HIV PREVALENCE AND ASSOCIATED RISK FACTORS AMONGST PRISON INMATES IN KUJE FEDERAL PRISON, FEDERAL CAPITAL TERRITORY, ABUJA, NIGERIA, JANUARY, 2013.

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BEING

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FEBRUARY, 2014

Attestation

I hereby declare that this project has been carried out and written by me. It is a record of my research work conducted under the supervision of Prof Kabiru Sabitu. It has not been presented in any previous application for award of higher degree. The works of other investigators referred to have been acknowledged accordingly.

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Certification

This thesis entitled: HIV prevalence and associated risk factors amongst prison inmates in Kuje Federal prison, Federal Capital Territory, Abuja, Nigeria, meets the regulation and requirement governing the award of Master Degree in Public Health of Ahmadu Bello University, Zaria and is approved for its contribution to science, knowledge and literacy presentation.

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Dedication

I dedicate this research work and its findings to mankind as a whole and especially to all those infected and affected with HIV/AIDS; and those who are in one form of bondage, incapacitation, and wrongful imprisonment. Also key are those continually suppressed despite their cry for justice, equity, fairness and improved but affordable health service delivery.

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Summary

In prisons, prevalence of HIV infection, overcrowding and poor prison conditions and diseases are of public-health importance. This study was conducted to determine HIV Prevalence and associated risk factors amongst prison inmates in Kuje Federal Prison, a male only prison located in the Federal Capital Territory, Nigeria.

Cross sectional study design and sample size of 154 were used. Data was collected by quantitative and qualitative methods. Variables on knowledge, attitude and practice were assessed using questionnaire, and HIV testing was also done. Knowledge, attitude and practice were scored and graded. Confidentiality and voluntary participation of respondents were ensured. Quantitative data was analysed using Epi-info version 3.5.3 and Microsoft Excel for univariate, bivariate and multi variate analysis, and thematic analysis done for qualitative data.

Mean age of respondents was 31.9 $\pm$ 7.8 years. 39.6% respondents were currently married. Median age at first marriage was 26 years (range 16-39) years. Overall HIV prevalence was 4.0% (1.5-8.6%, 95% CI) with convicts having 3.3% (0.1-17.2%, 95% CI) and awaiting trial inmates having 4.2% (1.4-9.5%, 95% CI). Only 16 (10.4%) knew all the five ways of HIV transmission. Mean score of HIV knowledge was 42%; 90 (58.4%) had poor knowledge and 3 (1.9%) had good knowledge. Attitude mean score on HIV was 84%; 120 (77.9%) respondents had positive attitude. 105 (68.1%) had ever been tested for HIV while 94 (61.0 %) knew HIV status. Consistent condom use 6 months before incarceration was 15.6%. Based on quantitative method, there was no (0%) heterosexual or homosexual practices in prison; however, the qualitative study found that same sex relationship exists. Fourteen respondents (9.1% [5.1-14.9%, 95%CI]) had tattoo, and six (4.0%) had body piercing. Mean score for HIV related good practice was 61% with 17 (11.0%) graded as having bad practice, 137 (89.0%) had fair practice and 0 (0.0%) had good practice.

Being younger than 25 years (OR: 1.28, P-value: 0.59), stay in prison less than 3 years (OR: 2.37, P-value: 0.38), multiple sexual partnership (OR: 4.64, P-value: 0.17), ever had STI (OR: 3.13, P-value: 0.17), tattoo (OR: 6.0, P-value: 0.09) and body piercing (OR: 5.4, P-value: 0.20) were associated with HIV status but not statistically significant, while ever attended school (OR: 0.31, P-value: 0.32), knowledge of HIV sexual transmission (OR: 0.39, P-value: 0.38), ever heard of condom (OR: 0.14, P-value: 0.18), ever used condom (OR: 0.23, P-value: 0.14), consistent

condom use (OR: 0.51, P-value: 0.5), seems to be protective but not statistically significant at P<0.05. On Logistics regression, never heard of male condom (AOR 33.1, P-value-0.016) and previous history of STI (AOR 18.4, P-value 0.05) were significant risk factors.

HIV prevalence in group is above 1% reference for low level epidemics. The correct and complete knowledge and good practice on HIV were generally poor which shows that more work and strategies need to be deployed to improve these. Steps should be taken to promptly treat sexually transmitted infections and make condoms accessible to all. Functional HIV counseling and testing services should be introduced with a well-designed HIV information, education and communication packages. More studies are also recommended.

Key words: HIV, Prevalence, Tattoo, Prison, Abuja

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Acronyms

AAFB:	Acid Alcohol Fast Bacillus
AIDS:	Acquired Immune Deficiency Syndrome
ANOVA:	Analysis of Variance
AOR:	Adjusted Odds Ratio
ART:	Anti-retroviral therapy
BCC:	Behavioural change communication
BMI:	Body mass index
FCT:	Federal Capital Territory
FMOH:	Federal Ministry of Health
FSW:	Female sex workers
GUD:	Genito -urinary disease
HCT:	HIV counselling and testing
HIV:	Human Immuno Deficiency Virus
IBBSS:	Integrated Behavioural and Biologic Survey
IVDU:	Intravenous Drug Users
LGA :	Local Government Area
MDG:	Millennium Development Goal
MSM:	Men who have sex with men
NACA :	National Agency for the Control of AIDS
NARHS:	National HIV/AIDS and Reproductive Health Survey
OR:	Odds Ratio
PLHIV:	People living with HIV
PMTCT:	Prevention of mother-to-child transmission of HIV
RTI:	Reproductive tract infections
SFH:	Society for Family Health
STI:	Sexually transmitted infections
TB:	Tuberculosis
TW:	Transport workers
UNAIDS:	Joint United Nations Programme on HIV/AIDS
UNODC:	United Nations Office for Drugs and Crime
WHO:	World Health Organisation

CHAPTER ONE: INTRODUCTION

1.1 Background

For centuries history, it has been the recognized right of societies to punish crime and today, the way to deal with persons who commit serious crimes is through confinements in prisons. When the British Government assumed the responsibility for the administration of Lagos in 1961, the evolution of an organized prison system began. The Nigerian prison system was modeled after the British system. The deplorable conditions of Nigerian prisons with the concomitant high death rate in most of them led to a setting up of a commission of enquiry in 1920. Post-independence, the increase in the prison population posed a lot of problems due to filthiness, understaffing and poor health related condition[1]. The prisons represent dynamic communities where at-risk groups congregate in a setting that exacerbates disease and its transmission, including Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome (HIV and AIDS).

The sudden emergence of HIV and AIDS in the world, its rapid spread from within and across nations especially in sub-Saharan African and its increasing burden, in the face of limited resources, has posed a serious threat to human existence and the attainment of the desired level of human development. AIDS remains a leading cause of mortality worldwide and the primary cause of death in sub-Saharan Africa, illustrating the tremendous, long-term challenge that lies ahead for provision of treatment services, with the hugely disproportionate impact on sub- Saharan Africa ever more clearer[2].

The first reported case of HIV in the world was quite recent in 1981 in the United State of America[3]. The menace of HIV and AIDS has been increasing in Nigeria since the report of the first case in 1986[4]. Many individuals, families, communities, businesses have felt the devastating effect of the epidemic with about 3 million Nigerians affected as at 2010 [5].

The Joint United Nations Programme on HIV/AIDS (UNAIDS) and its partners strongly recommended "Universal Access" to prevention, treatment and care for HIV and AIDS[6]. However, implementation of these strategies in prison settings needs adaptation due to the particular circumstances existing in prisons. It is too often forgotten that prisons can be very different in important ways, and that all prison inmates have their own social and health histories, and come from their own cultures, communities and backgrounds.

The prison setting is one of the most challenging for health care, health protection and the prevention of spread of diseases, particularly HIV / AIDS, sexually transmitted infections (STIs) and other diseases such as Tuberculosis (TB) and Malaria. The World Health Organization (WHO) issued the Moscow Declaration in 2003 calling for integration or at least close working relationships between national health and prison health services. Otherwise, health in prisons can remain on the periphery of interest of governments and can be equally marginalized within prisons[7].

WHO/UNAIDS[26,27] advocated for the use of second generation surveillance systems and incorporation of HIV testing into studies/surveys among the general populace and high risk groups to monitor changes and better understand HIV epidemic in each country. Second generation surveillance systems include HIV and STI biological and risk behaviour surveillance, using resulting data to warn of or explain changes in the levels of infection.

Population-based survey (either in general population or high risk groups) provide an opportunity to link HIV status with social, behavioural and other biomedical information, thus enabling researchers to analyze the dynamics of the epidemic in more detail. Information from this analysis could lead to better programme design and planning[27].

1.1.1 Situation analysis of Nigerian Prisons

Presently, there are a total of 234 prisons (137 convict prisons, 84 satellite prisons camps, 12 prison farms, and one open prison camp). Of the convict prisons two are maximum security while 18 are medium security[8,9]. According to the Nigerian Prisons Service, the conventional convict prisons are designed as remand for both the convicted and awaiting trial prison inmates. There are two major types of convict prisons operational in Nigeria today namely: The maximum and the medium security prisons. The maximum and medium security prisons cater for all classes of prison inmates including condemned convicts; lifers, long term prison inmates et cetera.

The currently installed capacity in the prisons is usually far exceeded. The total installed prison capacity in Nigeria as at end of 2011 was for 47,284 inmates. By 1976, the average daily prison population was 26,000, a 25 per cent increase from 1975. In 2007, Nigeria had a prison population of about 40, 444 according to International Centre for Prison Studies, King's College, London[10]. The population rose to 41, 404 (40,567 males and 817 females) as at May 2009 and as at July 31, 2010, the total prison inmates' population was 47, 628 out of which 13,000 (23%) were convicted persons while 34,328 (77%) are awaiting trial. As of May 2012, the total population of prison inmates was 50, 920 (convicted-14, 041; awaiting trial-36, 879; males-49,944 and females-976)[8,11].

There is usually disproportionate representation of prison inmates' population in each prison. Ikoyi prison had an original capacity for 800 persons, today, the population is 1,900. Out of this number, only 24 prison inmates are convicts. Port Harcourt prison has an installed capacity for 804 persons currently locks up 2, 924 persons out of which only 117 persons are convicts. Awka prison with an installed capacity for 238 persons presently accommodates 486 prison inmates out of which only 21 are convicts[9]. The Nigerian Prison system was supposed to exist with the full complement of legal, vocational, educational, religious, health and other social services but the situation has remained poor.

1.1.2 Burden of HIV/AIDS

Worldwide, as at the end of 2009, UNAIDS estimated that there were 33.3 million [31.4 million–35.3 million] people living with HIV (PLHIV) with an estimated 2.6 million newly infected. The number of children living with HIV increased to 2.5 million [1.7 million–3.4 million] with 370, 000 newly infected and 14 million children orphaned. The number of annual AIDS-related deaths worldwide was 1.8 million. Sub-Saharan Africa accounted for 22.5 million of PLHIV which represented 68% of the global total with about 1.3 million people dying of HIV related illnesses in sub-Saharan Africa which represented 72% of the global figure[12].

According to the 2008 report, almost 60 million people have been infected with HIV and 25 million people have died of HIV-related causes since the beginning of the epidemic[2]. Amongst countries with the largest epidemics in sub-Saharan Africa are Ethiopia, Nigeria, South Africa, Zambia, and Zimbabwe[2].

HIV is a serious health threat for the 10 million people in prison across the world. In most countries, levels of HIV among prison population are far higher than in the population outside prisons. It is estimated that the prevalence may be up to a hundred times higher than in the community. High rates of HIV in prisons are often accompanied by high rates of tuberculosis, sexually transmitted infections, drug dependence and mental health problems[13]. In West and Central Africa, according to recent publications and surveys carried out by UNODC, UNAIDS, WHO and the World Bank [28,29,30,31], available data on HIV among prison inmates indicate that the several countries are particularly affected by high HIV rate in prison settings. Regarding HIV, the prevalence among prison inmates in West Africa varies from double to nine times higher than what is observed among general population. It was estimated that the HIV prevalence among prison inmates in Nigeria was 9% in 2004, with Ghana having 19% in 2006, and Togo 7.6% in 2008[32].

1.1.2.1 Burden and impact of HIV and AIDS in Nigeria

HIV and AIDS constitute major public health problems in Nigeria; the burden of this disease spectrum is further compounded by the impact on other diseases, human output and economy. HIV and AIDS affect millions of people in Nigeria and stretch the already challenged infrastructure of the health sector.

HIV weakens the immune system and fuel the burden of other diseases and opportunistic infections such as Tuberculosis (TB) and *Pneumocystis jiroveci (carinii)* pneumonia (PCP).

Nigeria has been in a state of generalized epidemic. The trend of HIV prevalence amongst antenatal clinic attendees in Nigeria went up from 1.8% in 1991 to 5.8% in 2001 then declined to 4.4% in 2005. It rose again to 4.6% in 2008 and in 2010 it was 4.1%[5].

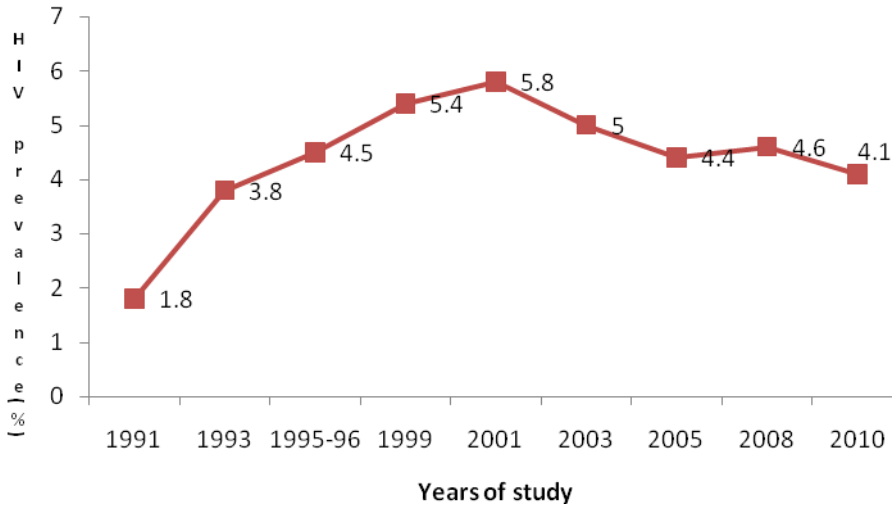


Figure 1: Trend of National HIV prevalence amongst antenatal clinic attendees, National HIV sero-prevalence sentinel survey, 1991-2010.

These figures are been used as proxy for the national prevalence. The 2007 National population based survey gave a figure of 3.6% for age range 15-49 years[14]. A national HIV survey conducted amongst the high risk groups in Nigeria in 2010 showed a prevalence of 27.4% amongst brothel-based female sex workers (FSW), 4.2% among injecting drug users (IDU) and 17.2% amongst Men who have sex with men (MSM)[15].

Based on the 2010 antenatal clinic survey prevalence of 4.1%, and further analysis with WHO's Estimation and Projection package (EPP 2009) and spectrum, about 3.15 million people were estimated to be living with HIV in Nigeria in 2011, with about 2.2 million orphans and vulnerable children, and about 200,000 deaths annually[5]. The majority of people living with HIV in Nigeria are between the ages of 15 and 49 in the prime of their working lives[5,14]. There is no national figure for HIV prevalence in Nigerian prisons but various studies found values ranging from 6% - 9%[16,17,18] and also the HIV/AIDS burden in the prison is not adequately known.

HIV is associated with increased morbidity, health care utilization, public health facility use, lost work time and increased time devoted to care-giving by relatives, causing neglect or abandonment of agricultural work /reduced labor force / time [19, 20]. A similar situation has been found in other countries like Malawi, Mozambique, Botswana, Namibia and Zimbabwe where the agricultural workforce has been reduced by between 14-20%[21]. This may also be the situation with Nigeria if drastic and decisive measures are not taken.

In 2008, 394.664 million USD was expended on HIV program with Government contributing about 7.6%[12]. With support from Global fund, United States President's Emergency Plan for AIDS Relief, United Kingdom's Department for International Development, World Bank and other donor agencies, Nigeria's National Agency for the control of AIDS (NACA) also estimated that in

2007 and 2008, the total spending for HIV and AIDS tracked by funding sources was 299,246,295.00 USD and 394,963,881.00 USD, respectively[22].

In prisons, the high prevalence of HIV infection and its associated illnesses, presence of injecting drug users (IDUs) combined with other risk behaviors, overcrowding and poor nutrition create crucial issues of public-health importance for correctional institutions and at a broader level, the communities in which they are situated. Findings from the Integrated Biological and Behavioural Surveillance Survey conducted by the Federal Ministry of Health (FMOH), Nigeria in 2007 and 2010 showed that high risk groups generally have HIV prevalence usually higher than that of the general population[15,23].

The Millennium Development Goal's (MDG) target '6' is that by 2015 HIV spread / new infection should have halted and the trend should be reversing[24]. To achieve this, all groups at high risk of HIV and AIDS must be clearly understood so that interventions can be developed to reduce the prevalence and incidence amongst them.

Also, to reduce the spread of HIV, relationship between it and other sexually transmitted infections (STIs) must be understood as they also add to the burden. STIs may cause ulcers that may lead to easier and more efficient transmission of HIV from one infected sexual partner to another. Also, the presence of HIV increases vulnerability to STIs. As a result of the presence of other untreated STIs and some endogenous RTIs, an HIV-infected person is more likely to transmit HIV in subsequent unprotected sexual contact. Prevention and management of STIs, therefore, have become a critical strategy for minimizing the impact of the HIV/AIDS pandemic[25].

1.2 Problems Statement

A high concentration for HIV has been documented in prisons in many parts of the world[13, 28,29,30,31,42,44,45]. Inmates once free, mix with general population hence may act as a bridge for HIV transmission, i.e may serve as a source of infection to the general population. Considerable gaps remain in the quantity and quality of information available in Nigeria on HIV/AIDS in prisons and the underlying dynamics of the HIV epidemic and its likely future course. In particular, data that provide insights into the dynamics of transmission and the following questions on HIV in prisons are lacking:

- What are the determinants of new HIV infections in prison inmates? Are there factors that influence transmission or influence the response?

- How well is the current response addressing new HIV infections in prisons? Is the coverage adequate? Has the response had an impact over time in prisons, in terms of behavioural change and HIV biological markers?

