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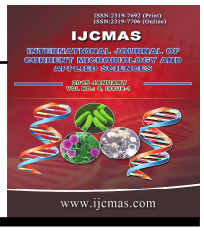

Original Research Article

Seroepidemiology of Herpes Simplex Virus Type-2 (HSV-2) Among Incarcerated Population of Potiskum Medium Security Prison Potiskum Yobe State: Study of Prevalence and Associated Risk Factors

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Keywords

Herpes Simplex Virus Type-2 (HSV-2), Potiskum Medium Security Prison Potiskum

A B S T R A C T

Prison inmates are reported to have high rates of transmissible infectious blood borne viruses and STDs particularly HSV-2 than general population, and this may be related to risk factors before and after incarceration. There is paucity of information's regarding HSV-2 in Potiskum and Yobe State in general. In this research we report data to bridge this gap in knowledge. It is a cross sectional study conducted on 220 consented prison inmates. 5ml blood were collected and tested for HSV-2 IgG using HSV-2 type specific IgG Enzyme linked Immuno Assay Test Kit (Globalmed LLC Alexenderia VA, USA). In this study HSV-2 prevalence was found to be 15% and risk factors such as homosexual, multiple sex partners, sex with prostitute, alcolism, smoking, intravenous drugs use, history of STDs and casual sex without condom are strongly associated with the transmission of HSV-2. Based on the result of prevalence obtained in this research, there is a need for Government to make a policy for screening and treatment of HCV-2 to prison inmates as the prisoners will become part of community upon regaining freedom.

Introduction

Sexually transmitted diseases (STDs) have been identified as the major public health problem worldwide, especially in developing countries, where the resources for their management are scarce [1]. Herpes Simplex Type-2 (HSV-2) is a one of the sexually transmitted disease and it is one of the most common courses of Genetal Ulcer Disease (GUD) [2]. HSV is a long life infection with rare to frequent recurrences of symptomatic and asymptomatic genetal shedding of 2-serotypes of virus most commonly HSV-2 and sometimes HSV-1 [3]. The effort to control STDs in developing countries are hampered by inadequate number of specialists STD clinics to support the need of population, lack of suitable diagnostic techniques and

the drugs for treatment [4]. Prison inmates are reported to have high rates of transmissible infectious disease particularly blood borne viruses and STDs than general population, and this may be related to risk factors before incarceration such as low socio-economic status, poor access to health care, poor household sanitation, high sexual risk behaviours and intravenous drugs use. Men entering prison have risk behaviour for STDs, intravenous drugs use, needle or sharp object sharing, alcoholism, unprotected sex with multiple sex partners and high risk partners. After incarceration additional risk factors such us overcrowding, sexual harassment, homosexual tendency, psychological stress, non professional tattooing or body piercing, and poor ventilation may also contribute to increase in transmission of infectious diseases [3]. Also other studies have shown that: most prison inmates are engage in risky sexual practice such as unprotected sex with commercial sex workers and casual sex with others before imprisonment [1].

Generally, studies concerning the seroprevalence of HSV-2 infections are scarce [3]. There is little information on the prevalence of HSV-2 in Nigeria, also anti HSV-2 screening is rarely perfume in general population [2]. Beside, laboratory testing for the detection of HSV-2 and most STDs are relatively insensitive, costly, time consuming, technically sophisticated and often not available. Since prison inmates return to general population upon having freedom this may likely expose the general population to HSV-2 infection. Thus, early detection counselling and treatment is needed for the prisoners [1]. This study is aims to determine the possible risk factors associated with HSV-2 transmission among prison inmates in Potiskum Medium Security Prison and also to suggest possible preventive and control measures for HSV-2 among incarcerated population and general population in Nigeria.

Materials and Methods

Study area and population

Potiskum Medium Security Prison is located in Potiskum Yobe State Nigeria. Potiskum is a headquater of Potiskum Local Government Area in Yobe State, Nigeria. It is located on the A3 highway at 11°42′33″N 11°04′10″E11.70917°N 11.06944°E. It has an area of 559 km² and a population of 205,876 at the 2006 census [8]. Potiskum prison is a Federal Medium Security Prison. At the time of this research the prison was housing about 311 prison inmates. The blood samples of 220 prison inmates were collected of which 211 inmates are males while 9 of the inmates are females.

Ethical consideration

Permission to conduct the study on prison inmates in Medium Security Prison Potiskum was obtained from both Medium Security Prison Potiskum Authorities and Yobe State Federal Prison Headquarters. after application and interview with Biomedical ethical committee of Yobe State Federal Prison Headquarters. Written informed consent was obtained from all participants.

