16.0%) of the respondents agreed with the statement, 40

(8.0%) of the respondents were not decided, 50 (10.0%) of the respondents disagreed with the statement, while 20 (4.0%) of the respondents were strongly disagreed with the statement. This implied that majority of the respondents were aware that regular screening can prevent the spread of sexually transmitted diseases like hepatitis B virus, human immunodeficiency virus, gonorrhoea, syphilis, chlamydia and human papilloma virus.

Item 8 on the table above shows that 300 (60.0%) of the respondents strongly agreed that screening for sexually transmitted diseases can be done before marriage, 90 (16.0%) of the respondents agreed with the statement, 40 (8.0%) of the respondents were not decided, 30 (6.0%) of the respondents disagreed with the statement, while 40 (8.0%) of the respondents were strongly disagreed with the statement. This implied that majority of the respondents were of the opinion that screening for sexually transmitted diseases like hepatitis B virus, human immunodeficiency virus, gonorrhoea, syphilis, chlamydia and human papilloma virus should be encouraging before marriage.

Item 9 on the table above shows that 330 (60.60%) of the respondents strongly agreed that family, friends, internet, radio television and school were the major source of information on sexually transmitted diseases, 130 (26.0%) of the respondents agreed with the statement, 0 (0.0%) of the respondents were not decided, 260 (52.0%) of the respondents disagreed with the statement, while 80 (16.0%) of the respondents were strongly disagreed with the statement. This implied that majority of the respondents were of the opinion that family, friends, internet, radio television and school were the major source of information on sexually transmitted diseases.

Item 10 on the table above shows that 330 (60.60%) of the respondents strongly agreed that health education lecture, hospital visit, family, friends, radio television and were the major source of information on screening for sexually transmitted diseases, 130 (26.0%) of the respondents agreed with the statement, 10 (2.0%) of the respondents were not decided, 20 (4.0%) of the respondents disagreed with the statement, while 10 (2.0%) of the respondents were strongly disagreed with the statement. This implied that majority of the respondents were of the opinion that health education lecture, hospital visit, family, friends, radio, television and school were the major source of information on the screening for sexually transmitted diseases.

Table 4 contain information on knowledge of sexually transmitted diseases among adult of different educational backgrounds. Chi-square test was used to test the null hypothesis. The result revealed that there was no significant difference in knowledge of sexually transmitted diseases among adult of different educational backgrounds ($p > 0.05$), in Maiduguri metropolis of Borno state North Eastern, Nigeria. Therefore, the null hypothesis was retained.

HO1: There is no significant difference in knowledge of sexually transmitted diseases among adult of different educational backgrounds in Maiduguri metropolis of Borno state North Eastern, Nigeria.

Table 4: Summary of chi-square analysis knowledge of sexually transmitted diseases among adult of different educational backgrounds responses n=500.

Variables	Observed frequency/(Expected frequency)					Total	df	X2 Prob	Decision
	SA	A	UD	D	SD				
Islamic education	29 (26.2)	24 (22.8)	7 (2.8)	11 (14.7)	9 (13.2)	80	16	5	HO: RT
Prim certificate	40 (43.6)	39 (38.0)	4 (4.7)	20 (24.4)	30 (22.0)	133			
Educational sec, sch, cert	57 (52.8)	48 (46.0)	4 (5.7)	32 (29.6)	20 (267)	161			
Qualification diploma	11 (13.4)	9 (11.7)	2 (1.4)	9 (7.5)	10 (6.8)	41			
Degree	27 (27.8)	23 (24.3)	1 (3.0)	20 (15.6)	14 (14.1)	86			
Total	164	143	18	92	83	500			

Table 5 contain information on knowledge of sexually transmitted diseases among adult male and female. Chi-square test was applied to test the null hypothesis. The result revealed that there was significant difference in knowledge of sexually transmitted diseases between adult male and female ($p < 0.05$), in

Maiduguri metropolis of Borno state North Eastern, Nigeria. Hence, the null hypothesis was rejected.
 HO2: There is no significant difference in knowledge of sexually transmitted diseases between adult male and female in Maiduguri metropolis of Borno state North Eastern, Nigeria.

Table 5: Summary of chi-square analysis knowledge of sexually transmitted diseases between adult male and female responses n=500.