There is lack of adequate data, national figure for HIV prevalence and burden in prisons; also there is inadequate literature on HIV risk factors in Nigerian prisons. The details of these factors in Kuje Federal prison are also not known. There are no specific health interventions regarding HIV for prison inmates. Even the decisions on interventions on HIV are based on data from the general populace in the communities. Another challenge being faced now in the population and high risk group is the issues of TB/HIV co-infection in Nigeria, despite this, the strategic framework and policy documents put in place by FMOH to guide implementation of HIV and even TB/HIV co-infection in Nigeria has no specifications for prison settings partly due to unavailability of comprehensive prison specific and national data on knowledge, behaviors, attitude, practices and risk factors that drive HIV in prisons[33,34].

1.3 Rationale/Justification for study

The rationale for this study is pivoted on the fact that the prevalence of HIV/AIDS in prison settings is a growing concern and information on HIV/AIDS in prison communities in Africa indicates that prisons concentrate great numbers of HIV-infected and at-risk populations[28]. The study will determine and quantify the magnitude of HIV and its dynamics in Kuje prisons because more information is necessary to formulate evidenced based interventions in prisons to reduce HIV transmission. It will fill information gaps on what Kuje prison inmates know about HIV/AIDS, their feelings (and preconceived ideas) and determine the HIV prevalence amongst them.

As one of the earliest studies in this prison, it will serve as baseline and guide for other studies including conduct of similar studies nationwide and thus provide basis for effective and evidence-based interventions that will promote well-being, reduction in morbidity and mortality due to HIV and AIDS in Kuje prisons which can be extended to other prisons in Nigeria. Such interventions will include promoting and provision of universal access to HIV prevention, treatment and care which is in line with the declaration of the international community that prisoners retain all rights that are not taken away due to incarceration. Loss of liberty alone is the punishment, not the deprivation of fundamental human rights. Like all persons, therefore, prisoners have a right to enjoy the highest attainable standard of health and in context of HIV/AIDS, this includes a right to HIV/AIDS prevention tools[13].

Sequel to the above, there is a need to collect serologic data and behavioural data to assess knowledge, behaviors, attitude, practices, mode of transmission and other determinants and associations that drive HIV amongst prison inmates. Series of studies have shown that with high prevalence of HIV there is a corresponding high incidence of TB and other diseases[35, 36, .37,38]. In absence of intervention, when a PLHIV develops TB, it gives only 40% smear positive and 50% lifetime breakdown[39]. Due to the lack of adequate information for planning and inavailability of

anti-retroviral drugs, six prison inmates of a Federal Prisons reportedly died of HIV/AIDS in 2011, while 12 others were confirmed to be infected[9]**.** These have further shown the impact of HIV and the need for this study in prison such as Kuje Federal prison.

The first step to the development of adequate HIV prevention, treatment, care and support programmes in prisons is to build better knowledge of the situation, better knowledge of the extent of the problem, and needs. The study will give information on prevalence and factors associated with HIV transmission in Kuje prisons which will aid formulation of preventive interventions for reducing transmission. It will also be a baseline for other studies and conduct of similar studies nationwide.

1.4 Research Questions:

- What is the prevalence of HIV amongst Kuje prison inmates?
- What are the knowledge, attitudes, practices and risk behaviours of Kuje prison inmates on HIV/AIDS and STI?

1.5 Objectives of study

1.5.1 General objective

The general objective of the study is to determine HIV Prevalence and its associated risk factors amongst prison inmates in Kuje Federal Prison, Federal Capital Territory, Abuja, Nigeria.

1.5.2 Specific objectives

The specific objectives of the study are:

1. To determine HIV prevalence amongst prison inmates in Kuje prison with provision of opportunities for HIV counseling and testing (HCT) with appropriate referral.
2. To assess knowledge on HIV/AIDS & STI transmission and prevention amongst prison inmates in Kuje prison.
3. To assess attitude towards HIV infection and AIDS amongst prison inmates in Kuje prison.
4. To assess behaviours and practices on HIV infection amongst prison inmates in Kuje prison.
5. To determine risk factors associated with HIV infection amongst prison inmates in Kuje prison.

CHAPTER TWO: LITERATURE REVIEW

Review of the literature on HIV and AIDS indicated that some studies have been conducted in some prisons within and outside Nigeria. This chapter presents the review of the literatures on the research topic.

2. 1. Prevalence of HIV in prisons

Prevalence of a disease or infection is the summation of new (incident) and old cases of the disease or the infection existing at a given point in time, or over a period of time in a given population.

A study by Society for Family Health (SFH) in 2010 which used a two-stage sampling design in six states and 18 prisons to evaluate the prison health and intervention situations found HIV prevalence among prison inmates to be 7.1%, which was higher than for prisons staffs-3.4%, higher among short term prison inmates-10.8% than for lifers-3.3%. The age group 30-39 years had the highest prevalence of 7.9% [16]. A study by Idigbe et al. in 1996, found 9% (n=753) of the prison inmates positive for HIV antibodies. It found that those Acid Alcohol Fast Bacillus (AAFB) positives for TB had HIV prevalence of 28%. Findings indicated higher prevalence of HIV amongst the prison inmates than recorded in the general population in Lagos with general population prevalence of HIV of 4%[17]. Another study conducted by Muhammad et al. in 2010 estimated HIV sero-prevalence among male prison inmates in Kuje prison to be 6%. The highest prevalence was found in the age group 10-20 years (7.1%) [9]. The study was only for HIV testing and did not assess behaviors or any risk factors[18].

Studies found that the prison HIV prevalence in Zambia was 27.2% while South Africa was as high as 41.4% in 2002[13]. Hellard and Aitken in 2004 showed that HIV prevalence in prison inmates in more developed countries ranges from 0.2% in Australia to over 10% in some European nations[42]. A study in Spain showed the prevalence of HIV in prison inmates to be as high as 19.4%

distributed as follows: women (26.0%), the 25-34 age group (29.1%), people with a tattoo (29.9%), inmates with a background in self-inflicted injuries (42.2%), Intravenous Drug Users (IVDUs) (46.3%), inmates who admitted sharing syringes (61.5%) and inmates with a prison record of one or more years (37.3%)[44]. Another study in 1996 amongst female prison inmates in Brazil showed that 25% of them were HIV sero-positive [45]. The prevalence of HIV in prisons in Russia accounted for about 20% of the known cases in that country[13].

2.2 Knowledge of prison inmates on HIV

A 2009 study by Sabitu et al. titled 'An assessment of knowledge of HIV/AIDS and associated risky behavior among prison inmates of Kaduna convict prison: the implications for Prevention Programmes in Nigerian Prisons'[40], showed that about 96.1% of the prison inmates had heard about AIDS while70% were ignorant of the causative agent; however, knowledge of route of disease transmission was high, with 91%, 67% and 46.7% of prison inmates mentioning sexual activity, unscreened blood transfusion and sharing unsterilized blades, respectively. Overall, 39.5% of the respondents had good knowledge of HIV/AIDS.

Another study by Odunjirin and Adebajo in 2001 indicated that 53.6% of the prison inmates were in the age group 20-29 years, 52% had secondary education while 9.9% had tertiary education and 7.1% had no formal education. They found out that about 97.2% had heard about AIDS although only 20.6% had known or seen someone with AIDS before and about 34.1% knew the causative agent of AIDS. 60.3% knew the correct mode of transmission of HIV. 15.5% claimed fidelity. On condom knowledge 12.7% claimed use of condom for casual sexual contacts were measures that could help prevent AIDS but 7.9% did not know any preventive measure[41].

A study by SFH found that knowledge on major routes of HIV transmission were sexual intercourse (86%), sharing of sharp (72%), blood transfusion (27%), multiple partners (14%) and

mother to child (1%). Knowledge of all 5 routes was low amongst inmates (0.1%). Knowledge on HIV infection prevention were abstinence (87%), stay faithful to one uninfected partner (87%) and correct condom use (67%)[16].

2.3 Attitudes of prison inmates towards HIV

SFH found that on self risk perception 54% rated self as having no chance of being infected while low chance was 32%, only 13% rated their chances as moderate or high[16]. Also 23% of inmates had non- discriminatory attitude towards persons infected with HIV according to UNAIDS indicators. Fifty-seven (57%) of the respondents agreed that they would keep AIDS infected member of the family secret.39% of inmates would like PLHIV to be quarantined. About 77% of respondents were willing to work with an infected colleague[16].

2.4 Behaviours / practices of prison inmates on HIV/AIDS

The 2009 study by Sabitu et al. reported that only 64 (14.9%) prison inmates reported having sexual intercourse in prison out of which 56.2% had it with same sex and the rest were heterosexual. The study by Odunjirin and Adebajo in 2001 found that 56.3% of respondents claimed to have used condom in the past although only 38.7% used it for their last sexual exposure while 28.2% claimed they used it for all casual sexual intercourse. On sexual practice, 42.8% said they knew that homosexuality was the most prevalent sexual practice in the prison while 28.6% claimed there was no sexual practice and 13.1% feigned ignorance of any sexual practices in the prisons. 53.2% claimed to have multiple sexual partners although 94.8% denied any sexual practice whilst still in prison[41]. The SFH study found that 39% of inmates use marijuana. Those that engaged in frequent alcohol consumption were 9%, and 37% of respondents had ever tested for HIV[16].

A publication titled 'HIV in prison: what are the risks and what can be done?' by Hellard and Aitken in 2004 showed that tattooing is a risk factor for HIV transmission in prison and that access to condoms, needle and syringe programmes in prisons was extremely limited[42]. Another study in Pakistan by Manzoor et al. in 2009 showed that the prevalence of smoking and drug / alcohol abuse amongst prisoners was 63.1% and 37.9%, respectively. This study found clustering of risk factors among prison inmates which are conducive to the transmission of STIs, HIV/AIDS and tuberculosis[43].

2.5 Factors associated with HIV/AIDS

Any factor that will either affect the incidence of a disease or infection or the number of old cases of a disease or infection or both will affect prevalence. Some of the factors that can cause an increase in prevalence of a disease in this case, HIV are prolongation of life of patients as carriers, longer duration of the disease, increase in number of new cases, in-migration of cases, out-migration of healthy people, in-migration of susceptible people, improved diagnostic facilities while those that can decrease prevalence are high case-fatality rate from disease, shorter duration of disease, decrease in new cases, in-migration of healthy people, out-migration of cases, improve cure rate of cases [54].

Factors that can predispose an individual to an infection such as HIV (which may be predominant or significant within a group) may also affect the dynamics within the group (in this case prison inmates) hence the factor may become associated with the HIV prevalence within that group. Such include existence of certain practices and or events that favour transmission of HIV in prisons such as sexual transmission (such as non-availability of condoms, homosexual practices and rape), tattooing, violence, length of incarceration and type of crime committed amongst others.

Prevention intervention programmes such as behavioural change communication (BCC) which is designed to realise the ‘‘ABC’’ of HIV prevention (i.e. abstinence, being faithful with one uninfected sex partners and use of condom), HIV counselling and testing (HCT), PMTCT, injection safety, control of other Sexually Transmitted Infections (STIs), safe blood transfusion services and anti-retroviral therapy (ART) programme for those infected and require treatment to reduce viral load all aim to reduce the risk of transmission.

The interplay between these factors or single factor relationship with outcome can explain the HIV sero-conversion / prevalence situations amongst the general population, the incarcerated and other high risk groups. The HIV epidemic is getting much attention while its relationship with the other STIs such as syphilis and gonorrhea are often overlooked. There is a connection between STI infection rates and HIV infection rates. By building the knowledge and treatment of STIs, the risk of HIV infection and transmission can be reduced. STI that disrupt the integrity of the skin or mucous membrane can bleed easily, increasing the infectiousness and susceptibility to HIV.

In 2006 at the XVI International AIDS Conference held in Toronto, WHO/UNAIDS confirmed that caring for sexually transmitted infections (STIs) at the right stage of an epidemic and targeting them at key population groups can reduce HIV transmission[46]. The association between HIV and other STIs is further shown in various studies such as that by Wasserheit in1992 which concluded that the evidence for *genital ulcer disease* as a risk factor for HIV acquisition is the most compelling[47]. Out of 10 studies of genito -urinary disease (GUD) in developing countries, six found significant relationships with HIV acquisition, controlling for sexual behaviour. In addition, a study of gay men reported a small impact of GUD on HIV risk[48].

Studies on syphilis alone have usually found a significant relationship with HIV, at least among the heterosexually active. Prospective studies showed no significant effects, while retrospective

studies reported some effects[49,50]. Two studies reported strong significant relationships (with risk ratios above seven), though these did not control for sexual behaviour [51,52].

A study in Zaire demonstrated that monthly testing and treatment for STIs for Zairean female sex workers reduced HIV incidence[53]. There is also evidence that infection with HIV affects the symptoms of some STIs, perhaps encouraging larger lesions[47]. From these studies it is obvious that knowledge of STI, good health seeking behaviour and early treatment will reduce the HIV incidence and impact.

The study by Sabitu et al. in 2009, found a strong association between educational attainment and knowledge of HIV/AIDS ($\chi^2 = 28.3$, df = 6, $P < 0.0001$). The SFH study[16] found that HIV prevalence varies with different age groups with age group 30-39 years with highest prevalence of 7.9%. Idigbe et al. also found that those inmates positives for TB had higher HIV prevalence of 28% while the general prevalence amongst inmates was 9%[17]. The study in 1996 amongst female prison inmates in Brazil showed on multivariate analysis that HIV infection ($p < 0.0001$) and incarceration time <12 months ($p < 0.05$) were each associated with TB[45].

A matched and unmatched case-control study on HIV transmission among male prison inmates in a State prison system in Georgia identified the following characteristics as associated with HIV sero-conversion in prison: male-male sex in prison, tattooing in prison, older age (i.e., age of >26 years at date of interview), having served ≥5 years of the current sentence, black race, and having a body mass index (BMI) of ≤25.4 kg/m^2 on entry into prison[55].

Another study in Spain using logistic regression analysis showed Intravenous drug users (IVDUs), women, the 25-34 and 35-44 age group, tattooed men, those with a background in self-inflicted injuries and those with a prison record of more than one year as predictors of HIV infection[44].

A study in the United States using data from a large sample of state prison inmates and logistic regression identified four variables had a statistically significant association with having contracted HIV inside prison: age of respondent (Each year an inmate was older decreased the chance that he would contract HIV in prison by 1.09 times); being non-White; having been convicted of a sexual crime; and the number of days spent in prison before being released for the first time[56]. To further underscore the implication of drugs and injecting drug use as risk factors, a study in Thailand showed that more cases than controls reported using drugs (60% *vs* 45%; P=0.005) and sharing needles (50% *vs* 31%; P<0.01) in the holding cell before incarceration. Independent risk factors for prevalent HIV infection included injection of methamphetamine before detention (adjusted odds ratio (AOR) = 3.3, 95% confidence interval (CI): 1.01 - 10.7), sharing needles in the holding cell (AOR = 1.9, CI: 1.2 - 3.0), being tattooed while in prison (AOR = 2.1, CI: 1.3 - 3.4), and borrowing needles after release (AOR = 2.5, CI: 1.3 - 4.4)[57].

Another study involving 114 cases and 149 controls showed injectable heroin use was significantly greater (P-value, 0.02) among HIV-infected cases (93.0%) than un-infected controls (84.6%), and also cases were more likely to share drug paraphernalia and have drug-using sexual partners. Multiple logistic regression analysis revealed that the number of imprisonments (between 2-5 times; OR = 5.23), sharing mainly dilutes (OR= 63.47), and sharing dilutes concurrently with needles (OR= 127.33) significantly predicted HIV sero-conversion, after controlling for age and years of education[58].

The relative contributions of needle use practices and sexual behaviors to human immunodeficiency virus (HIV) antibody sero-positivity also displayed in Quebec among incarcerated women. HIV positivity was found in 6.9% (95% CI: 4.6 - 9.9) of all participants and in 13% (95% CI: 8.6 -18.6) of women with a history of injection drug use. HIV sero-positivity among women with a history of injection drug use was predicted by sexual or needle contact with

a seropositive person, self-reported genital herpes, and having had a regular sexual partner who injected drugs, but it was not predicted by prostitution[59].

2.6 Conceptual Framework of HIV transmission in prison

Figure 2 shows the link between the community and the prisons. The inmates moved from community to prisons where they interact with themselves, the prison staff and other workers in the presence of the various factors in the diagram. Those people they interact with are members of the community. When and if the prisoners are released, they go back to the communities. The impact of the HIV in prisons and communities can be ameliorated with prevention intervention programmes after due understanding of the associated / risk factors.

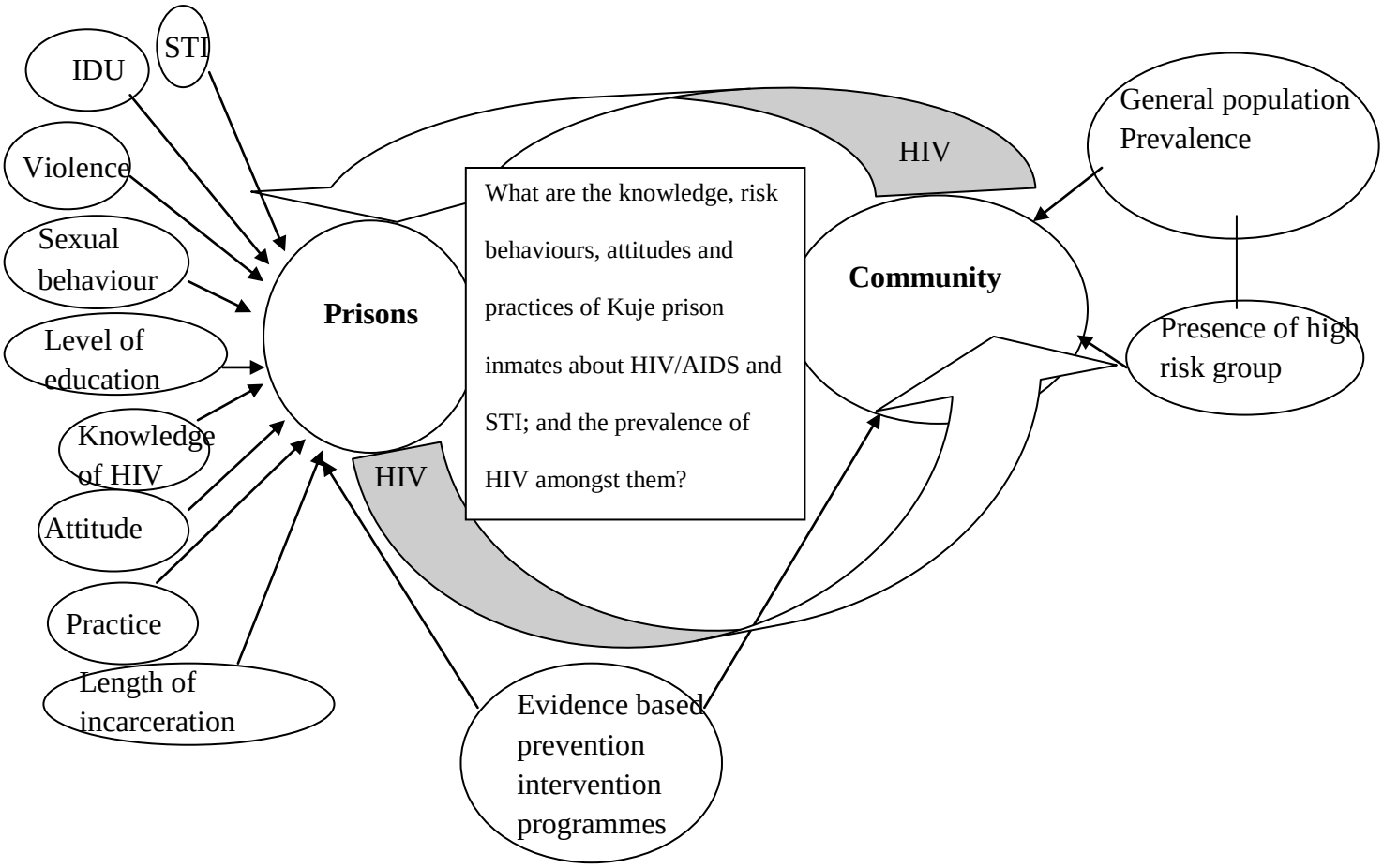


Figure 2. Conceptual Frame Work of HIV transmission in prison with its link to the community.

