

Prevalence of HIV, HepBsAg and Hep C antibodies among inmates in Chichiri prison, Blantyre, Malawi

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Abstract

Objective

To determine HIV, HepatitisBsAg and Hepatitis C antibodies including knowledge, attitudes, practices and risk factors that may facilitate the spread of HIV among inmates at Chichiri Prison, Blantyre, Malawi.

Design

This was a cross sectional study. Informed consent was sought from each of the participants before interviewer-administered questionnaires were used to collect socio-demographic data. Blood specimens were collected for HIV and hepatitis B and C serology.

Setting

Chichiri Prison in Blantyre which is one of the largest prison facilities in Malawi. Adult males and female inmates participated while juveniles were excluded.

Results

A total of 164 prison inmates comprising 142 males (86.6%) and 22 females (13.4%) participated in the study. The age range was 18-65 years with mean age at 28.6 years. Overall HIV prevalence rate was 36.6%; among male inmates it was 29.9%, and among the 22 female inmates tested, 11(50%) were reactive. Five males (3.5%) tested positive for HepBsAg with one of them dually infected with HIV. All participants were hepatitis C negative. 141 (86%) inmates acknowledged that they knew that man to man sex occurred in the prison, 55(33.5%) believed that mosquito bites could spread HIV; 33(20.1%) said that sex was the only way HIV could be spread, 8(4.9%) thought that HIV/AIDS could be spread through food sharing. 20 (12.2%) believed that HIV couldn't be spread from mother to child and 135 (82.3%) acknowledged that tattooing was practiced among the inmates. 130(79.3%) acknowledged knowledge of use of cannabis in prison; 3 (2.1%) male inmates actually accepted being homosexuals. None of the inmates reported knowledge of use of injectable drugs within the prison.

Conclusions

HIV prevalence rate (36.6 %) at the Chichiri Prison is higher than the national average of 14%, while female infection rates were higher than males. There are gaps in the inmates' knowledge of the epidemiology of HIV which need to be bridged through awareness programmes. Homosexuality and injecting drug use may not be a major factor in HIV transmission within prisons in Malawi. The low prevalence of Hepatitis BsAg (3.5%) and the inability to detect Hepatitis C antibodies deserve further study.

Introduction

Prison environments have been associated with high frequencies of high risk unhealthy behaviours such as injecting illicit drugs, unprotected and multiple-partner homosexual activity that expose inmates to HIV infection and hepatitis viruses.¹ Other sexually transmitted infections such as chlamydia, gonorrhoea and syphilis have been reported in higher frequencies as compared to the general population.^{2,3} In their study of prison inmates over two years in Thyolo district in southern Malawi, Zachariah et al⁴ reported that 4.2% were diagnosed with a sexually transmitted infection (STI), in which 28% were estimated to be incident cases i.e. acquired while the person had already been incarcerated.

In that study, syndromic diagnoses (rather than etiological diagnoses) were made. Nyangulu et al⁵, in a study on active tuberculosis (TB) case finding in Zomba Central Prison, Malawi, reported that 74% of inmates being investigated for TB were HIV sero-positive. However, the HIV infection rate among TB suspects was comparable to TB patients within the general population.

Malawi has an HIV infection rate of 14% in the general population⁶. The highest HIV infection rates have been reported in tuberculosis patients among whom about 75% are reported to be HIV infected⁷. HIV sero-prevalence among pregnant women attending antenatal clinics at the Queen Elizabeth Central Hospital (QECH), a university teaching hospital, serving both as a district hospital for Blantyre and the country's major referral hospital are estimated at 30%⁸. Manzi et al⁹ reported a 22% HIV infection rate among pregnant women accessing antenatal clinic in a rural district of Thyolo in southern Malawi.

HIV shares common routes of infection with HBV and HCV. HIV and HBV are known to be transmitted sexually although sexual transmission of HBV and HCV appear to be less efficient than is the case for HIV-1. It is therefore not surprising to find that some patients with HIV are co-infected with HBV and /or HCV^{10,11}.

The co-infection has a pronounced effect on the natural history of these infections. Although the effect of HBV infection on HIV infection is uncertain, HIV appears to have marked influence on the natural history of HBV infection^{10,11}.

Although various studies have been conducted among the prison population regarding tuberculosis^{5,12} and HIV prevalence among TB patients in prisons in Malawi,¹³ there is paucity of data on HIV sero-prevalence among the general prison population. We carried out a cross sectional study at the Chichiri Central Prison in Blantyre, Malawi, to determine the prevalence of HIV among inmates, to assess their current knowledge, attitudes, practices on HIV and to determine specific risk factors that may facilitate the spread of HIV. We took advantage of the present study to also screen the inmates for Hep BsAg and hepatitis C antibodies.

Methods

This was a cross sectional study in which interviewer administered questionnaires were used to collect socio-demographic data, knowledge, practices and attitudes towards HIV-related information.

Setting

The study was conducted at Chichiri Prison, Blantyre.