Sample Collection

5ml of blood were aseptically drawn by venepuncture from each consented inmates aseptically into sterile clean test tube containers. The blood were allowed to clot at room temperature after the test tube were kept slanted. The sera was separated by centrifugation at 3000G for 10 min. The separated sera were aspirated into clean

cryogenic vials, label and stored frozen at -20˚C until tested.

HSV-2 Screening on the Serum sample

The sera sample was thawed and screened for HSV-2, using HSV-2 type specific IgG Enzyme linked Immuno Assay Test Kit (Globalmed LLC Alexenderia VA, USA). The samples were tested by certified medical staff University of Maiduguri Teaching Hospital (UMTH).

Statistical Analysis

All the data were subjected to statistical analysis using statistical software package, Graphpad Prism version 5.00 for Windows (Graph Pad Software, Sandiego Califonia USA, www.graphpad.com) P-value and relative risk (RR) were calculated at 95% confidence interval (CI). P-values $\leq$ 0.05 were considered statistically significant.

Result and Discussion

Distribution of occupation of the prison inmates before incarceration in medium security prison potiskum.

Figure 1 below showing the distribution of the occupation of prison inmates before incarceration. Farmers, labourers, law enforcement and traders/business men are occupations that are predominantly engaged by the inmates before incarceration with the following percentages: 50%, 45%, 37% and 30% respectively. While the least occupations are civil servants, students and drivers and are least to be found in Medium Security Prison Potiskum. According to result of statistical analysis using Chi-square test for independence variables, the result is 78.74 with degree of freedom equal to 6. The P-value is < 0.0001 which is significant. Therefore, occupation is also one of the risk factor for acquiring HSV-2 in this study.

Distribution of HSV-2 in relation to risk factors for transmission

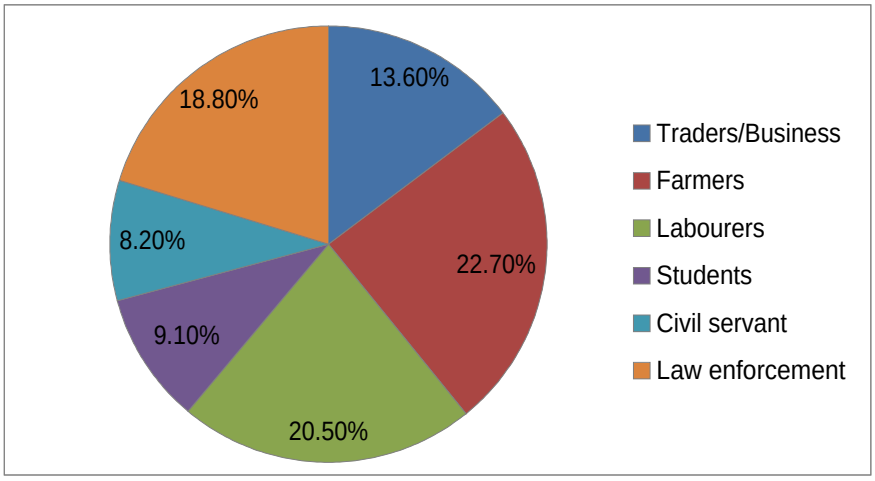
Of 220 consented prison inmates tested, 32 (14.5%) are seropositive for HSV-2. Table 2 shows the distribution of HSV-2 based on the known risk factors. 40.9% of the inmates had history of unprotected sex and with multiple sex partners. Fishers exact test shows that the P-value is < 0.0001 and (it is significant) for both inmates with unprotected sex and with multiple sex partners with (RR=21.67 and 13.96 at 95% confidence interval of 5.31-10.90 and 4.39-44.6). For inmates with habit of smoking and alcoholic consumption are 20% and 18.2% with all having the P-value of < 0.0001 with (RR=5.85 and 7.00 at 95% confidence interval of 3.13-10.90 and 4.00-14.06). The result of later variables are also significant. The percentage for inmates that admitted to have sex with prostitute and for the inmates with history of STDs are 9.1% and 18.6% with all having the same P-value of < 0.0001 which is significant with (RR=14.40 and 30.56 at 95% confidence interval of 5.81-35.67 and 11.34-82.36) respectively. The percentage for inmates with history of intravenous drugs use is 8.2% with P-value of 0.0001 at (RR=6.12 with between 3.57-10.47 at 95% confidence intervals). Those who have agreed to have participated in homosexual practice are small with 3.6% only. However about 75% of them are seropositive for HSV-2 with P-value of 0.0001 which is significant with (RR=6.12 at 95% confidence interval of 3.57-10.47). The prison inmates with knowledge of STDs are less likely to get infected with HSV-2.

This study investigated the seroprevalence of HSV-2 infections among prison inmates in Medium Security Prison Potiskum Yobe State Nigeria.