CHAPTER THREE: MATERIALS AND METHODS

3.1 Description of Study Area

The study was conducted in the Kuje Federal Prison, located in Kuje town, one of the six local government councils in the Federal Capital Territory (FCT), Abuja as shown in Figure 3. The Federal Capital Territory is the Federal capital of Nigeria and is one of the 37 semi-autonomous units that make up the country (36 states and the FCT).

The Federal Republic of Nigeria occupies a land mass of about 923, 768 sq.km and 800km of coast line in the West African region, lies between Latitudes 4^o 1' and 13^o 9' North and longitudes 2^o 2' and 14^o 30' East; bordered in the north by Niger Republic; east by the Republic of Chad and Cameroun; west by the Republic of Benin and in the south by the Atlantic Ocean. Nigeria has a three-tier structure- a Federal Government with a FCT; 36 State governments; 774 Local governments. From the 2006 national census estimate[60] and the speech by the Chairman of Nigeria's population commission on October 27, 2011[61], the country now has an estimated population of 168 million. Nigeria is made up of about 400 ethnic groups.

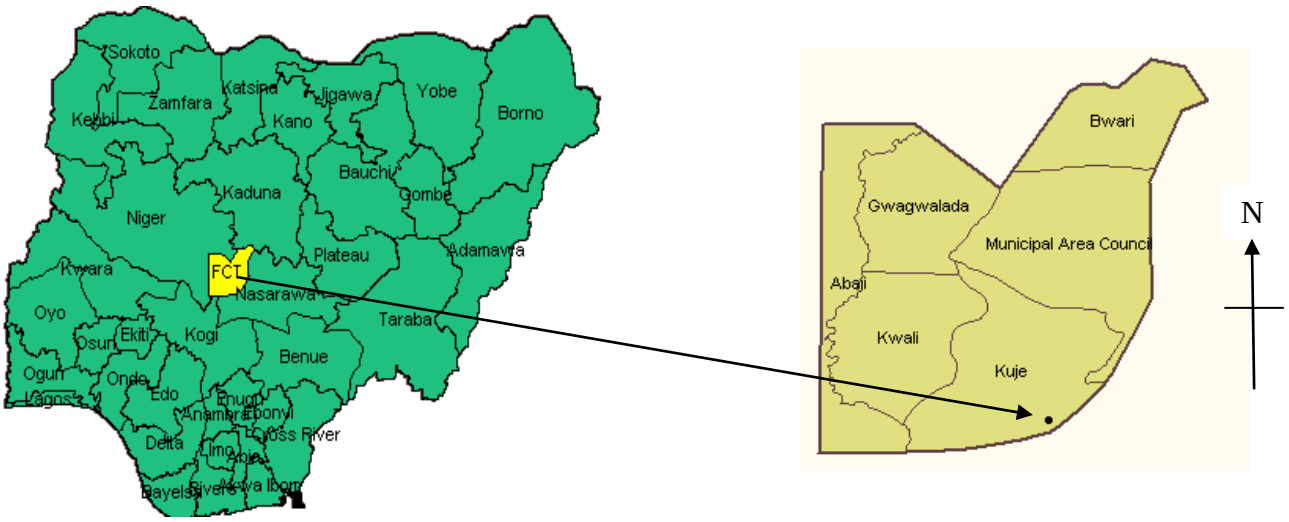


Figure 3. Map of Nigeria showing the Federal Capital Territory (Abuja) with prison location in Kuje Area council indicated.

The Kuje prison is a medium security convict prison. It is a male only convict prison originally designed for a capacity for 320 prison inmates. The prison serves offenders in Abuja and those from other states in the country. As at end of May, 2012, the inmates' population was 526 males with majority being awaiting trial inmates. There is a clinic with three medical doctors, nineteen nurses, seven public health officers, two laboratory scientists, one pharmacist and one pharmacist technician[8,11].

3.2 Study design

A cross sectional study design was used for the study.

3.2.1 Study period

The period for study preparation and conclusion was from July, 2012-April, 2013. The pilot study and pretest of study materials were conducted in December, 2012 while the main data collection was conducted in January, 2013.

3.3 Study population

The study population was Kuje Federal Prison inmates of all ages at the time of study. Kuje prison is a male only convict prison. The respondents were sampled prison inmates of all ages.

3.3.1 The inclusion criteria for the study were:

- A prison inmate (regardless of age) who had been in custody in Kuje Federal prison for at least 24 hours prior to commencement of data collection.

- A prison inmate who voluntarily gave informed consent to participate in the study.

3.3.2 The exclusion criteria for the study were:

- Inmates in custody for less than 24 hours prior to commencement of data collection were excluded from participation.
- An inmate's refusal to participate in the study.
- An inmate who claimed he knew his HIV status (either positive or negative) and refused HIV testing was excluded from the serologic (HIV testing component).
- Any inmate mentally unstable will be excluded from study.

3.4 Sample size determination

i) Prevalence of HIV in prisons from 2010 SFH study[16] was 7.1 % i.e. p =0.071.

(ii) Significance level of 0.05 (for 2-tail tests of significance); $Z_{\alpha/2} = 1.96$

(iii) Power of 80%; type 2 (β) error of 0.2.

(iv) Precision (d) of $\pm$5%

The minimum sample size required for the study was given as:

$$n = \frac{Z\alpha^2 * p * q}{d^2}$$ (Kish Leslie, 1965)[62]

n = minimum sample size

p = HIV prevalence in Prison = 7.1%=0.071

q = (1 – p) = 1-0.071= 0.929

d = precision = $\pm$5%

$$n = \frac{1.96^2 * 0.071 * 0.929}{0.05^2} = 101$$

The estimated sample size was 101

Correcting for non-responses: =1/1-f X n

f = non-response, then 1-f = response. For a study that has 2 components (serology and behavioural) [27],

$$= \frac{1}{\text{1-non-response (Behav) x 1- non-response (Test)}} \quad X \quad n$$

HIV testing refusal/non response

2010 IBBSS conducted amongst high risk groups-overall refusal/non response was 10.7%, (IDU=14.8%, MSM=16.4%, Brothel based FSW=13.6%, Non-brothel-based FSW 16.6%, Police, Armed Forces and TW had 7.1%, 5.9% and 3.6% of HIV test refusal respectively[15].

2007 NARHS conducted amongst general population- refusal/non response=21%[14]

Behavioural/questionnaire non response : 2007 IBBSS[23]=0.8%, 2007 NARHS[14] = 2.5%

Hence from above non responses, 25% non-response for testing (f_T), and 5% non-response for behavioural (f_B) was used, then the minimum sample size became

1/1-f, where 1-f =response rate = $1 / (1\text{-}f_T \text{ X } 1\text{-}f_B)$ X n

$\mathbf{f_T}$ = refusal testing (non response)=0.25

$\mathbf{f_B}$ **=** refusal questionnaire (non response)=0.05

=1/ (1-0.25 x1-0.05) X 101 = 1 / (0.75 x0.95) X 101 = (1 / 0.71) X 101=142

Calculated minimum sample size (n) =142

By rounding up, 'n" for study =150.

The number of respondents actually recruited into the study was 154.

3.5 Sampling technique

Probability sampling technique was used for participants' selection in the study. The basic sampling units (bsu) were individuals who are only males because the prison is a male only convict prison. Stratified sampling into convicts and awaiting trial inmates was done. The sample selection for each stratum was allotted based on probability proportionate to size (PPS). Using a sampling frame, simple random sampling scheme was used to select individual respondents in each stratum.

Allocation of respondents to different strata

The number of respondents recruited from each stratified group i.e. convicts group and awaiting trials group using PPS was calculated as follows:

$$\frac{\text{Population of the Convicts or Awaiting trial inmates in Kuje prison}}{\text{Total population of all prison inmates in Kuje prison}} \times \text{sample size (n)}$$

The total population of Kuje prison inmates as at the January 3, 2013 was 502 which were made up of 99 convicted inmates and 403 awaiting trial inmates.

Applying the above formula to calculate sample for each stratum,

Convicts sampled was 31

Awaiting trial sampled was 123

Both equaled 154

A web-based random number generator was used to generate the random numbers used for respondents' selection in each stratum.

3.6 Study Instruments

The study adapted tools on HIV surveys as outlined in 'Guidelines for measuring national HIV prevalence in population based surveys' by UNAIDS/WHO working Group on Global HIV/AIDS and STI surveillance[27]. The structured questionnaire used for study was adapted and modified from questionnaires used by the Federal Ministry of Health for National HIV/AIDS and Reproductive Health Survey (NARHS) and Integrated Behavioural and Biologic Survey (IBBSS), and the Chicago State University HIV risk behaviour questionnaire[63]. It captured questions on socio-demographic characteristics, HIV/AIDS and STI knowledge, attitude, behaviours and practice, health status, exposure to HIV programmes, care and support. The questionnaire contained mainly close-ended questions to facilitate data collection, entry and analysis; and few open-ended questions to allow respondents expatiate on vital issues which may add quality to the findings of the study. The HIV testing was conducted using antibody detection rapid test kits- Determine and Unigold with Stat-Pak as a tie breaker in case of discordance.

3.7 Data collection technique

Data was collected by using qualitative and quantitative methods. The qualitative method was through Focus group discussion and Key informant Interview using interview guides on various HIV related and prison issues. The Focus group discussion was conducted in a session involving ten (10) inmates while the Key informant Interview was conducted with a prison staff and a peer educator amongst the Kuje prison inmates. The sessions were conducted by an interviewer and a note taker, with each lasting for 1 hour 20 minutes -2 hours.

The quantitative method was done with interviewer-administered, pretested structured questionnaire and HIV testing. Using non repetitive serial numbers (without names of individual respondent), the demographic and behavioural data (questionnaire) were tracked to the serologic data (HIV testing result) since the interviewers were different from the counselor-testers.

Confidentiality of information, voluntary participation and respect for human subjects was ensured. A respondent knew his own individual number only and had access to his own HIV result.

The same code/number was written on all other materials for an individual such as consent forms. This code/number was also the same for an individual's data during the data entry and analysis hence linking of questionnaire and HIV test result was done. There was no other identifier such as names of respondents other than the unique identification code. Example of the unique identification code are 001, 005. The first set of data collection was through questionnaire administration for behavioural component, and then each participant in the behavioural part was offered opportunity to voluntarily partake in the HIV counseling and testing.

Based on the number of subjects to be enrolled for the study and considering the period for data collection, Four (4) interviewers and two (2) counsellor-testers were used for data collection. The interviewers and the counselor-testers were all males. Initially, a female was included but experience during the pilot study made the change to all males.

HIV Counselling and Testing: After the administration of questionnaire, the interviewer guided the respondent to the counsellor–tester. All respondents were asked individually for their voluntary consent to the blood testing for HIV using finger pricks and rapid test kits. Consents were given by written (signing/thumb printing) and verbal acceptance. Pre-test counselling were provided before testing while post-test counselling was provided prior to provision of the test result.

The linked anonymous testing with the provision of test results and referral was used. HIV testing was done using rapid test kits in parallel testing algorithm on blood samples for HIV antibody detection (though serial was proposed, this was changed because of the number of pricks an individual will undergo if there is discordance between the first, second and third test. Also

reading each test separately in serial algorithm will amount to addition of the time required for conduct of test). Testing was done using guidelines for rapid-test as recommended by UNAIDS/WHO and the national guideline on HIV counselling and testing[64].

In serial testing algorithm, an initial blood is taken and tested using the more sensitive kit. If the result is negative, the result is given to the client as HIV negative. If the result is positive, the blood is tested using a second HIV rapid test kit. If the second is also positive, the result is given to the client as HIV positive. However, if the second test is negative, a tie breaker is used and the result of the tie breaker is given to the client (Figure 4).

Parallel testing algorithm was used in this study; hence the blood sample was tested at the same time with two different test kits- a more sensitive kit and a more specific kit. If they both read negative, result was recorded as negative and vice versa for positive but when they had different readings, a tie breaker was used to confirm the actual result (Figure 5). All positive cases were post counselled and subsequently referred to Kuje Prison hospital for follow up and management. All negative cases were counselled and advised to go for repeat testing after three (3) months and to observe the HIV prevention principles as taught in the post test counselling. As recommended by the national guideline on HIV counselling and testing[64] Determine test kit and Unigold test kits were used together and Statpak test kits as tiebreaker. All study field workers received training on universal precautions and the disposal of hazardous waste.

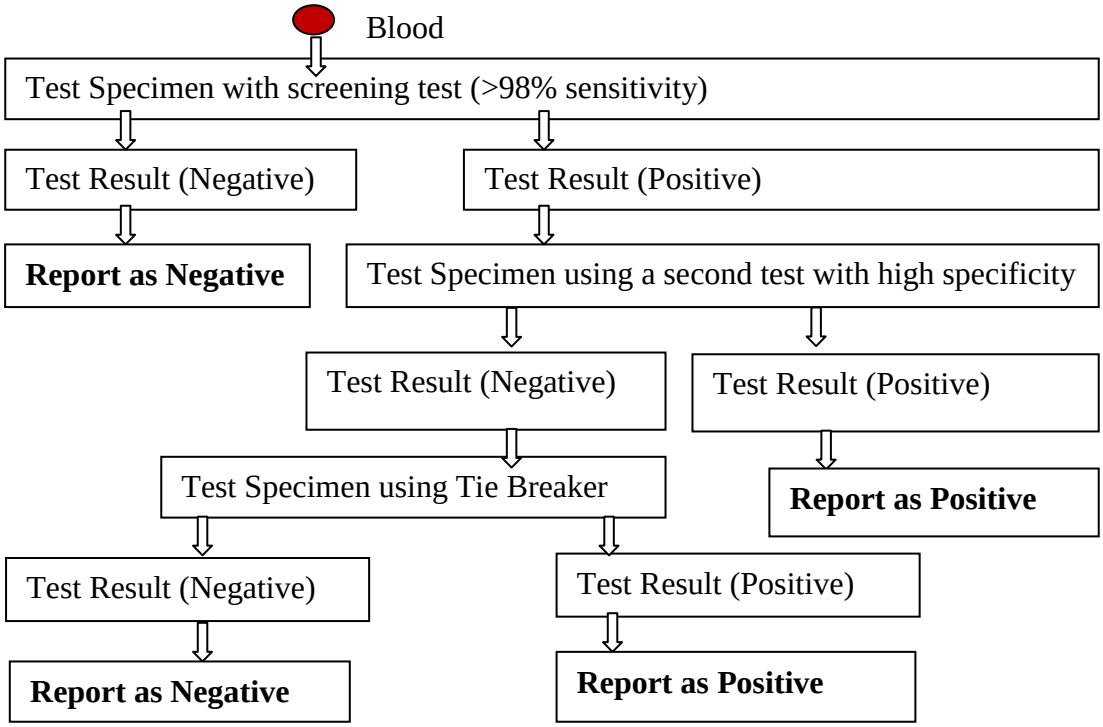


Figure 4. Serial testing Algorithm for HIV Rapid Test kits

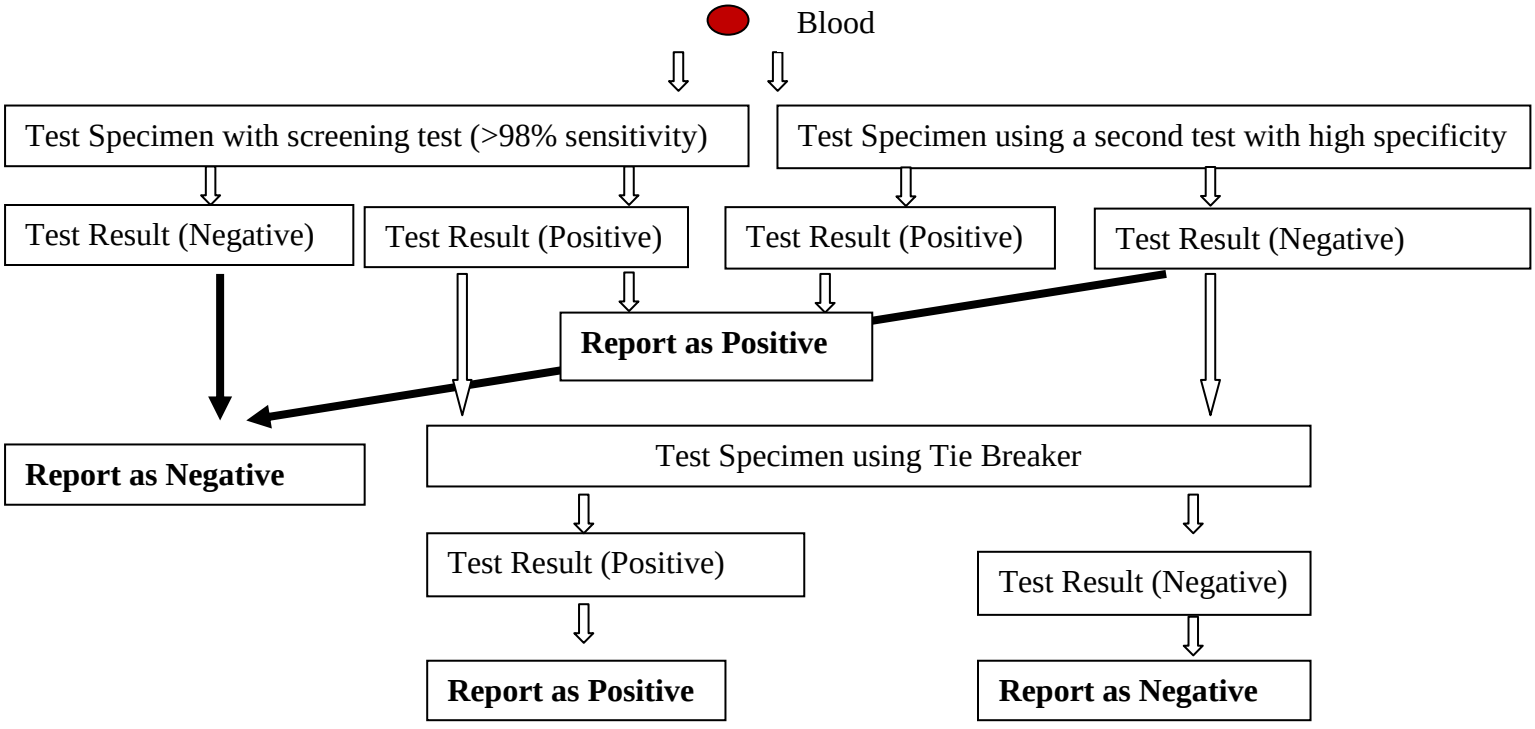


Figure 5. Parallel testing Algorithm for HIV Rapid Test kits

3.8 Quality assurance procedure

Ensuring the high quality of the information to be produced was a critical component of this study. All the personnel involved in this study worked to achieve this goal. To ensure data of high quality, training of data collectors and a pilot study were conducted.