Study participants

The study population comprised adult male and female inmates. There were over 1600 male inmates and 40 female inmates during the study period and both convicted and

remanded (not yet convicted) inmates who were eligible to be enrolled were recruited. Each inmate registered at the prison was assigned a number before random selection was done from the data base created. As males far outnumbered females, the latter were deliberately over sampled. Juveniles were excluded from participation as we considered obtaining informed consent to participate in an HIV study would be problematic.

Laboratory methods

About 5ml of blood was collected from individuals who had consented after HIV test precounseling. Serum samples were tested for HIV antibodies using 3 different diagnostic kits i.e. Determine® and Unigold® for initial testing while Hemastrip® was to be used as a tiebreaker if HIV results obtained from the other 2 kits were discordant. Blood specimens were also tested for HBsAg and hepatitis C serology using ABBOT® and BIOTEC diagnostic kits respectively.

Data analysis

All the completed questionnaires were entered into a personal computer on Microsoft Access and analyzed using Epi-info 2002, Microsoft Excel and SPSS (Version 12.0) packages. Prevalence of HIV sero-positivity and descriptive demographic data were determined and Chi-Square tests were used to test for associations. A p value of < 0.05 was considered statistically significant.

Ethical considerations

Ethical review and oversight was obtained from the College of Medicine Research and Ethics Committee (COMREC). Permission to conduct the research was obtained from the Ministry of Home Affairs through the Chief Commissioner of Prisons, Zomba, Malawi. Individual informed consent was obtained from each of the inmates. Confidentiality during interviews was maintained through prison personnel not being within hearing distance from the interview. Prison regulations however encouraged prison personnel to be within sight although not within hearing range during interviews. Pre-test counseling was provided to all participants who later provided a blood specimen for HIV, HepBsAg and Hep C testing.

Test results were only provided to those who wanted to know. Persons who tested positive were encouraged to access care at the Queen Elizabeth Central Hospital (QECH) HIV clinic which serves as a district hospital for the prison. Test results were not made available to prison authorities. One of the investigators was available to assist the prisoners access the HIV clinic if deemed eligible for antiretroviral therapy as per national eligibility guidelines.

Results

A total of 164 inmates, 142 (86.6%) males and 22 (13.4%) females participated in the study. Tables 1 and 2 below show the demographic characteristics of the inmates enrolled in the study. The majority of the participants were in the age ranging from 18 to 39 years. Most of them were married (60.36%), reported being employed before incarceration (56.1%) and were at the time of the study already convicted (80.5%). The remaining 19.5% were on remand.

Table 1: Distribution of surveyed inmates by their demographic characteristics (n=164)

Characteristic		Number (%)
Age (Years)	18 - 28	90 (54.9)
	29 - 39	60 (36.6)
	40 - 50	11 (6.7)
	51 - 61	2 (1.2)
	>61	1 (0.6)
Marital Status	Married	99 (60.4)
	Single	46 (28.1)
	Divorced	14 (8.5)
	Widowed	5 (3.1)
Occupation	Employed	92 (56.1)
	Unemployed	72 (43.9)
Prison status	Convicted	132 (80.5)
	Remandees	32 (19.5)

Table 2: Prison status and length of incarceration among study participants (n=164)

Number of times convicted	Number of participants (%)
Once	124 (75.6)
Twice	26 (9.8)
None	24 (14.6)
Length of current stay within prison	
0 - 6 months	135 (75.6)
6 - 12 months	13 (7.9)
12 - 24 months	7 (4.3)
24 - 60 months	6 (3.7)
More than 60 months	3 (1.8)
Length of prison sentence for convicted inmates	
Less than 2 years	58 (25.3)
2 - 5 years	72 (43.9)
5 - 20 years	28 (17.1)
More than 20 years	6 (3.6)

HIV serostatus

Overall HIV sero-positivity was 36.6% (60/164). Among those who were HIV seropositive, 59% reported being married, 26% single, 12% divorced and 3% widowed. Of the 22 women tested, 11 (50%) were HIV sero-positive compared with males at 29.9% (p<0.05). However, there was no difference between the ages of sero-positive males and females (p >0.05). Length of stay within prison and whether remanded or convicted were also not statistically significant between HIV sero-positive and those negative.

Hepatitis serostatus

Five males (3.5%) were HepBsAg positive with one dually infected with HIV. No participant tested positive for Hepatitis C.

Knowledge and attitudes on HIV related issues

The majority 154 (93.4%) had heard about HIV and AIDS and 144 (88%) were aware of the possibility of mother to child transmission of HIV. However 33 (20%) reported that sex was the only way HIV could be spread, 55 (34%) said mosquito bites could spread HIV, 8 (4.9%) reported that HIV could be spread through sharing food.

Participants' perceptions were also sought on a hypothetical situation as to what they would do if they tested HIV positive. The majority 162 (99%) reported they would seek further counseling, 158 (96%) would plan to be assessed for eligibility of ART, and 117 (71%) would stop having sex. 29 (18%) would consult a traditional healer, 22 (13%) would keep the diagnosis to themselves and none ever thought of committing suicide.

