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**FULL LENGTH RESEARCH ARTICLE**

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**SEROPREVALENCE OF HUMAN IMMUNODIFFICIENCY VIRUS (HIV) AMONGST  
INMATES OF KADUNA PRISON, NIGERIA**\*JOSHUA, I.A<sup>1</sup> & OGBOI, S.J<sup>2</sup><sup>1</sup>University Health Services<sup>2</sup>Department of Community Medicine

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[dristifanus@yahoo.com](mailto:dristifanus@yahoo.com)**ABSTRACT**

A cross sectional period prevalence study was carried out amongst inmates of Convict Prison, Kaduna Nigeria to determine their HIV status and provide baseline data. Out of the 100 samples collected, 12 (12 %) were positive for HIV with the highest proportion (41.7 %) occurring in the 20-29 yrs age bracket and lowest prevalence of 8.3% in younger inmates below 20 yrs and those above 50 yrs. Infection was detected in both sexes, but was greater in males (91.7%). The mean age of the inmates was 32 yrs, with a range 18-59yrs and sex ratio of 49:1 (male: female). The adoption of HIV counseling and screening (at the point of entering, incarceration and exit) is recommended. Provision of specific HIV/AIDS preventive measures, care and treatment should be part of routine medical practice for inmates irrespective of the diagnosis at presentation.

**Key words:** HIV seroprevalence, Convict Prison inmates, Baseline data, Kaduna Nigeria

**INTRODUCTION**

As the World enters the third decade of the HIV/AIDS epidemic, the evidence of its impact is undeniable, robbing countries of both human and natural resources. Nigeria, like other countries of the world is also affected, with an estimated average infection of about 6% out of a population of 150 million (FMOH, 2005).

Recent evidence indicate that prison population is at risk of HIV, even though they are one of the most neglected risk group in the area of prevention and management (Joshua 2004). By late 1992, HIV seropositive prisoners had been detected in the Nigeria prisons (Orubuloye *et al.* 1995). A prevalence of 8.7 %, far higher than the Nation's average of 6 % was reported for Nigerian prisons (Akpan *et al.* 2004).

Survey of some high security prisons in the country showed high level of unprotected sexual activities: homosexuality was 15 % in Kano prisons and 8 % at Kirikiri maximum security prison in Lagos (Olayide 2001). This behaviour among male inmates is not new and uncommon. A Federal Bureau of Prison study in 1982 reported that 3 % of Federal prison inmates engaged in homosexual activity while in incarceration (Nacci & Kane 1982).

The few studies conducted on the prevalence of HIV in some Nigerian prisons are not enough for development of effective management policies and control strategies. More surveys are needed particularly as people under incarceration are usually neglected in the area of HIV prevention and management strategies of the government. This necessitated this cross sectional study at Kaduna Convict Prison to provide a baseline data that could be used in the future to monitor the trend of the disease in the country.

**MATERIALS AND METHODS**

**The prison:** The Convict Prison Kaduna located along Independence Way was established in 1915 to accommodate 550 inmates. At the time of the survey there were about 1000 inmates and 179 serving personnel

**Study population and design:** The study population included all categories of prisoners under incarceration, i.e. those convicted and those awaiting trial.

A sample size of 400 was taken following the approach of Odujirin (1998) cited by Odujirin & Adebayo (2001). The 400 selected subjects were first interviewed using a structured pre-tested questionnaire. Blood samples were collected from 100 inmates (out of the 400) after informing them about the study and obtaining their consent between 8.00 am to 2.00 pm, with the clinic as the collection centre. Those not interested were replaced.

Stratified sampling technique was used to select the subjects for the study. There were 50 cells containing different categories of prisoners and an average of 9 inmates were selected from each of the cell except those with hardened criminals like armed robbers. This was done using systematic method through a predetermined sampling interval after drawing the sample frame. Samples were collected from 2 out of the 9 inmates from each cell.

**Screening:** Blood samples were screened for HIV infection using ELISA which is both sensitive and specific (99-100 %) and which is a method approved by the Food and Drug Administration for the routine screening of blood for HIV. The method used 2 sequential rapid tests as recommended by the Nigeria Ministry of Health series algorithm testina for rapid HIV testina usina Determine. HIV 1& 2 Stat Pak

testing kits. Specimen negative on Determine HIV 1& 2 were considered negative and Specimen positive on Determine HIV 1& 2 and HIV 1& 2 Stat Pak were considered positive. Specimens with discordant results on Determine HIV 1& 2 and HIV 1& 2 Stat Pak were re-tested on Genie 11 as a tie-breaker. Specimens negative on the tie-breaker were considered negative while specimens positive on the tie-breaker were considered positive. Results were delivered within 30 min of the test. All the reagents were used according to the manufacturer's instructions. The principal investigator used an average of 5 min to give post-test information to each inmate.