3.8.1 Pilot Study

The questionnaires and other study tools were pretested in a pilot exercise 2 weeks before the main data collection exercise to ensure validity, reliability, acceptability and clarity of study tools. It was conducted in the same site as the main study (Kuje prison) and by the same fieldworkers. It was preceded by training of the six fieldworkers on the study methodology and tools. Fifteen respondents were recruited for the pilot. Their consent was sought for questionnaire administration and HIV testing. 1 of 15 (6.7%) declined answering the questionnaires and 3 of 15(20.0%) refused HIV testing.

Some of the findings from the pilot used to improve respondent participation and conduct of the main study were:

1. The questionnaire was bulky with some ambiguous questions hence questionnaire was reviewed.

2. The fieldworkers spent too much time on each respondent hence approaches to improve time management were introduced including better counselling and interpersonal approach.

3. The security check in the Kuje prison was strict hence the pilot activity gave us opportunity to adjust to it.

4. The approved data collection period in the prison was 10.00am to 1.00 pm daily, which we had to consider in our work time.

5. Need for proper labeling of each respondent's study materials with the individual codes.

6. All other logistics and referral tools were pretested and perfected for the main study.

7. The female fieldworker had to be replaced by a male because of the phone calls and approaches being received from the inmates. Also the space for phone numbers of counselor- testers on the test result and referral forms were deleted.

3.8.2 Training of fieldworkers

Training of the six fieldworkers was conducted before commencement of data collection. During training, the fieldworkers were introduced to the study design and data collection method. Specific instructions and explanations were provided on how to ask and record responses to questions in the questionnaire. The fieldworkers were familiar with the community, spoke English and pidgin and had previous field experience.

3.9 Data Management

3.9.1 Data collection and retrieval

During the data collection, the interviewer collected the information from the respondent using questionnaires which are then submitted on daily basis. The questionnaires were further checked on submission for errors and omissions which were corrected immediately. The process of blood testing for HIV was monitored in order to ensure that all informed consent and specimen collection procedures according to study protocol were implemented correctly. Monitoring of the "response rate" for HIV testing was done. Problems that were identified during the reviews were immediately addressed on the field.

3.9.2 Measurement of Variables

The study collected data on the following variables (Questionnaire is on appendix 2). Socio-demographic information of respondents, duration of incarceration, knowledge about HIV/AIDS and STI, sexual behaviours, history/duration of sex pre and intra prison, condom accessibility and consistent usage, use at last sex, use in anal sex, self-reported STI symptoms and treatment, treatment seeking behavior, drug usage / injecting drug use in prison, history of sharing sharp / cutting objects and tattooing, knowledge and treatment of Tuberculosis, exposure to HIV related communication, attitudes towards PLHIV, and also conducted HIV Testing.

3.9.3 Statistical Analyses

Gross review and manual editing of the filled questionnaires were performed before electronic data entry. Data was entered into Microsoft Excel 2007 and Epi-info software (version 3.5.3). Data cleaning and random checks of entered data were performed to exclude incomplete, inconsistence and inaccurate data before analysis. Electronic data back-up was undertaken (using a flash drive and e-mail). Data analysis was performed using Microsoft Excel 2007 and Epi-info software (version 3.5.3) for univariate analysis using frequencies and proportions; bivariate analysis of the association between HIV Status and selected behavioural indicators, socio-demographic and other factors using prevalence odds ratios, Fisher's exact test and/or Chi² (X^2) test of statistical significance; Variables that were significant at $P \leq 0.20$ at bivariate analysis were subjected to multivariate analysis using unconditional logistics regression model with forward selection approach, to identify independent predictors of HIV status in the group.

All analyses were done at 95% confidence interval. Level of significance for all tests was 5% (0.05). Data was summarized using tables and charts for key indicators.

3.9.4 Criteria for scoring and grading of HIV Knowledge, Attitude, and Practice of respondents

Knowledge, Attitude, and Practice were graded separately using selected variables that addressed each of these objectives (10 each for knowledge and practice, but five for attitude). Table 3.1 below presents the variables used to grade knowledge, attitude and practice on HIV/AIDS.

For knowledge, one (1) was the score for answering a question on a knowledge variable correctly and zero (0) for wrong responses, this gave a total of 10 marks for knowledge. Based on the score of an individual, mean score for knowledge was calculated for the study population. All respondents who scored between 0-4 were classified as having poor knowledge, 5-8 as fair knowledge and 9-10 as good knowledge, because a high level of knowledge is usually required to avoid being infected with HIV.

For attitude, one (1) was the score for answering the question on an attitude variable correctly and zero (0) for wrong responses, this gave a total of 5 marks for attitude. Based on the score of an individual, mean score for attitude was calculated for the study population. All respondents who scored between 0-3 were classified as having negative attitude on HIV/AIDS, and 4-5 as positive attitude on HIV/AIDS.

For practice, one (1) was the score for answering the question on a practice variable correctly while zero (0) was score for wrong responses, this gave a total of 10 marks for practice. Based on the score of an individual, mean score for practice was calculated for the study population. All respondents who scored 0-4 were classified as bad practice on HIV/AIDS, 5-8 as fair practice on HIV/AIDS, and 9-10 as good practice on HIV/AIDS, because a high level of good practice is required to prevent HIV transmission.

Table 3.1.Selected variables used to grade knowledge, attitude and practice on HIV/AIDS.

	Variables used for grading Knowledge	**Variables used for grading Attitude and opinion**	**Variables used for grading Practice**
1	AIDS has no cure	Willing to eat with a person you knew had the HIV	Know your HIV status
2	Can get HIV through sexual intercourse	Willing to care for a relative that is ill with AIDS	Never had sex
3	Can get HIV through blood transfusion	Willing to care for a cell mate who became ill with AIDS	Did not have sex in exchange for money
4	Can get HIV through mother to unborn child	A child that has the virus that causes AIDS should be allowed to attend school with other children	Did not have 2 or more sexual partner in the last 6 months / sex with prostitutes
5	Can get HIV through sharing of sharp objects like needles, razors	Consider self as having low or no personal risk of contracting HIV	Did not have unprotected sex with male
6	Avoid HIV by staying with one Faithful uninfected partner		Used condoms every time
7	Avoid HIV by using condoms every time		Did not have sex in prison
8	Avoid HIV by Abstaining from sex		Does not have tattoo/body piercing
9	Avoid HIV by Delaying the onset of sexual intercourse		No Alcohol/psychoactive drug use
10	Avoid HIV by not having sex with FSWs		No injecting drug use

3.10 Ethical consideration

I. Prior to the commencement of the study, approval from the Comptroller General of Nigerian Prison service was obtained (Appendix 8).

II. Ethical clearance was obtained from the Health Research Ethics Committee in Ahmadu Bello University, Zaria (Appendix 9).

III. Written and signed informed consent (Appendix 1) was obtained from each respondent before a questionnaire was administered or an HIV testing was conducted. Informed consent form was signed by both the respondent and the person administering it.

IV. The two components of study (Questionnaire and HIV testing) were proposed to every selected participant and each had free will to partake in the two components of study or either of the components. Pre and post-test counselling and testing were conducted in an enclosed room for participants who consented to the HIV testing. Every respondent who agreed had HIV test had access to only his own result so that if necessary, he could voluntarily seek referral or medical care.

V. Confidentiality of information, voluntary participation and respect for human subjects were ensured. All inmates were selected randomly after which they were given unique non repetitive numbers by the investigators. All individual survey materials such as sampling frame with inmates identities; questionnaires and results were not shared with the prison staff or those outside the conduct of study so as not to breach confidentiality.

VI. Due to the poor hygiene conditions in prisons, hygiene specific items such as soaps, detergents, and tooth brushes were given to inmates, whether they participated or did not participate in study. No cash was give [65].

3.11 Limitations

The major limitations of the study are:

- Analytic study design (case control or cohort) was considered for the study during the conceptualization phase but due to the difficulty in confirming a person with HIV prior to testing, the window period involved and the low number of already diagnosed HIV cases in Kuje prison, case control could not be used. Also prospective cohort study design could not be used because of the time required. Hence the risks found in this study from the cross-sectional design may not be exact and should be interpreted with caution.

- Reporting Bias: Similar to most behavioural surveys, the issue of under-reporting risk behaviours among participants must be considered. Due to social stigma, some behaviours such as condom use, male to male sex, anal sex, drug injection, or needle sharing may be under-reported by respondents. Using the qualitative method of data collection, this was reduced to an appreciable level.

- Selection Bias: Use of Intermediary (Warders and an inmate) as the first contacts for selected inmates before meeting the study personnel could have introduced some form of selection bias because the provision of information as to why they were selected was not professionally communicated to the selected inmates hence some refused out rightly.

- The sensitivity and specificity of selected rapid tests kits are very high (>98%) but they detect only HIV antibody in individuals who are out of the window period of about three months[66]. Infections within the window periods cannot be detected because rapid test kits do not detect antigens or proteins of HIV in an individual hence some of the recent infections will be missed. Laboratory tests like Enzyme linked Immune Sorbent Assay

(ELISA), Western blot and Polymerase Chain Reaction (PCR) for early detection of infections in the window period are outside the scope of this study.

- Kuje prison is a male only prison hence gender specific findings may not be representative of female inmates in prisons. In addition, it is one of the 234 prisons (137 convict prisons, 84 satellite prisons camps, 12 prison farms, and one open prison camp) so findings may not be generalized for the whole prisons in Nigeria.

- Due to the location of Kuje prison in the Federal capital territory and notably, its proximity to the national headquarters of the Nigeria Prison Service, the social conditions, welfare, infrastructure and caliber/status of inmates may not be comparable to those of other prisons in other states and rural environment. Hence some findings may be biased by the above reasons.

3.12 Scope of the study

The study covered three major scopes:

I. It determined the HIV prevalence amongst prison inmates by using HIV rapid test kits.

II. It assessed the general knowledge on HIV/AIDS and STIs, attitudes, behaviours and practices that prevent/ promote HIV infection in prison by using questionnaires.

III. It assessed the relationship / association between specific behaviors/factors and HIV infection at level of analysis.

3.13 Dissemination Plan

Copies of the report will be submitted to the Ahmadu Bello University, Zaria, the Federal Ministry of Health, Nigeria's Ministry of Internal Affairs, Nigerian Prison Service, Nigeria Field

Epidemiology and Laboratory Training Programme (N-FELTP), United Nations Office for Drugs and Crime (UNODC), National Agency for the Control of AIDS (NACA) and other identified stakeholders.

Presentations will be made at prisons for prisoners and the prison staff; workshops, seminars and meetings, conferences on HIV/AIDS / medicine and conferences on prisons locally and internationally. Key results will be shared with various stakeholders including policy makers at Ministry of Internal Affairs, Federal Ministry of Health, National Agency for the control of AIDS and Nigeria Prison Service. Articles and manuscripts will be written and submitted to scientific journals for publication so as to add to the body of knowledge. Reports and findings will be printed on wall charts and data sheets.

CHAPTER FOUR: RESULTS

This chapter presents the findings of the study. It is presented according to the two methods of data collections used in the study. Both are presented together under same objective.

4.1 Socio-Demographic Characteristics of study population

This section shows the finding of the socio-demographic characteristics of the study population. These characteristics considered included age, level of education, occupation, state of origin, religion, languages respondents can speak, marital status, length of stay in prison, place of residence before coming to prison. Gender was not considered because Kuje prison is a male only prison.

Respondents' Prison Status distribution

154 respondents were recruited into the study and were distributed as shown in Figure 6 below.

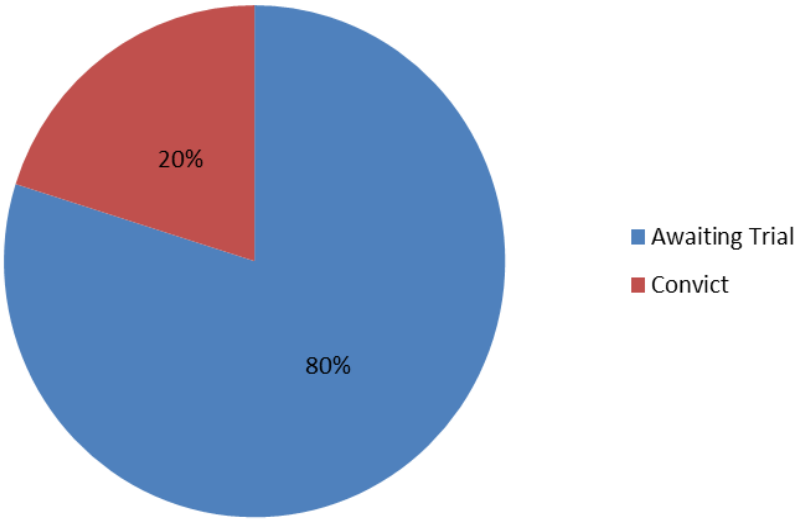


Figure 6: Distribution of final respondents that accepted participation in study by prison status (N=154), Kuje Prison HIV study, 2013

123 (80%) of respondents were awaiting trial inmates and 31 (20%) being convicted inmates.

Age composition

Table 4.1 is showing the age distribution of respondents.

Table 4.1. Age distribution of respondent (N=154). Kuje Prison HIV study, 2013

Age (years)	Convicts (n=31)	Awaiting Trials (n=123)	All (N=154)	Percent (%) of total
15-19	0	1	1	0.6
20-24	3	16	19	12.3
25-29	5	38	43	27.9
30-34	9	36	45	29.2
35-39	6	16	22	14.2
40-44	4	9	13	8.4
45-49	0	2	2	1.3
50-54	3	1	4	2.6
55-59	1	2	3	1.9
No response	0	2	2	1.3
Mean age (with S.D) in years	35.3 (±9.0)	31.0 (±7.3)	31.9(±7.8)	
Median age with range in years	34(±21-55)	30(±18-59)	31 (±18-59)	
Mode in years	29	28	28	

The mean age of respondents was 31.9 (Standard deviation (S.D) = 7.8) years. Forty-five (29.2%) of respondents were between the ages 30-34 years while only one (0.6%) was between the ages 15-19.

Marital status

The distribution of respondents according to their marital status is shown in Table 4.2.

Table 4.2. Marital Status of respondents (N=154). Kuje Prison HIV study, 2013

Marital status	Frequency	Percent (%)	95% Confidence Limit
Currently married	61	39.6	31.8-47.8
Never married	92	59.7	51.5-67.6
Widowed	1	0.6	0.0-3.6
Total	154	100.00%	100

The proportion of currently married was 39.6%. Median age at first marriage was 26 years (range 16-39) years. The mean, median and mode numbers of wives is one.

Religion

Of the 154 respondents, 75.3% (67.7-89.9%, 95%CI) were Christians while 23.7% (18.1-32.3%, 95%CI) were Muslims. 68 (44.4%) attends congregational services everyday while 3 (2.0%) do not attend at all. Three (1.9%) did not respond to the question on how religion helps them to cope with problems while 151(98.1%) responded, of those that responded, 117 (77.5%) felt religion was very important in helping them deal with problems while 4 (2.6%) felt it is not important.

Education

The distribution of respondents based on their level of education is shown in Figure 7.

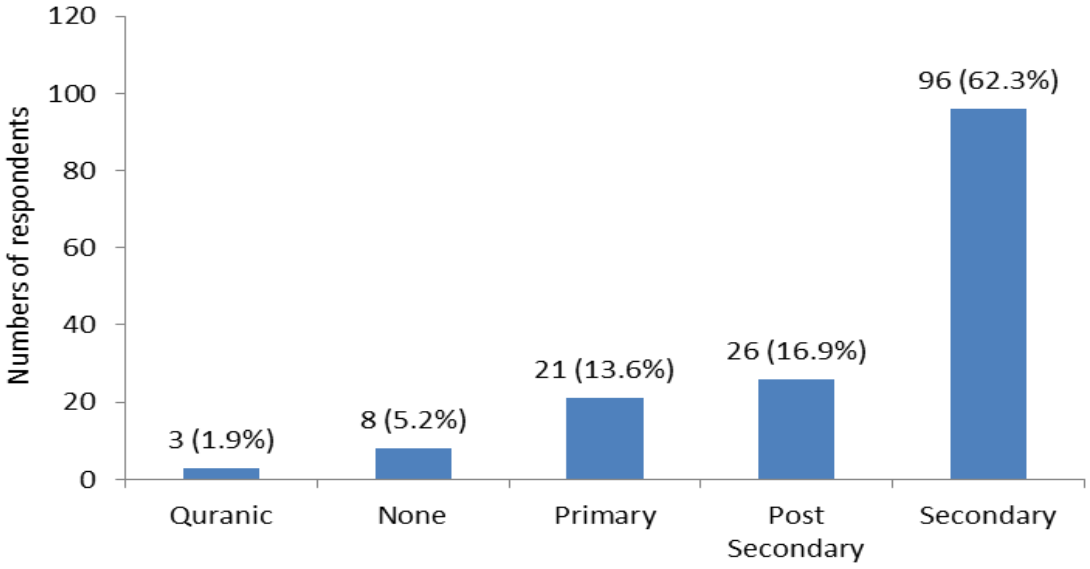


Figure 7. Highest level of school completed by respondents (N=154). Kuje Prison HIV study, 2013

The proportion of respondents that had a form of education was as high as 146 (94.8% {90.0-97.7%, 95% CI}, n=154), while 8 (5.2%, {2.3-10.0%, 95% CI}) had none. Those that completed secondary education were 96 (62.3%) while 26 (16.9%) had post-secondary education.