Table.1 Shows the Distribution of HSV-2 in Relation to Risk Factors for transmission in Medium Security Prison Potiskum

Risk factor	**No screened (%)**	**NO. Positive**	**P-value**	RR	**95% (CI)**
Homosexual practice			0.0001	6.12	3.57-10.47
Yes	8 (3.6)	6 (75.0)			
No	212 (96.4)	26 (12.3)			
Intravenous drug use			0.0001	6.73	3.97-11.42
Yes	18 (8.2)	12 (66.7)			
No	202 (91.8)	20 (9.9)			
His. of STDs			0.0001	30.56	11.34-82.36
Yes	41 (18.6)	4 (2.2)			
No	179 (81.4)	28 (68.3)			
Multiple sex partners			0.0001	13.96	4.39-44.6
Yes	90 (40.9)	29 (32.2)			
No	130 (63.5)	3 (2.3)			
Sex with Prostitute			0.0001	14.40	5.81-35.67
Yes	60 (27.2)	27 (45.0)			
No	160 (72.7)	5 (3.1)			
Alcoholic consumption			0.0001	7.00	4.00-14.06
Yes	40 (18.2)	20 (50.0)			
No	180 (81.8)	12 (6.7)			
Unprotected sex				21.67	5.31-88.41
Yes	90 (40.9)	30 (33.3)			
No	130 (59.1)	2 (1.5)			
Smoking			0.01	5.85	3.13-10.90
Yes	44 (20.0)	19 (43.2)			
No	176 (80.0)	13 (7.4)			

Figure.1 Occupation of Prison Inmates before incarceration in Medium Security Prison Potiskum



Also the association between risk factors of exposure and HSV-2 transmission have been determined. This type of study have been undertaking in some countries or have been carried out in some state within Nigeria, however report of HSV-2 among prison inmates in Yobe State is scarce. In this work the prevalence of HSV-2 in Medium Security Prison is 15%, which is consistent with other studies conducted among prison inmates in other countries. Akhtar et al., 2000 reported prevalence to be 11.4%

among males incarcerated population in Sindh Pakistan [5]. Dasilver et al., 2011 reported prevalence of 19.9% in Portuguese Prison establishments [3] However this is contrary to the prevalence reported in other studies conducted in correctional facilities or general population. For example, one study in Australia shows that HSV-2 prevalence among female prisoners to be 58% with the males having 21% [6]. It is 77.8% among women in Enugu [7]. All the variables such as homosexual practice, intravenous drugs use, history of STDs, multiple sex partners, sex with prostitute, alcoholic consumption, unprotected sex, smoking and lack of knowledge for transmission of STDs that serve us significant risk factor for the transmission of HSV-2 in this study are also considered significant or consistent in other studies [1,2,6]. These named variables are considered as risk factors for transmission of HSV-2 among prison inmates in this research. Correctional facilities based programs on health such as infectious disease screening, treatment and harm reduction for HSV-2 need to be initiated in Nigerian prisons. This is necessary as inmates serves as potential reservoir for infection to the host community upon release, they should be tested and treated before joining the general population.

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References

1. Htun Y., Morse S.A., Dangor Y (1998). Comparison of clinically detected disease specific and syndromic protocols for the management of genetal ulcer disease in Lesetho. J Sex Transm. Inf. 74 (1) p 23-28.
2. Agabi A.Y., Banwat E.B., Mawak J.D., Lar P.M., Dashe N., Dashen M.M., Adoga M.P., Agabi F.Y., Zakari H., (2010). Seroprevalence of herpes simplex virus type-2 among patients attending sexually transmitted infection clinic in Jos, Nigeria. J of Infec. In Dev. Count 4 (9) p 572-5.
3. Marques N.M., Margalho R., Melo M.J., Saraivadakunha J.G., Silvester A.A ., (2011). Seroepidemiological survey of transmissible infectious disease in Portuguese prison establishments. Brazz. J of Inf. Dis 15 (3) p.143-86.
4. Greenblatt R.M., Lukerhart S.A., Plummer F.A., (1988) genetal ulceration as a risk factor human immunodeficiency virus infection. AIDS J. 2: p47-50.
5. Akhtar S., Luby S.P., Rahbar M.H., (2000). Multivariate analysis of risk factors associated with genetal ulcer disease among incarcerated males in Sindh. J of Pakis. Med. Asso (JPMA) 9 (2) P. 206-15.
6. Butler T., (2000). Herpes simplex virus type-2 in prisoners New South Wales Australia. J STD AIDS 11 (11) p.743-7.
7. Ojimah U.R., (2012). Herpes Simplex Virus Type-2 infection among female in Enugu, Enugu State. Niger J Med. 21 (4) p.394-403.
8. Frederick O.A., Garba M.J., Adanne I., (2006). Seconday Atlas Macmilan Nigeria. ISBN: 978-018-355-4. 1: 1-136.