High risk health behaviours

We also aimed to determine the prevalence of homosexuality, rape, tattooing and use of illicit drugs within prisons. 141 (86%) reported knowledge that male to male sexual activity occurred in the prison, 134 (82%) and 130 (79.3%) reported that tattooing and use of cannabis occurred in the prison respectively. 59 (36%) reported knowledge of homosexual rape but only 3 (2.1%) reported being involved in same sex activities. None reported knowledge of injecting drug use at the prison.

Discussion

This study has estimated the HIV prevalence at Chichiri prison in southern Malawi at about 37% and this is substantially higher than the national prevalence estimated at 14%⁶. This result concurs with studies conducted in other countries where HIV prevalence among prison inmates were also higher compared to the general population^{14,15,16}. There was however no significant difference between the mean age of HIV positive and HIV negative inmates indicating that both males and females at the age are equally affected.

The occurrence of HIV among female prison inmates elsewhere has been described in the context of injecting drug use and acquisition of HIV prior to incarceration, as heterosexual activity is deemed not to be a significant factor. Although there were only 22 women who participated in our study, the 50% infection rate among this group raises important considerations. Generally, same sex activity among females is not considered a high risk activity with regard to HIV transmission. Incarcerated females are also physically separated from males at Chichiri prison. The occurrence of heterosexual activity, although can still occur, is unlikely to contribute to the high HIV rates among this group. Assuming the absence of injecting drug use, acquisition of HIV prior to incarceration seems the most plausible explanation to us. This raises the question therefore as to why HIV rates among this group is much higher than the general female population, much higher than pregnant women attending antenatal clinics at QECH and in fact approaching the rates that have been observed among TB patients. There is therefore need to understand the socio-demographics of women incarcerated in Malawian prisons. It is interesting also to note that no single female tested positive for HepBsAg compared to 5 males (3.5%) who tested positive, one of whom had a co-infection with HIV.

Although specific details on HIV knowledge were not sought,

the majority knew of the existence of HIV and some of the risk factors for transmission. That many still considered mosquitoes as likely to transmit HIV, and that sex is the only way of transmission should be cause for concern. That the majority were aware of mother to child transmission and the possibility of antiretroviral therapy, suggests that information, education and communication (IEC) efforts have penetrated the prison environment. This concurs with another study conducted in Benin¹⁷ where it was found that inmates had variable levels of knowledge on HIV/AIDS. However availability and access to sources of information were considerably reduced during confinement.

Although only 2.1% of inmates reported having sex with other men, the figures may be much higher. A study conducted by Jolofani¹⁸ at Zomba Prison, reported that 1 in 8 men had sex within the prisons. As males and females are strictly segregated within prisons in Malawi, and there is no provision for conjugal visits and homosexual activity is illegal, condoms are not promoted for inmates. Odujirin and Adebajo, in their study of prison inmates in Kiri-Kiri, Nigeria¹⁹, reported that about 43% inmates reported knowledge of male to male sexual intercourse to occur within the prison environment. Sexual activity among females, who are largely outnumbered by males, does not receive much attention.

It is encouraging to note that the majority of prison inmates would take acceptable action such as seeking further counseling and access to ART should they test HIV positive.

Although illicit injecting drug use among inmates is a major challenge in prison environments around the world²⁰⁻²⁴, participants in our study reported no knowledge of the existence of the practice at Chichiri prison. We believe that is a reasonable reflection in general as illicit injecting drug use is not considered a problem in Malawi. Our findings also indicated that the duration of stay in prison was not linked to HIV status suggesting that most of the HIV acquisition was likely to be outside prison probably as a result of the inmates unprotected sexual activities before incarceration. Furthermore, if earlier reports concerning homosexual activities among prison inmates in a facility in Malawi¹⁰ and Nigeria¹⁹ were anything to go by, we can assume that men having sex with men may have, to some extent, contributed to the high HIV prevalence observed in this study. This line of thought is reinforced by the fact that 141 (86%) and 59 (36%) of the study population acknowledged that homosexual activities and rape between men occurred in Chichiri prison. Although this was not a feasibility study of acceptability of HIV testing in prisons among apparently healthy inmates, we have demonstrated that HIV testing is possible within Malawian prisons.

It is now known that HIV disease progression and enhanced immunosuppression has a direct bearing on the natural history and pathogenesis of Hepatitis B and C and sexual transmission also appears to be significant and of epidemiological importance in the light of heterosexual transmission of HIV in India¹⁰.

In the present study we found that HIV-HBV coinfection in Chichiri prison was very low compared to other prisons globally²⁵⁻²⁷ and we also failed to detect HCV antibodies in the

study population. This may partly be due to the low or non-existent use of illicit injectable drugs among the participants or the non-validation of the hepatitis B and C diagnostic kits used as we did for HIV serology in the study. Whatever the reasons we recommend that this aspect of our study be further investigated.

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