Occupation

Table 4.3 presents the occupation of inmates before they were incarcerated.

Table 4.3. Occupation of respondents before incarceration (N=154), Kuje Prison HIV study, 2013.

Employment status	Frequency	Percent (%)	95% confidence limit (%)
Employed	22	14.3	9.4-21.4
Not employed	3	1.9	0.4-5.7
Self employed	101	65.6	59.2-74.8
Student	21	13.6	8.9-20.6
Other employment	3	1.9	0.4-5.7
No response	4	2.6	1.3-5.0
Total	154	100.0	100.00%

Over 65% said they were self-employed, with only 2% agreeing they were unemployed. Fourteen percent claimed they were students.

Distribution of respondents by state of Origin and place of stay before incarceration

Table 4.4 is a tabular presentation of the distribution of respondents by state of origin.

Table 4.4. Distribution of respondents by state of origin (N=154), Kuje Prison HIV study, 2013

State/Indigene	Frequency	Percent (%)	State/Indigene	Frequency	Percent (%)
ABIA	13	8.4	KATSINA	1	0.6
ADAMAWA	2	1.3	KEBBI	2	1.3
AKWA IBOM	2	1.3	KOGI	10	6.5
ANAMBRA	12	7.8	KWARA	1	0.6
BAUCHI	3	1.9	LAGOS	1	0.6
BENUE	16	10.4	NASARAWA	4	2.6
BORNO	10	6.5	NIGER	2	1.3
CROSS RIVER	5	3.2	ONDO	1	0.6
DELTA	3	1.9	OSUN	2	1.3
EBONYI	2	1.3	OYO	3	1.9
EDO	12	7.8	PLATEAU	7	4.5
EKITI	1	0.6	RIVERS	2	1.3
ENUGU	7	4.5	SOKOTO	2	1.3
FCT	3	1.9	TARABA	1	0.6
IMO	7	4.5	ZAMFARA	2	1.3
JIGAWA	2	1.3	Non Nigerian	2	1.3
KADUNA	3	1.9	No response	5	3.2
KANO	3	1.9	Total	154	100

Benue state had the highest 16 (10.4%) respondents amongst respondents. There were two non-Nigerian in custody. Even though the prison is located in Kuje Prisons, FCT had 3 (1.9%) respondents. On the last place of abode, findings on analysis showed that 108 (70.6%) stayed in FCT before incarceration, 28 (18.2%) stayed in Northern Nigeria, 14 (9.1%) stayed in southern Nigeria and 3 (1.9%) stayed outside Nigeria while 1(0.6%) was not indicated.

No of times and duration of stay in prison.

Of the 154 respondents, 146 (94.8%), were in prison for the first time while 7 (4.5%) were there for the second time with only one inmate in prison for more than 3 times. All the 31 convicts were in prison for the first time. 3.9% have been in custody for less than1 month, 36.4% for 1 month to less than 1 year, 27.3% for 1 year to less than 3 years, 22.1% for more than 3 years to less than 6 years, 10.4% for more than 6 years.

Source of water and waste disposal

About 100% of all respondents get water for drinking, cooking/washing utensils from in-house tap or bore hole. 62.3 % use water closet toilet for human waste disposal while 35.1% use ventilated pit latrine, 2.6% did not answer the question.

Qualitative findings on socio-demographics:

The prison staff interviewed said:

> *"The installed capacity of the Kuje prisons has just been increased from 360 to about 560. There are 4 custodies in the prison yard. Custody 1 and 2 are structured as dormitories having about 100 inmates each. Custody 3 and 4 are built in cubicle structures with an average of 7 people per room and this has reduced overcrowding. Majority of the awaiting trial inmates have stayed here for more than one year even some have spent between five-seven years".*

The least number of years for an inmate amongst the FGD participant was 2 months while the highest was 11 years. Most of them are in custody for such long period because of some difficult bail conditions that were unmet, and inability of court sessions to hold leading to incessant adjournments. The least age of FGD participant was 19 years while the oldest was 48 years with majority being between 26and 29 years of age.

On a typical weekday, lock-ups are open for inmates between 9.00am to 1.00pm followed by a temporary lock up from 2.00pm to 5.00pm. They are open again at 5.00pm before a final lock-up for the day at 6.00pm.

Convicts clean the environment, do tailoring jobs, prepare meals and do any other jobs during the morning open-up sessions. In the evening open-up session, they participate in sports and other leisure activities. Those on awaiting trial don't carry out any assignment/chores.

The key informant (staff) said the Kuje prison Hospital has 3 doctors, about 8 Nurses and many other health personnel

Feeding, Social life and Other Amenities

The inmates are offered three meals per day. Quality of meals is satisfactory to most of the inmates in the FGD and they say it is of moderate quality. The meals consist of fish, almost every day; meat once in a while but egg is not served. The budget for each inmate's meal is N200/day. Provisions and beverages are allowed into prisons. There is Television and DSTV in the prison yard. This was purchased through the contributions of inmates. Approval was received from the government before they were installed. The Government provides all other basic needs.

> One of the inmates (29 years old) said: *'There is freedom in here and the prison warders are very nice and cooperative'*
>
> Another one said: *'The prison is managed well'.*

4.2 HIV Prevalence

Table 4.5 presents the proportion of respondents that accepted HIV test and the the overall prevalence amongst respondents.

Table 4.5. HIV test acceptance and HIV prevalence of respondents that accepted HIV test. Kuje Prison HIV study, 2013.

	n	Percent (%)	95% Confidence limit (%)
Acceptance of HIV test			
Yes	149	96.8	92.6-98.9
No	5	3.2	1.1-7.4
Total	154	100	100
HIV prevalence			
Convicts	30	3.3	0.1-17.2
Awaiting Trial	119	4.2	1.4-9.5
All respondents tested	149	4.0	1.5-8.6
Refusal	5	NA*	NA
Total	154	-	-

NA* –prevalence figure could not be calculated because it is refusal of test.

Of the 154 that participated in the behavioural component of the study, 149 (96.8%) accepted HIV testing as shown in Table 4.5, hence the refusal was 3.2%. The overall HIV prevalence was 4.0% (1.5-8.6%, 95% CI). For the convicts, prevalence was 3.3% (0.1-17.2%, 95% CI) while for the awaiting trial inmates it was 4.2% (1.4-9.5%, 95% CI). The age group with the highest prevalence of 23.1% was 40-44 years which represented 50% of HIV positive respondents while zero was recorded for 15-19, 30-34, 35-39 and 45-59 age groups.

4.3 Knowledge of HIV/AIDS

This section presents information about awareness of HIV, knowledge of how it is spread and knowledge of how it can be prevented.

Awareness of HIV/AIDS

The awareness of HIV and AIDS amongst Kuje prison respondents is shown in Figure 8.

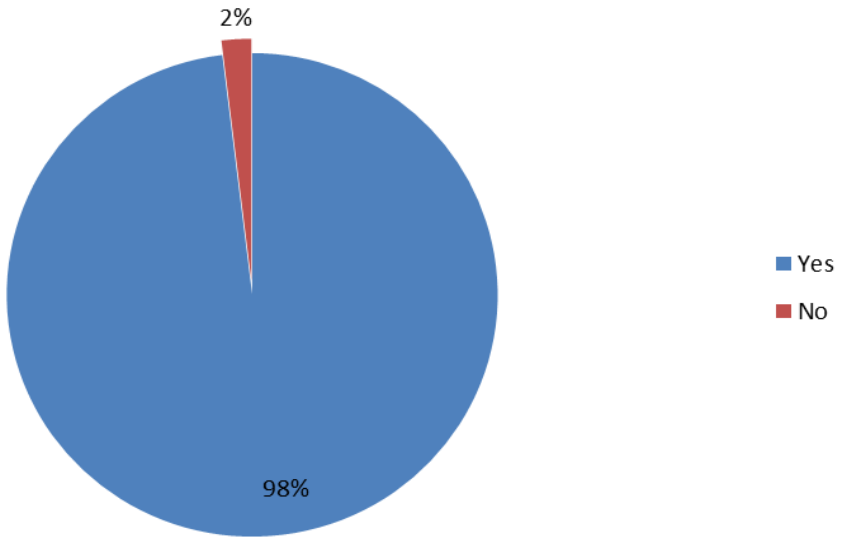


Figure 8. Proportion of respondents that ever heard of AIDS or HIV (N=154). Kuje Prison HIV study, 2013

The awareness of HIV and AIDS amongst Kuje prison respondents was 98.0% (94.4-99.6%, 95% CI).

General knowledge on HIV and AIDS

Table 4.6 presents the summary of responses of respondents to questions on general knowledge on HIV/AIDS.

Table 4.6. Knowledge of selected variables on HIV and AIDS amongst respondents (N=154), Kuje Prison HIV study, 2013

Variable	N	Percent (%)	95% Confidence limit
Have heard of AIDS or HIV	154	98.0	94.4-99.6
Know that AIDS has no cure	154	43.0	35.0-51.3
Know someone who has AIDS	154	65.6	57.4-73.1
It is possible that a healthy looking person has the virus that causes HIV	154	93.2	87.8-96.7
Know a place where one can get an HIV test	154	90.7	84.9-94.8

The proportion of those that have heard of HIV or AIDS was 98.0% while 43% knew AIDS has no cure, 30.5% did not know whether AIDS has a cure or not, while 26.5 % believe it has a cure. 61.0% said they knew their HIV status.

Qualitative findings: The FGD participants and inmate key informant (KI) have a good general knowledge of HIV and its prevention principles which are abstinence, partners' mutual faithfulness to one another, condom use, avoidance of multiple sexual partners, and avoidance of sharing sharp objects amongst others. The following quotes by inmates reveal and substantiate inmates level of awareness and knowledge of HIV and AIDS.

> Male inmate (32 year sold) *"AIDS is a disease that comes with many sicknesses that can kill. It can be passed from one person to another through sex"*
>
> Male inmate (25 year sold) *"HIV no dey show for face"*

Knowledge on routes of HIV transmission

Respondents were asked to indicate how they thought a person could get the virus that causes AIDS. The responses are presented on Table 4.7 below.

Table 4.7. Knowledge of routes of transmission of respondents (N=154), Kuje Prison HIV study, 2013

Variable	N	Percent (%)	95% Confidence limit
Can get HIV through sexual intercourse	154	92.7	87.3- 96.3
Can get through blood transfusion	154	39.3	31.1-47.9
Can get through mother to unborn child	154	18.2	12.2- 25.7
Through sharing sharp objects like razors; and by sharing needles	154	89.0	82.7-93.6

The routes of HIV transmission mentioned by the respondents included sexual intercourse (92.7%), blood transfusion (39.3%), and mother to unborn child (18.2%). Only 16 (10.4%) knew all the five ways of HIV transmission.

Knowledge on HIV prevention methods

Table 4.8 presents findings on the knowledge of HIV prevention methods and how to avoid being infected with HIV.

Table 4.8. Knowledge on HIV prevention methods (N=154), Kuje Prison HIV study, 2013

Variables	N	Percent (%)	95% Confidence limit
Staying with one Faithful uninfected partner	154	46.8	38.3-55.4
Using condoms every time	154	78.9	71.4-85.2
Abstaining from sex	154	37.7	29.6-46.3
Delaying the onset of sexual intercourse	154	1.5	0.2-5.2
Reducing number of sexual partners	154	6.6	3.1-12.2
Avoiding sex with CSWs	154	11.8	6.9-18.4
Avoid sharing of sharp objects like needles, razors	154	86.4	79.8-91.5
Praying to God	154	19.3	13.0-26.9
Using antibiotics	154	1.5	0.2-5.2
Seek protection from a traditional healer	154	0.7	0.0-4.1

The proportion of those that agreed that abstaining from sex is a form of prevention was low (37.7%) while keeping to one partner was 46.8%. As shown in Table 4.8, it was observed that some believed praying to God (19.3%), use of antibiotics (1.5%) and traditional healers (0.7%) could prevent one from getting infected with HIV.

Misconceptions about HIV Transmission

Table 4.9 presents the proportion respondents with misconceptions about how HIV is transmitted.

Table 4.9. Misconceptions about HIV Transmission (N=154), Kuje Prison HIV study, 2013

Variables	N	Percent (%)	95% Confidence limit
Through Sharing toilets	154	0.7	0.0-4.1
Sharing eating utensils	154	4.4	1.6-9.4
Mosquito bites/bed bugs	154	2.2	0.5-6.4
Kissing	154	4.5	1.7-9.6
Hugging	154	0.7	0.0-4.1
Witchcraft	154	1.5	0.2-5.3

Generally, the misconception was relatively low. The highest was that HIV is transmitted by kissing (4.5%) and sharing eating utensils (4.4%).

Scores and grades of respondents on knowledge of HIV/AIDS

Using a score of 1 for correct response and 0 for incorrect response to each of the questions on 10 selected knowledge variables, the mean score of knowledge for respondents was 4.2 (S.D $\pm$1.8) i.e 42%; with 90 (58.4%) respondents scoring below the mean while 64 (41.6%) scored above the mean. Also, 90 (58.4%) were graded as having poor knowledge (scored 0-4), 61 (39.5%) respondents had fair knowledge (scored 5-8) and 3 (1.9%) respondents had good knowledge (scored 9-10).

4.4 Attitudes about HIV/AIDS

Attitude towards Stigma and Discrimination on HIV/AIDS

Series of questions were asked of respondents who had heard of AIDS to assess the degree of HIV and AIDS-related stigma and discrimination. The responses to HIV/AIDS related stigma and discrimination are presented in this section on Table 4.10.

Table 4.10. Attitude towards HIV/AIDS Stigma and Discrimination (N=154). Kuje Prison HIV study, 2013.

Variables	N	Percent (%)	95% Confidence limit
Willing to eat with a person you knew had the HIV	154	68.0	60.0-75.3
Willing to care for a relative that is ill with AIDS	154	97.4	93.5-99.3
Willing to care for a cell mate who became ill with AIDS	154	85.6	79.0-90.8
Would want to keep it as a secret if a family member has HIV	154	76.6	69.1- 83.1
A colleague in your work place /prison who has HIV should be allowed to continue working/staying with you?	154	90.2	84.3-94.4
A child that has the virus that causes AIDS should be allowed to attend school with other children	154	86.2	79.7-91.2

Sixty-eight percent, 68.0% (60.0-75.3%) of respondents are willing to eat with someone with HIV. 87.0% (80.7-91.9%,95%CI) answered that people with HIV needs more health care than others while 12.3% (7.6-18.6%, 95%CI) agree to equal health care.

Attitude of respondents towards risk perception

The personal risk assessment of respondents based on the perception of been at risk of getting infected is shown in Figure 9 below:

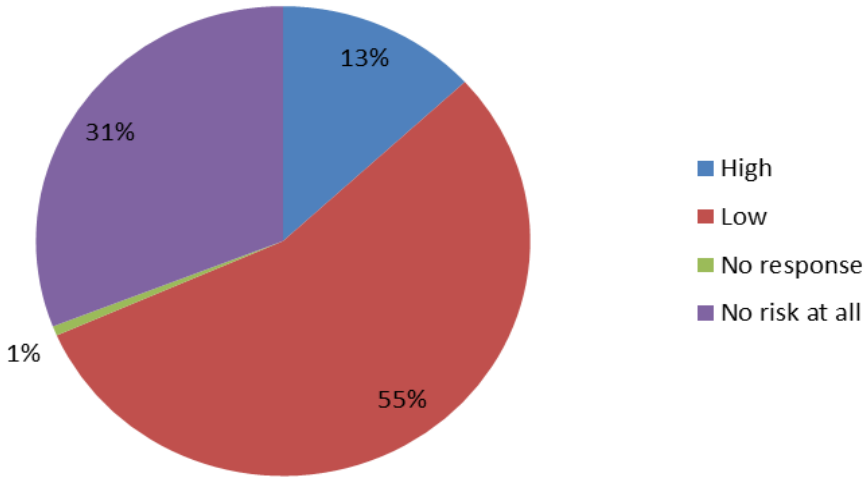


Figure 9. Personal risk perception of inmates on contracting HIV (N=154), Kuje Prison HIV study, 2013.

Twenty (13%) respondents perceived themselves as having high chance while 84 (55%) perceived self as having low chance.

Scores and grades of respondents' attitudes on HIV/AIDS

Using a score of 1 for correct response and 0 for incorrect response to each of the questions on 5 selected attitude variables, the mean score of attitude for respondents was 4.2 (S.D $\pm$1.1), i.e. 84% with 71 (46.1%) respondents scoring below the mean while 83 (53.9%) scored above the mean. Also, 34 (22.1%) were graded as having negative attitude (scored 0-3), and 120 (77.9%) respondents had positive attitude (scored 4-5).

4.5 HIV related behaviours / practices

Ever tested for HIV

Respondents were asked about their practices as regards having an HIV test. 105 (68.1% [61.1-76.3, 95%CI]) have ever been tested for HIV while 94 (61.0% [52.1-69.4, 95%CI]) knew HIV status and 97.4% (93.4-99.3, 95%CI) would like to have a test. The reason gave by 98.6% of all those that would like to have the test was to know their HIV status. Ninety- one percent (90.7% [84.9-94.8, 95%CI]) of respondents knew a place where they can get an HIV test.

Sexual behaviours and Sexual history

Information in this section includes age at first sex, number of sexual partners, and the practice of sex in exchange for money, favours or gifts. The study also assessed the usage of condoms, access to condoms, reasons for use or non-use.

The median age of sexual debut (first sex) of respondents is 18 (range: 9-30) years. There was no sexual act with any man 6 months before incarceration but one sexual act with a transgender was recorded. Figure 10 presents findings on sexual practices before imprisonment.