## RESULTS

Only 100 out of the 400 inmates interviewed were screened because of the high cost of HIV testing kits. The mean age, age range and sex ratio of the population sample were 32yrs, 18-59 yrs and 49:1 respectively.

Of the 100 number screened, 12 (12 %) had antibodies against HIV. The percentage positivity was highest in the age group 20-29yrs (41.7 %), followed by 30-39yrs (25 %), 40-49yrs (16.7 %) and least in younger inmates below 20 years and above 50 years (8.3 % in each group respectively). The detailed results are summarised in Tables 1 & 2.

**TABLE 1: SEX DISTRIBUTION AND HIV SEROPOSITIVITY**

Sex	Number tested	Number Reactive	% Positivity
Male	98	11	91.7
Female	2	1	8.3

$\chi^2=2.791$  df= 1,  $p < 0.095$ , Mean age=32yrs, age range=18 -59yrs

**TABLE 2: AGE DISTRIBUTION AND HIV SEROPOSITIVITY**

Age group(yrs) Tested	Number tested n=100	Number reactive n=12	% Positivity
below 20	4	1	8.3
20-29	46	5	41.7
30-39	30	3	25
40-49	11	2	16.7
50-59	9	1	8.3

## DISCUSSION

The assessment of the HIV prevalence in Convict Prison Kaduna is important in view of the fact that there is no baseline data for reference, despite evidence of risky sexual and non-sexual practices (Joshua *et al.* 2006).

The prevalence figure of 12 % recorded in this study is lower than the figures reported amongst inmates in Brazil (15 %), Cote d'Ivoire (27.5 %), South Africa (15 %), Zambia (26.7 %) and Spain (16.4 %) (Hardings 1990; Hardings & Schaller 1992; Hernandez *et al.* 1996; Hammett *et al.* 2002; Autores *et al.* 2002). However, the figure falls within the range reported for France (13 %), Switzerland and Netherlands (11 % each) (Jurgens 1996).

The HIV infection among the inmates could have occurred either outside the prison before incarceration or inside during the period of imprisonment. A Survey by Dolan *et al.* (1994) showed that a prisoner that tested negative while entering the prison later tested positive after 6 years of incarceration without interruption.

Medical files confirmed his report of severe symptoms were consistent with primary HIV infection (Dolan *et al.* 1994; Yirrel *et al.* 1996).

The highest percentage seropositivity of 91.6 % recorded in males could be because they constitute the majority of the inmates (98 %). The only female that tested positive fell within the age group 30-39yrs and nursing a baby. However it could not be ascertained whether she became pregnant and infected in the prison or before incarceration as she was not willing to disclose information.

The age group 20-29yrs had the highest percentage positivity (Table 2). These are the most sexually active group as well as the ones most likely involved in risky nonsexual practices such as ear piercing, tattooing, intravenous drug usage, scarification marks, barbing, manicure/pedicure with shared unsterilised instruments. Prisoners may also share tooth brushes in facilities where these are not issued, where inmates are unable to purchase their own, or where infection control precautions are not understood.

The mean age of 32 yrs recorded for the inmates screened corresponds with the age bracket of 18-35 yr that are likely to have multiple sex partners and thus more likely to contact the disease and other sexually transmitted infections (STIs) which can increase the HIV viral load in genital fluids (UNAIDS 2000). Prisoner communities participate in sexual activity either voluntarily or through threats and coercion. In South Africa, up to 65 % of males prisoners have sex with other prisoners and an estimated 80 % of the prisoners awaiting trials are robbed and raped by convicted prisoners with whom they share cell; the more crowded the cell the higher the chances (AFP 1998; Goyer & Gow 2000). The situation may not be different in our prisons.

With the high prevalence figure recorded in this study, it is recommended that HIV counseling and screening should be adopted (at the point of entering the prison, incarceration and exit) and provision of specific HIV/AIDS preventive measures, care and treatment as part of routine medical practice for inmates irrespective of the diagnosis at presentation, since many of them may be asymptomatic. Routine screening for HIV infection among inmates may go a long way towards understanding the epidemiology of the disease in the nation's prisons and subsequently provide tools for its prevention and control.

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