Variables		Observed frequency/(Expected frequency)					Total	df	X2 Prob	Decision
		SA	A	UD	D	SD				
Gender	Male	157 (96.2)	106 (66.2)	5 (7.9)	8 (63.9)	7 (48.6)	283	4	0	HO: RJ
	Female	13 (73.3)	11 (507.0)	9 (6.0)	105 (69.0)	79 (37.3)	217			
Total		170	117	14	113	86	500			

Table 6 contain information on knowledge of sexually transmitted diseases among adult of different ethnic backgrounds. Chi-square test was used to test the null hypothesis. The result revealed that there was no significant difference in knowledge of sexually transmitted diseases among adult of different ethnicity ($p > 0.05$), in Maiduguri metropolis of

Borno state North Eastern, Nigeria. Therefore, the null hypothesis was retained.
 HO3: There is no significant difference in knowledge of sexually transmitted diseases among adult of different ethnicity in Maiduguri metropolis of Borno state North Eastern, Nigeria.

Table 6: Summary of chi-square analysis knowledge of sexually transmitted diseases among adult of different ethnic backgrounds responses n=500.

Variables	Observed frequency/(Expected frequency)					Total	df	X2 Prob	Decision
	SA	A	UD	D	SD				
Kanuri	40 (35.4)	36 (35.1)	4 (4.3)	14 (18.4)	21 (21.6)	121	24	0.609	HO: RT
Marghi	34 (37.2)	35 (37.0)	7 (4.5)	20 (19.3)	25 (22.7)	115			
Shuwa	30 (33.2)	36 (33.0)	2 (4.1)	19 (17.2)	21 (20.3)	108			
Ethnicity Babur/Bura	13 (12.3)	10 (12.2)	0 (1.5)	10 (6.4)	7 (9.4)	40		4.504	

Hausa/Fulani	15 (12.0)	13 (11.9)	1 (1.4)	4 (6.2)	6 (7.3)	38
Mandura	12 (11.7)	11 (11.6)	2 (1.4)	6 (6.0)	7 (7.1)	39
Maffa	10 (12.0)	12 (11.9)	3 (1.4)	7 (6.2)	7 (7.3)	39
Total	154	153	19	80	94	500

SUMMARY OF FINDINGS

The following were the summary of findings:

- Adult in Maiduguri metropolis had knowledge of sexually transmitted diseases. Some respondents believed that sexually transmitted infections are a blood borne diseases that can be transmitted during sexual intercourse, from mother to her unborn child through umbilical cord or from mother to child during child birth
- Knowledge of sexually transmitted diseases in Maiduguri metropolis among adult of different educational background did not differ significantly ($p>0.05$)
- Knowledge of sexually transmitted diseases between male and female in Maiduguri metropolis differed significantly ($p<0.05$)
- Knowledge of sexually transmitted diseases in Maiduguri metropolis among adult of different ethnic background did not differ significantly ($p>0.05$)

DISCUSSION

On the level of knowledge of adult towards sexually transmitted infections and screening, it was found that adults in Maiduguri metropolis had knowledge of sexually transmitted infection. This shows that awareness about sexually transmitted infections in general has increased over the last decades since the advent of HIV/AIDS due to the widespread publicity given on the disease by various non-governmental organizations in the study area. However, awareness about other STIs might not be encouraging. This finding contradicts the result of a study conducted by Alubo, et al. [4] who opined that knowledge of other STIs apart from HIV/AIDS is low in the developing world. Also, in Germany, Samkange-Zeeb, Mikolajczyk and Zeeb, [12] reported that their adolescents were reported to have low levels of knowledge and awareness of STDs with the exception of HIV/AIDS. While, Zhang, Pan, Cui, Law, Farrar and Ba-Thein, [13], in their study observed, higher percentages of knowledge on syphilis (95%) and gonorrhoea (83%) among Chinese university students in Guangdong, China. This could be explained by the greater awareness among their students as Guangdong was reported to have the highest morbidity from syphilis and gonorrhoea in China. It is believing that this area might have continuous campaigns or health promotions on these diseases by the local authority.

Some respondents agreed (42.0%) that sexually transmitted infections are a blood borne diseases mostly caused by virus and bacteria. While, around (16.0%) of the respondents agreed that it can be transmitted during sexual intercourse, from mother to her unborn child through umbilical cord or from mother to child her during child birth. It was also found that that HBV,

HPV and HIV were commonly caused by viral infection, while syphilis, gonorrhoea, trachoma and chlamydia are caused by bacteria. The finding of this study is in line with the finding of a study conducted by Amu and Adegun [14,15], revealed that More than 75% of their respondents knew that sexual intercourse, transmission from mother to child and blood transfusion as the commonest modes of transmission of STIs while some of them equally had misconceptions.