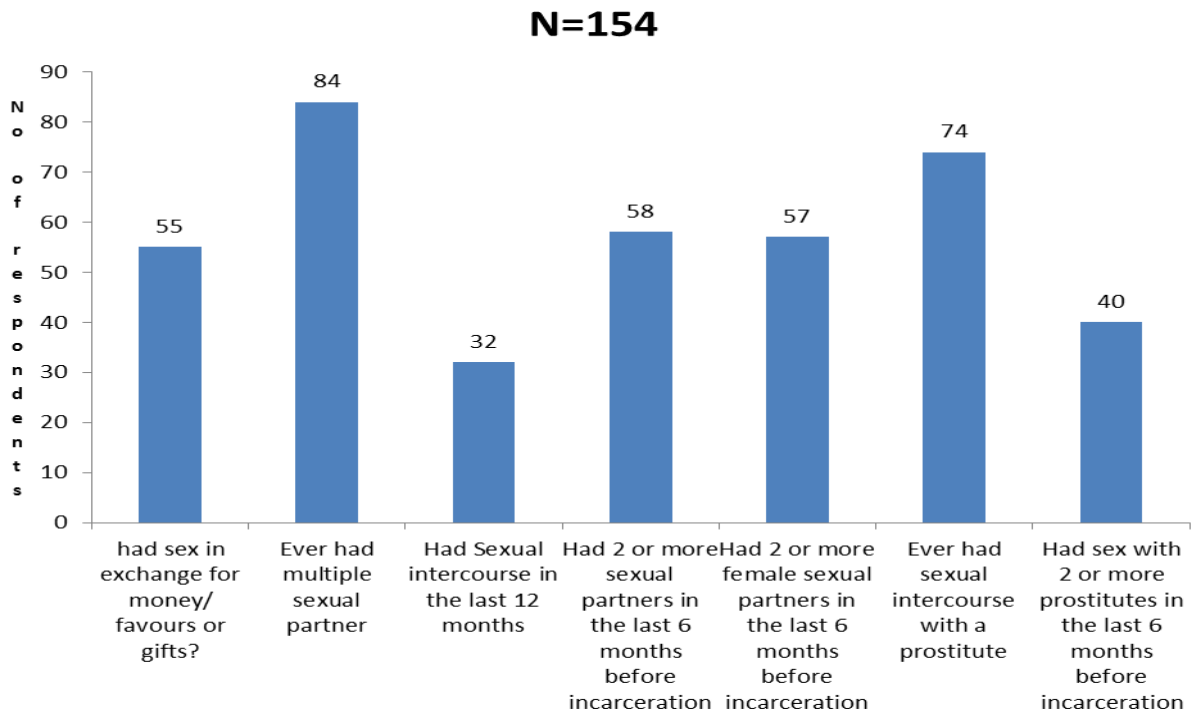


Figure 10. Numbers of respondents that experienced selected sexual practices before imprisonment (N=154). Kuje prison study, 2013.

Current sexual practice and behaviors while in prisons

Based on responses by respondents, there were no (0%) sexual practices in prisons. Every respondent answered 'NO" to sexual acts while in prisons. From quantitative data collected, there was also 0% presence of male sexual partnering amongst inmates. Of 154 respondents, only one =0.65% (0.0-3.8, 95%CI) was bisexual and the rest were heterosexual. None agreed to being a homosexual.

Qualitative findings: The KI (staff) is not certain of the existence of same sex sexual relationship in Kuje prisons even though there are rumors of its occurrence. The KI (staff) said it occured in some other prisons where she had worked. The KI (inmate) and the FGD agreed that same sex relationship exists and some have been caught in the act.

The practice of same sex relationship is not acceptable to the inmates. Four of 10 participants in FGD claimed they know an average of 10-15 inmates involved in same sex sexual relationship. All participants said heterosexual relationship is not in existence in the Kuje prison. The following quotes reveal and substantiate inmates level of awareness and knowledge of HIV and AIDS. Inmates were quoted as follows

> Male inmate 35 years old: *"Man dey befriend man here but we don't like it. They hide in bathroom or at night when we have all slept".*
>
> Another FGD inmate said: *"We have caught some while they are doing it"*

Condom usage- knowledge and accessibility

The condom knowledge and accessibility are presented in Figure 11.

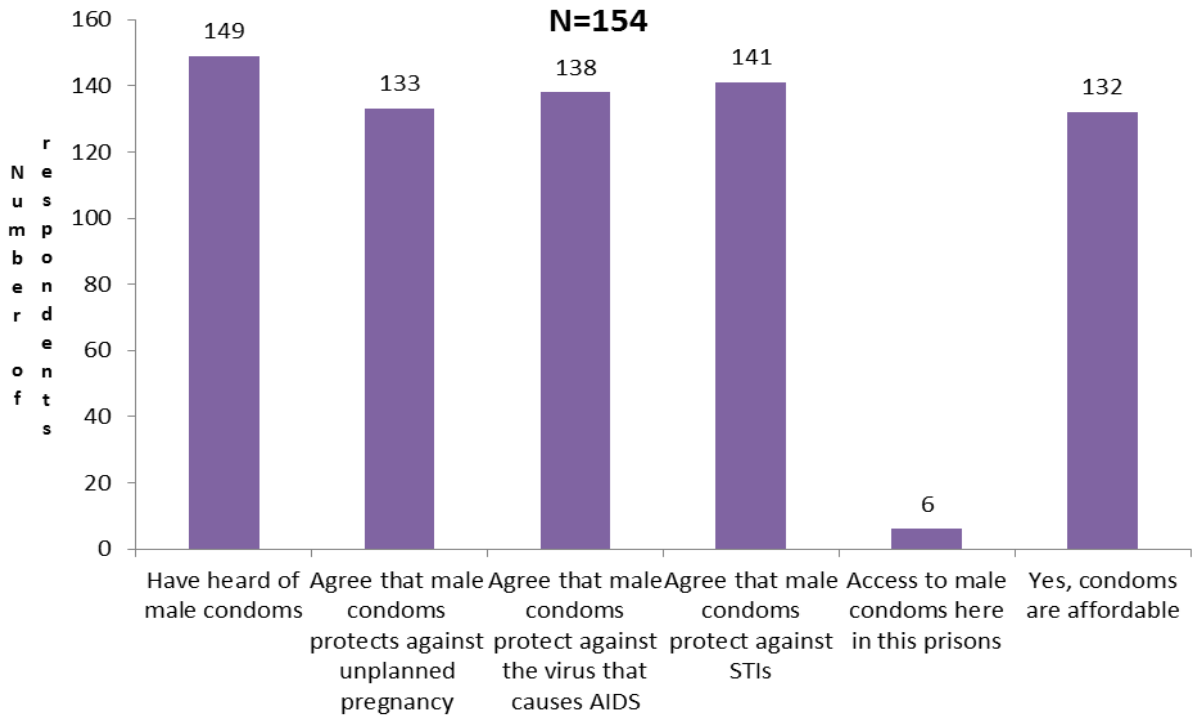


Figure 11. Condom knowledge of inmates and condom accessibility (N=154). Kuje Prison HIV study, 2013.

149 (96.5%) have heard of male condom, 138 (89.6) agree that male condom prevent against HIV.

The access to male condom in Kuje prison is low at 6 (3.9%).

Condom Use

The condom usage of respondents was assessed with various questions on whether a respondent had ever used condom and consistent usage within the period before incarceration. The findings are shown in Table 4.11 below.

Table 4.11. Condom usage of respondents. Kuje Prison HIV study, 2013.

	Have you ever used male condoms		**Consistent condom use 6 months prior to incarceration**	
	Frequency	Percent (%)	Frequency	Percent (%)
Yes	125	81.2	24	15.6
No	21	13.6	85	55.2
Did not have sex/ Non response	8	5.2	45	29.2
Total	154	100	154	100

A large number of respondents (81.2%) have used condom at one point in their life with 15.6% consistently using condom in the last 6 months prior to incarceration. Of those that used condom, 52.8% have confident to wear it when having sex while 67.6% have the confidence to convince partner to wear.

Qualitative findings: The inmates generally agreed that there is no availability of condom in kuje prisons.

Other HIV related practices

Body Tattoo and body piercing

Fourteen respondents representing 9.1 % (5.1-14.9%, 95%CI) had tattoo on their bodies. Of these, 13 (92.9% [66.1-99.8%, 95%CI]) had it before coming to prison. Of the 13, 12(92.3% [64.0-99.8%, 95%CI]) had maximum of two while only one (7.7% [0.2-36.0%, 95%CI])) had between 3and 4. One person got a tattoo while in custody.

Six respondents representing 4.0% (1.5-8.5%, 95%CI) of respondents had body piercing and they all had it before coming to prisons. All have 1-2 body piercings.

Qualitative findings: Tattooing practices

The FGD indicated that very few undergo tattooing and new instruments (blade and needles) are used for each individual.

Use of alcohol

Figure 12 below shows the findings on alcohol use.

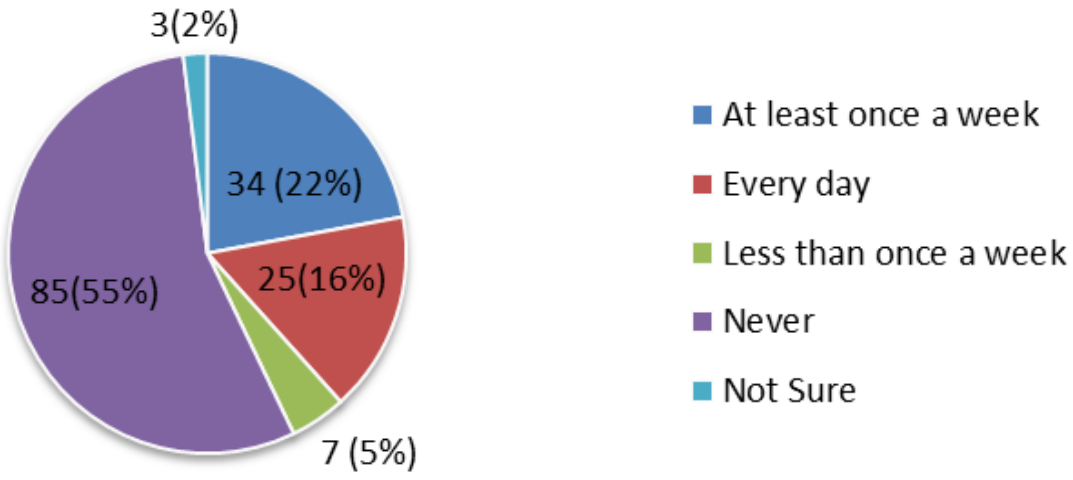


Figure 12. Frequency of alcohol intake of respondents within the last 4 weeks (N=154). Kuje Prison HIV study, 2013

Sixty-six (43%) of the respondents reported that they took drinks containing alcohol during the last four weeks preceding the study period. Frequency of alcohol intake within the period showed that 25 (16%) had daily intake and 34(22%) did so at least once a week.

Use of psychoactive drug and injecting drug use

Respondents were asked to indicate whether they had ever tried any psychoactive drugs such as marijuana, cocaine, heroin and solvents (glue).

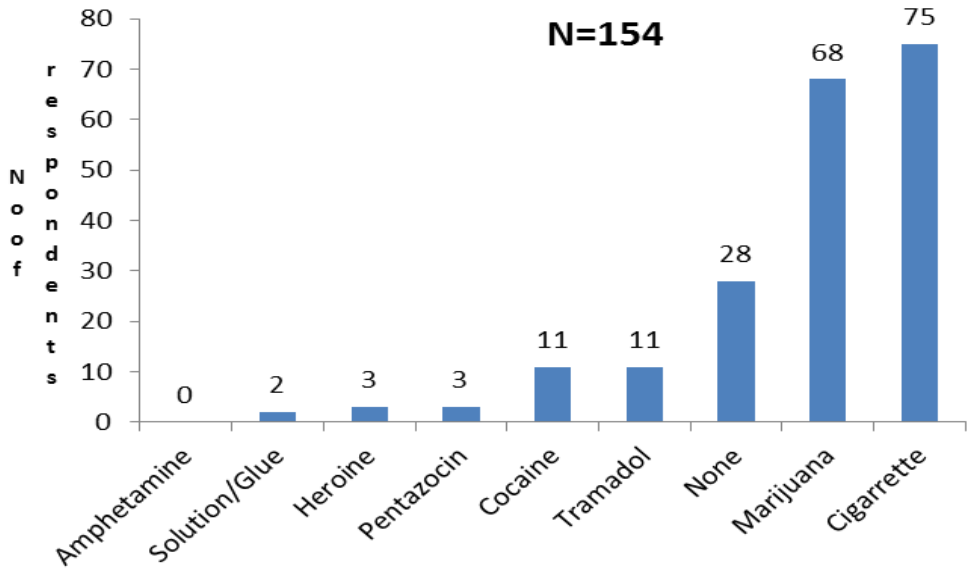


Figure 13. Proportion of respondents that have used psychoactive drugs (N=154), Kuje Prison HIV study, 2013.

Cigarette and Marijuana use was predominant amongst respondents as shown in Figure 13 above. Four respondents (2.6%) of respondents had ever injected illegal drugs into their body of which 2 (50%) injected within the six months before incarceration, and also 2 (50%) share needle which translated to 1.3% of the total respondents.There is no injecting drug use or sharing of needle in prison.

Qualitative findings: Drugs

The participants said there is no cocaine or heroin usage in the prisons and also there is no Injecting Drug Use (IDU) in the prison. They say it is probably because there is no access to the drugs. The use of marijuana is noted by the inmates.

KI inmate: *'There is no way to get drugs except the time when one big man was in prison"*

FGD participant: *"I can say there is marijuana use and the population of those that smoke is up to 250-400 of all of us".*

Scores and grades of respondents on practices on HIV/AIDS

Using a score of 1 for correct response and 0 for incorrect response to each of the questions on 10 selected HIV/AIDS practice variables, the mean score of practice for respondents was 6.1 (S.D ±1.2) with 103 (66.9%) respondents scoring below the mean while 51 (33.1%) scored above the mean. Also, 17 (11.0%) were graded as having bad practice (scored 0-4), 137 (89.0%) respondents had fair practice (scored 5-8) and 0 (0.0%) respondents had good practice i.e. scored between 9 and 10.

4.6 Other HIV related diseases and issues

Sexually transmitted infections

Sexually transmitted infections (STIs) including HIV itself influences cross transmission. Table 4.12 presents results on questions on other STIs knowledge of respondents.

Table 4.12. Knowledge of STIs amongst respondents. Kuje Prison HIV study, 2013.

Variables	N	Percent (%)	95% confidence limit
Ever heard of STIs	154	91.4	85.8-95.4
Prevent a woman from getting pregnant in future	154	55.0	46.4-63.4
Prevent a man from fathering children in future	154	56.4	47.8-64.8
Symptoms in women			
Causes Lower abdominal pain	154	10.4	6.1-16.3
Causes Genital discharge	154	12.3	7.6-18.6
Foul smelling discharge	154	7.8	4.1-13.2
Pain while urinating	154	18.8	13.0-25.9
Genital sores/ulcer	154	13.0	8.1-19.3
Swelling in groins	154	10.4	6.1-16.3
Itching	154	14.9	9.7-21.6
Painful intercourse	154	9.1	5.1-14.8
Symptoms in men			
Genital discharge	154	17.5	11.9-24.5
Burning pain on urination	154	52.6	44.4-60.7
Genital sores/ulcers	154	16.9	11.3-23.8
Swellings in groin	154	18.2	12.4-25.2

Table 4.12 shows that majority (91.4%) of respondents have heard of STIs but knowlegde of symptoms in men and women is poor with mean of 12.1% (SD$\pm$ 3.5) knowing knowledge in women and 13.5% (SD$\pm$17.5) in men.

Ever had any sexually transmitted diseases

Figure 14 presents proportion of the respondents that have ever experienced STI at any point in their life.

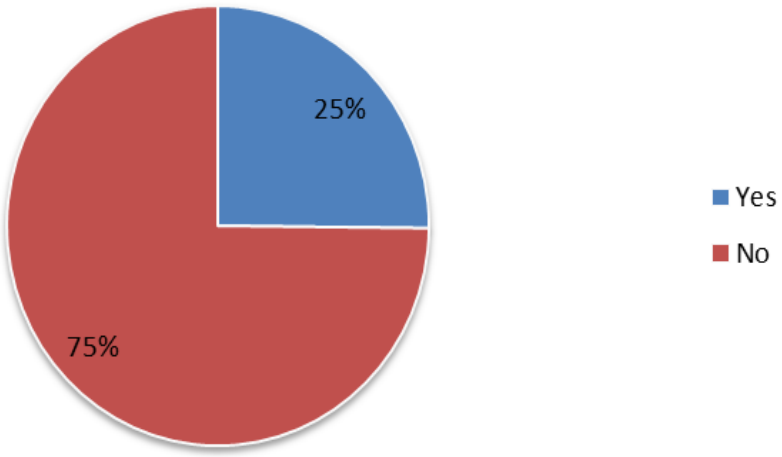


Figure 14: Ever had any sexually transmitted diseases (N=154). Kuje Prison HIV study, 2013.

The proportion of the respondents that experienced STI at any point in their life was about 25% as shown in Figure 14. Eight respondents experienced STI symptoms within the last 12 months, of which genital discharge was experience by 3 respondents, genital itching by 5 respondents experienced while genital sore/ulcer was experienced by one respondent. Of the eight respondents who experienced any of the above symptoms within the past 12 months, four (50.0%) had one episode while two (25%) experienced it thrice. 50% of those with sypmtoms in the last 12 months sought treatment in a clinic while one from traditional and 2 sought no treatment. None of the respondents stopped having sex during the symptoms and there was no use of condom.

Knowledge of Tuberculosis

Respondents were asked whether they had ever heard of tuberculosis (TB). Figure 15 shows the number of respondents who have knowledge of selected tuberculosis variables.

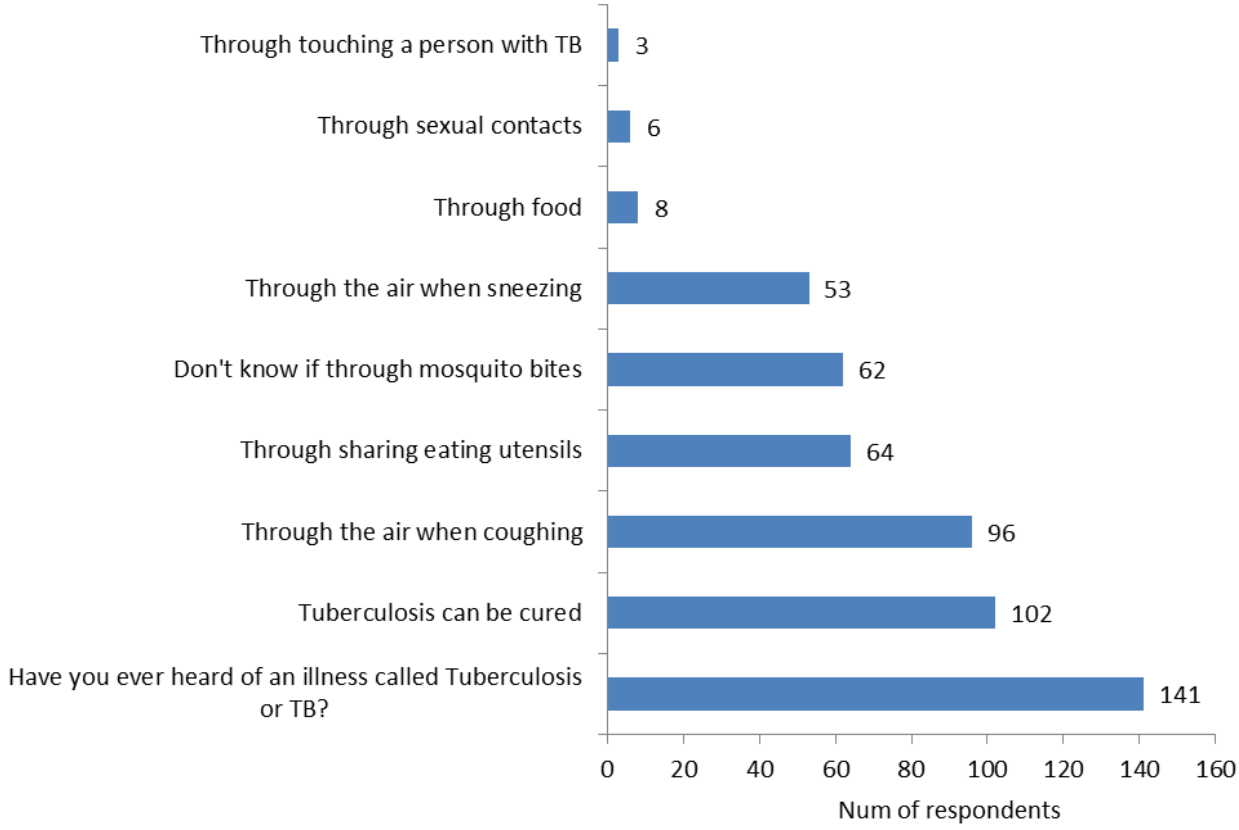


Figure 15. Numbers of respondents who have knowledge of selected Tuberculosis variable, (N=154). Kuje Prison HIV study, 2013.

141 (91.6%) of respondents had heard of tuberculosis. Sixty-six percent (66%) knew that TB has cure while 62 (40.2%) do not know if it can be transmitted through mosquito bites.

80 (51.9%) of respondents interviewed said that they would keep it a secret if a member of his family has Tuberculosis, while 133 (95%) would care for the person.

Qualitative findings: The KI (staff) stated that inmates with prolonged cough of over three weeks are usually tested for Tuberculosis (TB) with sputum AAFB in the prison hospital. If result is negative and cough is persistent, they are sent to University of Abuja Teaching Hospital Gwagwalada for further investigations. There were currently 2 inmates with TB. Direct Observe Therapy and Shortcourse (DOTS) TB treatment services are offered in the Kuje prison Hospital.

The KI (staff) and the inmates are of the general opinion that they are not at higher risk for TB as the prison is not overcrowded. In the past there was overcrowding but this has reduced because of the recently added 200 custody capacity.

Circumcision: All the 154 (100%) respondents were circumcized.

Communication

Communication is key to HIV knowlegde and behavioural change. Questions were asked as regards communication during the past 12 months. Figure 16 shows the proportion of respondents who received some information on HIV.

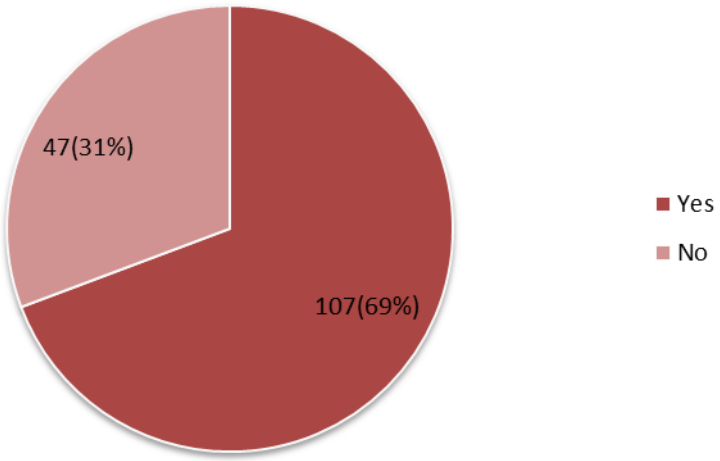


Figure 16. Proportion of respondents who had anybody/organisation or the prison authority discussed HIV with them within the last 12 months (N=154). Kuje Prison HIV study, 2013

Qualitative findings: HIV /AIDS Communication and interventions

According to the staff in the KII, the inmates are exposed to HIV communication/prevention programs at least once every year. Various partners that have assisted in this area are Society for family health (SFH) and Planned Parenthood Federation of Nigeria (PPFN). This was agreed to by the inmates. The inmates were of the opinion that this study was the most unique and successful HIV/AIDS activities within the last 10 years. This was notable based on the HIV/AIDS awareness created by study as many of those not sampled / selected for the study approached the hospital laboratory team requesting to be tested for HIV.

The staff key informant (KI) said

> *"There are HIV intervention programs in Prisons and trained HIV peer educators amongst the prisoners trained by Planned Parenthood Federation of Nigeria (PPFN) and other non-governmental organizations; We also have a functional HIV unit in the prison yard hospital with routine counselling and testing facilities and linkages to an antiretroviral site at University of Abuja Teaching Hospital, Gwagwalada. There is no mandatory testing here. Inmates who are HIV positive are not separated from other inmates and they are given nutritional support. The Prisons Headquarters provides N10, 000.00 monthly as support to the Prisons hospital for medical checkup, nutritional support and other issues of the Inmates living with HIV". There were currently seven (7) inmates on antiretroviral drugs (ARVs). We get ARVs that will last for 2-3 months from University of Abuja Teaching Hospital. The drugs are divided into monthly dosages which are kept by the prison hospital staff. One month's drugs are given to each patient for keep. Inmates that came into custody with sexually transmitted diseases were treated by the prison hospital. In the past there was counselling for all newly admitted inmates and those willing to test were tested. This has stopped because of periodic stock out of test kits".*

4.7 Factors associated with HIV infection amongst inmates

Bivariate analysis

Age: The mean age for the convict group was 35.3 (±9.0) while awaiting trial inmates was 31.0 (±7.3). Comparing the mean age for the convicts and awaiting trial, ANOVA gave T Statistic of = 2.7523 and P-value: 0.0066. Mann-Whitney/Wilcoxon Two-Sample Test (Kruskal-Wallis test for two groups) = 6.8505, P-value: 0.0089. This indicates significant difference in the ages of the convicts and awaiting trial groups.

No of times and duration of stay in prison.: 3.9% of inmates have been in custody for less than 1 month, 36.4% for 1 month to less than 1 year, 27.3% for 1 year to less than 3 years, 22.1% for more than 3 years to less than 6 years, 10.4% for more than 6 years. Using chi square, there is no statistically significant relationship between prison status and length of stay (P=0.6) in Kuje prison.

Table 4.13 presents the bivariate analysis of occupation as predictor and prison status as predicted outcome. From the chi square and P-value, it shows that there is a relationship between occupation and the prison status.

Table 4.13 Cross tabulation of occupation of respondents and prison status (N=154). Kuje Prison study, 2013

Occupation	Awaiting Trial	Convict	TOTAL	χ^2 , P-value
Employed	19	3	22	16.61, 0.0023
Not employed	2	3	5	
Others	3	2	5	
Self employed	81	20	101	
Student	18	3	21	
TOTAL	123	31	154	

Table 4.14 Cross tabulation of prison status of respondents and HIV status. Kuje Prison study, 2013.

	HIV Status		
Exposure	**HIV Positive**	**HIV negative**	**Total**
Awaiting Trial	5	114	119
Convicts	1	29	30
Total	6	143	149

149 of the 154 respondent accepted HIV testing. Prevalence amongst convicts was 3.3% while for the awaiting trial inmates it was 4.2% The odds of an awaiting trial inmates being HIV positive is 1.27 (0.13-29.90, 95% CI), with fisher exact of 0.65 (>P=0.05), hence no statistical significance.

Table 4.15 below presents the bivariate analysis of age and marital status as independent exposure and positive HIV status as outcome stratified by prison status.

Table 4.15. Cross tabulation of Age, and Marital status of respondents with HIV positive status by Prison status. Kuje Prison study, 2013.

Characteristics	**Convicts,**		**Awaiting trial**		**Total**	
	Freq of positives, (sample-n)	χ^2, P-value	**Freq of positives (sample-n)**	χ^2, P-value	**All**	χ^2, P-value
Age in years						
15-19	0 (0)	5.1, 0.5	0 (1)	21.4, 0.0061	0 (1)	15.2, 0.055
20-24	0 (3)		1(16)		1 (19)	
25-29	1 (5)		1 (37)		2 (42)	
30-34	0 (9)		0 (36)		0 (45)	
34-39	0 (5)		0 (15)		0 (20)	
40-44	0 (4)		3 (9)		3(13)	
45-49	0 (0)		0 (2)		0 (2)	
55-54	0 (3)		0 (1)		0 (4)	
55-59	0 (1)		0 (2)		0 (3)	
15-59	1 (30)		5 (119)		6 (149)	
Marital status						
Current married	0 (18)	1.5, 0.2	4(41)	4.8, 0.09	4(59)	1.9, 0.3
Never married	1 (12)		1 (77)		2 (89)	
Widowed/Separated	0 (0)		0 (1)		0 (1)	
All	1 (30)		5 (119)		6 (149)	

It shows that 3 (50%) of those infected are within the age group 40-44 years. The chi square test shows assocation between age and HIV positive status (χ^2 =5.1, P-value: 0.05 for convict and χ^2 = 21.4, P-value: 0.006 for awaiting trial). Four of the six infected are currently married, but the chi square was not statitically significant for marital status.

Other bivariate analysis using Chi square

All other analysis on exposure and outcomes relationships were not statistically significant using Chi^2. There is no significant relationship between length of stay in prison and HIV positive status (Chi^2=2.6, P-value: 0.6). No of years of education also do not have relationship with HIV positive status (Chi^2=1.2, P-value: 0.74) but level of education attained has a relationship with knowledge of sexual transmission of HIV (Chi^2=11.8, P-value: 0.0081). Based on crosstabulations, the bisexual individual was not positive and non of the 4 IDUs was positive.

Bivariate analysis with odds ratios

Relationship between selected exposures and HIV Positive as outcome is presented on Table 4.16a and 4.16b.

Table 4.16 a. Bivariate analysis of selected exposures with HIV status as outcome. Kuje Prison HIV study, 2013

Exposure Variables		Outcome Variable				
		HIV +	HIV-	OR	OR(95% CI)	P-VALUE
Age	<25	1	19	1.31	0.03-12.4	0.59
	≥25	5	124			
Ever attended school	Yes	5	135	0.30	0.03-7.8	0.32
	No	1	8			
Length of stay	<3 years	5	97	2.37	0.26-55.2	0.38
	≥3 years	1	46			
Transactional sex	Yes	2	52	1.12	0.13-8.57	0.62
	No	3	87			
Ever heard of male condom	Yes	5	139	0.14	0.14-4.02	0.18
	No	1	4			
Ever used condom	Yes	3	118	0.23	0.02-2.96	0.14
	No	2	18			
Sex last 12 months	Yes	2	30	3.6	0.34-37.77	0.21
	No	2	108			
Multiple partners	Yes	3	53	4.64	0.41-119.01	0.17
	No	1	82			
***Consistent condom use**	Yes	0	22	undefined	undefined	0.49
	No	3	81			

* Non of the respondents that used condom always/regularly in the last 6 months before incarceration tested positive for HIV.

Table 4.16 b. Bivariate analysis of selected exposures with HIV status as outcome. Kuje Prison HIV study, 2013

Exposure Variables		Outcome Variable				
		HIV +	HIV-	OR	OR(95% CI)	P-VALUE
Prison status	Awaiting Trials	5	114	1.27	0.13-29.90	0.65
	Convicts	1	29			
Ever had STI	Yes	3	32	3.13	0.47-20.7	0.17
	No	3	100			
Not knowing status	Yes	1	21	1.04	0.02-11.20	0.66
	No	4	87			
Know transmission through sexual intercourse	Yes	5	129	0.39	0.04-9.63	0.38
	No	1	10			
High personal risk	Yes	1	18	1.71	0.03-18.51	0.50
	No	4	123			
Tattoo	Yes	2	11	6.00	0.67-45.65	0.09
	No	4	132			
Body piercing	Yes	1	5	5.40	0.10-63.64	0.20
	No	5	135			

Age lower than 25 years, length of stay in prison lesser than 3 years, multiple sexual partnership, ever had STI, tattoo and body piercing though not statistically significant at P<0.05, had odd ratios (OR) greater than one, indicating some associations with been HIV positive. While ever attended school, knowledge of HIV sexual transmission, ever heard of condom, ever used condom seem to be protective but not statistically significant at P<0.05. Notably is consistent use of condom of respondents in the last last 6 months before incarceration. None of the respondents who attested to using condom always within this period tested positive to HIV hence the odds ratio (OR) was undefined and Fisher's exact was P=0.49. This may suggest some level of protection by consistent use of condoms even though not statistically significant.

Multivariate analysis-Logistics regression

Table 4.17 presents multivariate analysis' adjusted odds ratios (AOR) and P-values for the selected variables significant at P $\leq$ 0.20 at bivariate analysis. There was no direct comparison groups because it was based on a model and not a direct analytic study design such as case control or cohort study.

Table 4.17. Multivariate analysis of the variables significant at P<0.20 with HIV positive status as outcome. Kuje Prison HIV study, 2013

Variable	HIV Positive Status	
	AOR	**P-value**
Never heard of male condom	33.1	0.016*
Never used condom	15.2	0.09
Had sex last 12 months	5.2	0.14
Had multiple partners	5.2	0.20
Had history of STI	18.4	0.05*
Has body tattoo	6.1	0.07
Has body piercing	2.5	0.49

Those that have never heard of male condom (AOR = 33.1, P-value = 0.016) and those that have had history of STI (AOR = 18.4, P-value = 0.05) at a point in their life were significantly associated with HIV infection (positive status).

CHAPTER FIVE: DISCUSSION

This chapter discusses the findings on HIV prevalence, knowledge, attitude, practices and associated factors conducted in Kuje prison. Prevalence of a disease or infection is the summation of new (incident) and old cases of the disease or the infection existing at a given point in time, or over a period of time in a given population. HIV prevalence data provides important information to plan the interventions. The understanding of the distribution of HIV infection within the Kuje prison population and analysis of the social, biological and behavioural factors associated with HIV infection offer insights about the HIV dynamics in Kuje prison.

Important factors that may influence the varying levels of HIV transmission, prevention and prevalence are the level of knowledge, level of education of people, their socioeconomic status and their cultural/traditional practices as well as their belief, health care seeking behaviours and misconception about a disease such as HIV/AIDS and access to HIV/AIDS services among others.

The study found a prevalence of 4.0% amongst the inmates in the prison which is above the 1% reference for low level epidemics[26]. This value is lower than 7.1% reported by SFH in 2010[16], and 9% by Idigbe et al in 1996[17] in other prisons in Nigeria. It is close to the prevalence of 6% reported by Muhammad et al in 2010 in an HIV testing only study which did not assess behaviours or any risk factors in the same prison[18].

When the Kuje prison HIV prevalence is compared with findings of other prisons outside Nigeria, it showed a much lower value. The prison prevalence in Zambia was 27.2% while South Africa was as high as 41.4% in 2002[13]. Hellard and Aitken in 2004 showed that HIV prevalence in prison inmates can be over 10% in some European nations[42] as shown in Spain with a prevalence figure as high as 19.4% [44]. Another study in 1996 amongst female prison inmates in Brazil showed that

25% of them were HIV sero-positive[45]. Prevalence found in kuje prison is much higher than the prevalence in Australian prisons (0.2%)[44] .

In this study, prevalence for the convicts was 3.3% while for the awaiting trial inmates it was 4.2%. The age group with the highest prevalence of 23.1% was 40-44 years which represented 50% of HIV positive respondents which is not the same as the age group 30-39 years in the SFH study with prevalence of 7.9%[16]. In Spain, 25-34 age group was highest with 29.1%[44]. Also notice was that the prevalence did not differ as regards duration of stay in prison while the SFH study found it higher among short term prison inmates-10.8% than for lifers -3.3%[16].

Correct knowledge on HIV transmission and prevention are important to enhance effective preventive action. In this study, the awareness of HIV and AIDS was 98.0% which is close to what Sabitu et al found (96.1%) in 2009 in Kaduna prison [40]. A study in Lagos by Odunjirin and Adebajo in 2001 also found awareness of HIV/AIDS to be about 97.2%; and just as 65.6% of respondents in this study had known or seen someone with AIDS, their study got 20.6%[41]. This may be due to the fact that this Kuje prison study was conducted about 12 years after their study; hence there could have been more exposure, awareness and more people infected/affected over time.

Knowledge of route of disease transmission such as sexual activity, unscreened blood transfusion and sharing unsterilized blades was 92.7%, 39.3%, 89% respectively, while study by Sabitu et al found 91%, 67% and 46.7% respectively. This shows that there is high knowledge of sexual transmission in the two prisons while the other two modes of transmission's figures were not in agreement.

Overall in this study, the mean score of knowledge for the sampled population was 4.2 all over 10 scores (42%). Comparing the scores to a standard grading, 58.4% of respondents had poor knowledge, 39.5% had fair knowledge, and 1.9% respondents had good knowledge. This is in

contrast to what Sabitu et al found, that 39.5% of the respondents had good knowledge of HIV/AIDS, this could be due to use of less number of knowledge variables and grading pattern. Odunjirin and Adebajo reported that 60.3% knew the correct mode of transmission of HIV, also variable and grading patterns were not stated. Comparing this study findings with the SFH study, SFH found that though, knowledge on major routes of HIV transmission were sexual intercourse (86%), sharing of sharp (72%), blood transfusion (27%), multiple partners (14%) and mother to child (1%). Knowledge of all 5 routes was low amongst inmates (0.1%), this study found proportion of inmates who know the five route of transmission to be 10.4%. All these translate to poor, incomplete / inadequate knowledge on HIV/AIDS.