However, around (64.0%) of the respondents agreed that screening/test for sexually transmitted infections can be done at laboratory or hospital. And also, majority, (62.0%) of the respondents in Maiduguri metropolis agreed that going for screening regularly and before marriage can prevent the spread of sexually transmitted infections like hepatitis B virus, human papilloma virus and HIV/AIDS. Furthermore, around (26.0%) of the respondents agreed that they got their information/knowledge about sexually transmitted infection from their friends, family, TV and radio. While, around (66.0%) of the respondents strongly agreed that they got their information about sexually transmitted infection from their schools, health education lecture, and radio. The result of this finding is in agreement with the study conducted by Amu and Adegun [14,15] their finding revealed that (92.4%) their respondents had heard about sexually transmitted infections before, the three most important sources of information being electronic media (68.7%); teachers (68.1%); and print media (44.9%), also, Alama [16] said, that people become aware of screening either through hospital, friends or private laboratory and chemist. On the other hand, Mirza, Ghani and Pal [17] found that electronic media was the most important source of information for 25.5% of their studied group, and Oluwole, Elison, and Olateju, [18], found that the majority of their respondents were informed by health care workers. However, on regard to etiological agent (33.8%), of the respondents strongly agreed that HIV, HPV, genital herpes and HBV are sexually transmitted infection caused by virus. While, (32.0%), of the respondents strongly disagreed that syphilis, gonorrhoea, chlamydia and trichomoniasis are sexually transmitted infection caused by bacterial infections. This means that the respondents in the present study have a good knowledge of sexually transmitted diseases cause by virus than those causes by bacteria. This finding is in line with the finding of the study conducted by Amu and Adegun [14,15] their finding revealed that Eighty percent of their respondents knew only one STI, and among them the two most commonly mentioned ones were HIV/AIDS (78.0%) and gonorrhoea (23.0%). While, Zhang, et al. [13], in their study observed, higher percentages of knowledge on syphilis (95%) and gonorrhoea (83%) among Chinese university students in Guangdong, China. This could be explained by the

greater awareness among their students as Guangdong was reported to have the highest morbidity from syphilis and gonorrhoea in China. We believe that this area might have continuous campaigns or health promotions on these diseases by the local authority. However, despite good knowledge majority (41.0%) of the respondents strongly disagreed with the statement that sexually transmitted diseases can cause serious complication that can lead to hospitalization.

There was no significant difference in knowledge of adult on knowledge of sexually transmitted diseases and screening based on educational qualification in Maiduguri metropolis of Borno state North Eastern, Nigeria. This could be due to the level of their level of education, as the majorities (32.2%) of the respondents are secondary school certificate holders, followed by (26.6%) primary school leavers and (17.0%) degree holders. In this study participant who can read and write have diploma or degree and have adequate knowledge than those who had only Islamic knowledge (can read and write only in Arabic). This is in line with the finding of a study conducted by Amu and Adegun [14,15] among senior secondary school students in Ekiti State, south western Nigeria the result of their finding revealed that, majority of the respondents had good knowledge of STIs; the rest had fair and poor knowledge. Furthermore, Svensson [19] stated that an educated people are close to better health information and reproductive health choice which affect their health status directly or indirectly. Also, Babalola and Fattusi [20] revealed that education is the only individual level variables that are consistently a significant predictor of utilizations of medical services, especially reproductive health services. hepatitis B virus before marriage

There was a significant difference in knowledge of sexually transmitted diseases and screening between adult's male and female in Maiduguri metropolis of Borno state North Eastern, Nigeria. This could be due to fear of stigmatization, discrimination and social isolation from the society. This is in line with the study carried out by Cotler et al. [22], Dam et al. [23] on acceptability of premarital screening among University students in Saudi Arabia opined that stigmatizing attitude found in their studies was highest when the statement was related to the concept of contagion.

There was no significant difference in knowledge of adult on sexually transmitted diseases and screening based on ethnicity in Maiduguri metropolis of Borno state North Eastern, Nigeria. This could be due to different ethnic group had similar believe about sexually transmitted infections [24].

SUMMARY

This study assessed the knowledge of adult on sexually transmitted diseases in Maiduguri metropolis of Borno State North-Eastern, Nigeria. In order to achieve this objective, one research objectives and one research question was formulated and three null hypotheses were tested. The theoretical frame work used for this study was theory of Health Belief Model developed by Stretcher and Rosentock [1]. The Health Belief Model (HBM) is a theoretical framework used to understand health behaviours and possible reason for non-compliance with recommended health action [1,25]. Related literature was

reviewed under the following sub-headings: Concept of sexually transmitted infections, Pathogenesis of sexually transmitted infections, and Types of sexually transmitted infections and Adults' Knowledge on Screening for Sexually Transmitted Infections [26].

Survey research design was used for this study. The populations for this study was made up of ten thousand and-ten (10,010), INEC, 2019, and five hundred (500) respondents were sampled for the study using simple random sampling. Data were collected using questionnaire on Knowledge and Screening on Sexually Transmitted Diseases among adult in Maiduguri metropolis (KSSTD) [27]. Five hundred respondents were sampled for this study and analyzed using descriptive statistics of frequency count and percentages to describe the demographic characteristics of the respondents and to answer research questions. While, inferential statistics of Chi-square test was used to test the research hypotheses at 0.05 alpha level of significant. The result of the findings revealed that adult in Maiduguri metropolis had good knowledge of sexually transmitted diseases.

Also, the result of the findings revealed statistically that knowledge of sexually transmitted diseases in Maiduguri metropolis among adult of different educational background did not differ significantly ($p>0.05$). While, knowledge of sexually transmitted diseases between male and female in Maiduguri metropolis differed significantly ($p<0.05$), and knowledge of sexually transmitted diseases in Maiduguri metropolis among adult of different ethnic background did not differ significantly ($p>0.05$) [28,29].

It was concluded that adult in Maiduguri Metropolis have the knowledge of sexually transmitted diseases. For example some respondents believed that sexually transmitted infections is a blood borne diseases, furthermore, some respondents believed that viruses and bacteria are the causative agent of most sexually transmitted infection, while some respondents believed that sexually transmitted infections can be transmitted during sexual intercourse, from mother to her unborn child through umbilical cord or from mother to her child during child birth. It was also found some that respondents strongly agreed that HBV, HPV and HIV were commonly caused by viral infection, while syphilis, gonorrhoea, trachoma and chlamydia are caused by bacteria. And majority of the respondents in Maiduguri metropolis believed that going for screening regularly and before marriage can prevent the spread of sexually transmitted infections like hepatitis b virus, human papilloma virus and HIV/AIDS [30].

It was recommended that government should embark on sensitizations workshops and public enlightenment campaigns to educate the general population of young adult on the sexually transmitted diseases and the importance of regular screening for sexually transmitted diseases. A well-organized health education campaigns and media (TV, radio and internet) are needed to improve public perceptions and understanding about sexually transmitted infections. Massive educational campaign that involves all stakeholders of society, including health care workers and community members, should be undertaking to make society more tolerant when it comes to issues of sexually transmitted diseases [31].

CONCLUSION

Based on the findings of this study, it was concluded that adult in Maiduguri Metropolis have the knowledge of sexually transmitted diseases. For example some respondents believed that sexually transmitted infections is a blood borne diseases, furthermore, some respondents believed that viruses and bacteria are the causative agent of most sexually transmitted infection, while some respondents believed that sexually transmitted infections can be transmitted during sexual intercourse, from mother to her unborn child through umbilical cord or from mother to her child during child birth. It was also found some that respondents strongly agreed that HBV, HPV and HIV were commonly caused by viral infection, while syphilis, gonorrhoea, trachoma and Chlamydia are caused by bacteria. And majority of the respondents in Maiduguri metropolis believed that going for screening regularly and before marriage can prevent the spread of sexually transmitted infections like hepatitis B virus, human papilloma virus and HIV/AIDS.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations were made:

- Government should embark on sensitizations workshops and public enlightenment campaigns to educate the general population of young adult on the sexually transmitted diseases and the importance of regular screening for sexually transmitted diseases
- A well-organized health education campaigns and media (TV, radio and internet) are needed to improve public perceptions and understanding about sexually transmitted infections
- Massive educational campaign that involves all stakeholders of society, including health care workers and community members, should be undertaking to make society more tolerant when it comes to issues of sexually transmitted diseases

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