In this study, the misconception about how HIV is transmitted was relatively low. The highest was that HIV is transmitted by kissing (4.5%) and sharing eating utensils (4.4%). Also the opinion that it can be transmitted by mosquitos and bed bugs was 2.2%. On self risk perception, 13% of respondents perceived themselves as having high chance; low chance was 55% while no risk at all was 31%. These values agree reasonably with what was found by SFH with 13% rating their chances as moderate or high, 54% rating self as having no chance of being infected while low chance was 32%, only.

Stigma and discrimination are two major problems often faced by people living with HIV and AIDS in many developing countries, including Nigeria. Stigma and discrimination shown to persons living with and affected by HIV and AIDS can worsen the spread and the impact of the HIV and AIDS epidemic. As a result of fear of discrimination and stigma, many individuals are afraid of seeking HIV testing to know their HIV status while persons living with HIV and AIDS (PLHIV) may be less inclined to declare and openly acknowledge their HIV sero status. This can lead to continued under-reporting of the epidemic, increased transmission, and limited access to treatment, care and support programmes. On the other hand, stigma and discrimination violate the

human rights and dignity of people living with HIV and AIDS and those affected by the epidemic. Despite these challenges, the study revealed that a large proportion of inmates (68%) are willing to eat with someone with HIV while 87.0% believes PLHIV needs more health care than others. Overall in this study, the mean score of attitude for the sampled population was 4.2 all over 5 scores (84%). Comparing the scores to a standard grading, 22.1% were graded as having negative attitude (scored 0-3), and 77.9% of respondents had positive attitude (scored 4-5).

Behaviours such as sexual intercourse are important for the transmission of HIV and other sexually transmitted infections. The understanding of patterns of sexual behaviour is important in assessing the factors contributing to the HIV and AIDS epidemic and other sexually transmitted infections, and also to determine the impact of interventions on sexual behaviour. In Nigeria as in other parts of Sub-Saharan Africa, sexual intercourse is the main mode of transmission of HIV and AIDS and is usually through unprotected sexual intercourse. It is also the mode of transmission of other STIs. The use of preventive measures such as latex condoms substantially reduces the risk of infection for both partners provided the condoms are used correctly and consistently. The understanding of patterns of sexual behaviour is important in assessing the factors contributing to the HIV and AIDS epidemic.

Quantitative findings in this study recorded no sexual practice in prison but the study in Kaduna prisons by Sabitu et al reported 14.9% of prison inmates as having sexual intercourse in prison out of which 56.2% had it with same sex and the rest were heterosexual relationship. Kuje is a male only prison while the Kaduna prison is mixed. Odunjirin and Adebajo found that 42.8% of respondents in Kirikiri prisons knew that homosexuality was the most prevalent sexual practice in the prison while 28.6% claimed there was no sexual practice in the prisons. 53.2% claimed to have multiple sexual partners although 94.8% denied any sexual practice whilst still in prison[41]. The qualitative arm of this study reported presence of same sex relationship and inmates said they

personally knew those in same sex relationships. The respondents claimed that there is no practice of sex in prison despite that, 1.6% used condom at their last sexual act while in prison, this further buttressed the findings of the qualitative method of data collection that found that sex in prison exists as same sex relationship.

The condom usage, accessibly and knowledge had various values with 96.5% having heard of male condom, 89.6% agree that male condom prevent against HIV when this figure is compared with usage, only 19.8% consistently used condom in the last 6 months prior to incarceration. This finding does not agree with what was found in Kaduna prison with 43.8% of the sexually active inmates claiming to have used condoms regularly. Odunjirin and Adebajo found that 12.7% respondents claimed use of condom for casual sexual contacts were measures that could help prevent AIDS, 56.3% claimed to have used condom before although only 38.7% used it for their last sexual exposure while 28.2% claimed they used it for all casual sexual intercourse. The accessibility to male condom in Kuje prison is 3.9%.

This study also found the proportion of those that have ever tested for HIV to be moderately high at 68.1% and almost double what SFH had in their study (37%).

Findings of Hellard and Aitken in 2004 showed that tattooing is a risk factor for the transmission in prison and that access to condoms, needle and syringe programmes in prisons was extremely limited[42]. In this study, nine percent of respondents had tattoo on their bodies with of which only one person had it in prison. Six respondents representing 4.0% of respondents had body piercing and they all had it before coming to prisons. In this study, there was no injecting drug use or sharing of needle in prison despite 2.7% of respondents agreeing they had ever injected illegal drugs into their body of which 2 (50%) injected within the six months before incarceration, and 50% of these numbers shared needle which translated to 1.4% of the total respondents.

Among the information sought from the respondents was how often they had drinks containing alcohol during the last four weeks preceding the investigation and whether they had ever used psychoactive drugs. These questions were asked because of the usual assumptions that alcohol consumption and drug use may be more likely to engage in risky sexual behaviour than those who do not. Sixty-six (43%) of the respondents reported that they took drinks containing alcohol during the last four weeks preceding the study, with 16% taking it daily. Cigarette and Marijuana use was predominant amongst respondent; this was also reported in the qualitative arm of study. The SFH study found that 39% of inmates use marijuana and frequent consumption of alcohol was 9%. A study in Pakistan showed that the prevalence of smoking and drug/ alcohol abuse amongst prisoners was 63.1% and 37.9%, respectively [43].

The average score of practice for respondents was 6.1 out of 10 marks for practice (61%). Also 11.0% were graded as having bad practice (scored 0-4), 89.0% had fair practice (scored 5-8) and 0 (0.0%) respondents had good practice (scored 9- 10).

Factors that can predispose an individual to an infection such as HIV (which may be predominant or significant within a group) may also affect the dynamics within the group (in this case prison inmates) hence the factor may become associated with the HIV prevalence within that group. Such include existence of certain practices and or events that favour transmission of HIV in prisons such as sexual transmission (such as unavailability of condoms, homosexual practices and rape), tattooing, violence, length of incarceration and type of crime committed amongst others. The interplay between these factors or single factor relationship with outcome can explain the HIV sero-conversion / prevalence situations amongst the general population, the incarcerated and other high risk groups.

According to a study in Spain factors that vary HIV prevalence include age, people with a tattoo inmates with a background in self-inflicted injuries ,Intravenous Drug Users (IVDUs), inmates who admitted sharing syringes and inmates with a prison record of one or more years (37.3%) [44]. The chi square test shows assocation between age and HIV positive (χ^2 5.1, P-value 0.05 for convict and χ^2 21.4, P-value 0.006 for awaiting trial). and especially for the awaiting trial inmates. Four of the six infected are currently married, but the chi square was not statitically significant.All other bivariate analysis on exposure and outcomes/ relationships were not statistically significant. Also the length of stay and HIV positive status do not have relationship (Chi^2=2.6, P-value: 0.6). No of years of education also do not have relationship with HIV positive status (Chi^2=1.2, P-value: 0.74) but highest level of education attained has a relationship with knowledge of sexual transmission of HIV (Chi^2=11.8, P-value: 0.0081). The study by Sabitu et al also found a strong association between educational attainment and knowledge of HIV/AIDS (χ^2 = 28.3, df = 6, P < 0.0001).

In this Kuje prison study, the likelihood of being HIV positive is higher (though not statistically significant in respondents that are younger than 25 years, in prison for less than 3 years, have had multiple sexual partnership, ever had STI, have body tattoo and body piercing, while those that attended school, have knowledge of HIV sexual transmission, have heard of condom, ever used condom, and consistent condom use seems to be protective but not also statistically significant at P<0.05. An awaiting trial inmate has 1.27 chances of being positive to that of a convicted inmate. Two risk factors were significantly associated at logistics regression. These are 'never heard of male condom (AOR=33.1, P-value=0.016)' and 'previous history of STI (AOR=18.4, P-value = 0.05)'. These are good piece of information which should guide design of interventions in prisons

Findings in this study is supported by a study among male prison inmates in a State prison system in Georgia which identified the following characteristics as associated with HIV sero-conversion

in prison: male-male sex in prison, tattooing in prison, older age (i.e., age of >26 years at date of interview), having served ≥5 years of the current sentence, black race, and having a body mass index (BMI) of ≤25.4 kg/m^2 on entry into prison[55]. The age in this case is directly opposite to what was found. BMI calculation was not part of this Kuje prison study.

Another study in the United States using logistic regression identified four variables had a statistically significant association with having contracted HIV inside prison: age of respondent, each year an inmate was older decreased the chance that he would contract HIV in prison by 1.09 times, and this agreed with our findings that the older age groups are less likely to be HIV positive than the younger ones [56].

Findings from this study, did not implicate drugs and injecting drug use because the proportion of inmates using drugs is low and this was not reflective on bivariate analysis; but it is implicated as risk factors in a study in Thailand which showed that more HIV positive inmates (cases) than controls inmates reported using drugs and sharing needles with $P<0.05$, it showed that independent risk factors for HIV infection included injection of methamphetamine before detention (adjusted odds ratio (AOR) 3.3, 95% confidence interval (CI): 1.01 to 10.7), sharing needles in the holding cell (AOR-1.9, CI:1.2 to 3.0), being tattooed while in prison (AOR-2.1, CI:1.3 to 3.4), and borrowing needles after release (AOR -2.5, CI:1.3 to 4.4)[57]. Another study showed injectable heroin use was significantly greater ($p = 0.02$) among HIV-infected cases (93.0%) than un-infected controls (84.6%), and also cases were more likely to share drug paraphernalia and have drug-using sexual partners. Multiple logistic regression analysis revealed that the number of imprisonments (between 2-5 times; OR = 5.23), sharing mainly dilutes (OR= 63.47), and sharing dilutes concurrently with needles (OR= 127.33) significantly predicted HIV sero-conversion, after controlling for age and years of education[58].

It should be noted that most of what was found in Thailand are not common amongst the inmates in Kuje prisons hence this may explain the relatively low prevalence of 4.0% in that prison.

The relative contribution of needle use practices and sexual behaviors to human immunodeficiency virus (HIV) antibody sero-positivity has also been displayed in Quebec among incarcerated women. HIV positivity was found in 6.9% of all participants and in 13% of women with a history of injection drug use[59].

The HIV epidemic is getting much attention while its relationship with the other STIs such as syphilis and gonorrhea are often overlooked. There is a connection between STI infection rates and HIV infection rates. By building the knowledge and treatment of STIs, the risk of HIV infection and transmission can be reduced.

In this Kuje study, having been infected with STI at any point in time is associated with HIV infection with an AOR of 18.4, P=0.05. The association between HIV and other STIs has been shown in various studies such as that by Wasserheit in1992 which concludes that the evidence for *genital ulcer disease* as a risk factor for HIV acquisition is the most compelling[47]. Studies on syphilis alone have usually found a significant relationship with HIV, at least among the heterosexually active. Prospective studies showed no significant effects, while retrospective studies reported some effects[49,50]. Two studies reported strong significant relationships (with risk ratios over 7), though these did not control for sexual behaviour [51,52]. Further investigation of associations between HIV and STIs was not conducted in this study

The findings in this study in Kuje prison though cannot be generalized for the whole prison inmates in Nigeria may indicate that the situation as regards HIV and AIDS in Nigeria Prison may not be as bad as those in some developed countries and even some developing counties in Africa and Asia as written above. This could be due to the low homosexual activity, and low injecting

drug use as found by this study in Kuje prison which may serve as proxy for Nigeria, and this could also be the reason for the relatively low prevalence in this Prison.

It also shows that the prison setting which is an incarceration institution has dynamics that reflects what is obtainable in the open community as regards HIV prevalence by comparing the general population HIV prevalence with the prison HIV prevalence. The Nigerian HIV sentinel survey prevalence amongst antenatal clinic attendees which is used as proxy for the general population in 2010 was 4.1%, which is almost the same as that of the prison inmates (4.0%) found in this study. This further buttresses the conceptual frame work on page 19 of this thesis. There is a constant dynamics and relationship between the community and the prisons.

Some of the findings in this study may require more analysis; and more studies in more prisons should be conducted to make some of above findings national fact for Nigeria. This will guide development of evidence base planning and interventions for the country.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This study was able to determine the prevalence of HIV in Kuje prison and also provided information on the knowledge, attitude and practices of inmates; and factors associated with HIV transmission and HIV positive status.

The overall HIV prevalence determined amongst inmates was 4.0% with awaiting trial inmates having 4.2% and convicts 3.3%. There is a huge gap in the correct and complete knowledge on HIV/AIDS amongst the Kuje prison inmates as the level of knowledge on HIV and AIDS for the inmates was poor at 42%. Majority (77.9%) of the inmates demonstrated positive attitude on HIV/AIDS. As regards practices that can fuel HIV transmission, the level of good practices was extremely low, with majority (89%) falling within the fair practice level. Those that have never heard of male condom, do not consistently use condoms and those that have previous history of STI are more likely to be infected with HIV.

This study gave valuable information that can be utilized for planning and intervention design for Kuje prison specifically and generally for other prisons in Nigeria. It will also serve as baseline for further studies in Kuje prisons and the prisons in Nigeria as a whole.

6.2 Recommendations

Sequel to the findings from this study the followings recommendations are made:

1. It is recommended that routine / periodic and functional HIV counseling and testing (HCT) services is introduced into the prison, this will identify HIV positive inmates early and further enroll them into care and support before advanced stages of the disease. This study was able to detect six positive inmates who had been missed by the prison health service.

2. The level of knowledge on HIV and AIDS is low, so intensive and correct information on HIV and AIDS should be routinely made available to all inmates by introducing a well-designed HIV / AIDS information, education and communication sessions / packages in prisons at least twice a year so as to increase their knowledge base on HIV and AIDS.

3. The level of attitude amongst inmates should be maintained and further improved towards 100% by routinely sharing information that reduces stigma and discrimination in prisons and also with a view to correcting myths, beliefs and misconceptions about HIV/AIDS.

4. Risky practices on HIV should be reduced by actions such as creating awareness on risky behaviours, promoting usage of male condoms, and prompt and correct management of sexually transmitted infections once detected.

5. Based on findings from qualitative method on the presence of male-male sex in prisons, interventions that reduce risk of HIV transmission in anal sex should be introduced in prisons. Such Interventions may include policy formulation, provision of male condoms and lubricants.

6. It is recommended that more studies in prisons are conducted nationwide to further explore gaps and findings identified in this study.

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APPENDICES

Appendix 1: Informed consent form statement for HIV test

HIV Prevalence and its associated risk factors amongst prison inmates in Kuje Federal Prison, Abuja informed consent form statement for HIV test.

Participant's code#: _____(same as that on questionnaire). Date: _____

READ CONSENT STATEMENT TO EACH PARTICIPANT. CIRCLE CODE '1' IF PARTICIPANT CONSENTS TO THE HIV TEST AND CODE '2' IF HE REFUSES.

As part of the study we are asking people to give a few drops of blood for an HIV test. HIV is the virus that causes AIDS. AIDS is a very serious illness. The HIV test is being done to see how big the AIDS problem is in the prisons.

For the HIV test, we need a few drops of blood from a finger. Giving the blood drops will take a few minutes. The equipment used in taking the blood is clean and completely safe. It has never been used before (SHOW EVIDENCE) and will be thrown away after each test. You may feel a slight pinch as your finger is pricked. No participant will be compensated for any inadvertent injury or harm from this test.

No name will be attached but I can tell you the test result immediately after the test, if you wish. No one else will be able to know your test result except you tell them yourselves.

If you want to authenticate your HIV result, I can provide you with the name of a nearby facilities offering counseling and testing for HIV.

In addition to the benefit of you knowing your HIV status for participating in this study, the country may further benefit from the information you give as this information will help the government to plan health services for the prisons. Hygiene specific items such as soaps, detergents, slippers and tooth brushes will be given as incentives to all sampled inmates.

Participation is entirely voluntary. Should a participant choose not to participate, this will not affect his/her rights and will not result in him/her being treated differently by the Prison Authorities/co-inmates.

This study had been approved by Ahmadu Bello University Teaching Hospital Ethics committee. If you have any questions pertaining to the test, you can contact this person-Dr Adebobola Bashorun, 08029068808, Nigerian Field and Epidemiology Training Program, 50 Haile Sellasie street Asokoro Abuja.

Do you have any questions?

You can say yes or no to the test, it is up to you to decide. Will you allow us to perform the HIV test on you?

HIV testing accepted----------1

HIV testing refused----------2

If HIV test is accepted and consented to:

Participants' sign/thumbprint_____ Counselor Tester's sign/thumbprint____ _____

Appendix 2: Study questionnaire

HIV PREVALENCE AND ASSOCIATED RISK FACTORS AMONGST PRISON INMATES IN KUJE FEDERAL PRISON, FEDERAL CAPITAL TERRITORY, ABUJA, NIGERIA, 2012

INDIVIDUAL INTERVIEW SCHEDULE FOR KUJE PRISON INMATES

001 SURVEY IDENTIFICATION NUMBER ___|___|___|

Introduction: My name is…… ……, I am a resident with the Nigerian Field Epidemiology and Laboratory Training programme in Ahmadu Bello University Zaria and the Federal Ministry of Health. We are interviewing people here in Kuje prisons to find out about certain behaviors that affect people's health in prisons.

Confidentiality and consent: I am going to ask you questions some of which may be very personal. Your answers are completely confidential. Your name will not be written on this form. Please answer all questions you can answer honestly. None of the information you provide will be given to the prison authority, law enforcement or court system. You will not be prosecuted because of the answer you provide. The answers to these questions will help us better understand what people think, say and do about certain kinds of behaviours and HIV. It will help to find solution to some health problems affecting people in this environment. We would greatly appreciate your help in responding to this survey. My supervisor may come back later to verify this information.

Hygiene specific items such as soaps, detergents, slippers and tooth brushes will be given to all sampled inmates whether they accept or refuse to participate. Participation is entirely voluntary. Should a participant choose not to participate, this will not affect his/her rights and will not result in him/her being treated differently by the Prison Authorities/co-inmates.

This study has the permission of the Comptroller general of Prisons and has been approved by the Ahmadu Bello University Teaching Hospital ethics committee. If you have concerns about your rights / or questions ,you can contact this person- Dr Adebobola Bashorun, 08029068808, Nigerian Field and Epidemiology Training Program, 50 Haile Sellasie street Asokoro Abuja.

Do I have your consent to continue with the interview? Yes [ ] No [ ]

(Signature of interviewer certifying that informed consent has been given by respondent)……..

Interviewer visits	**002 Date**	**003 Time started**	**004Result**
Visit 1			
Visit 2			

Result codes: 1.Completed; 2.Respondent not available; 3.Refused; 4.Partially completed; 5.Others (Specify)

005 INTERVIEWERS: Code [____|____] Name_____Signature_____

Section 1: Background characteristics

Q1001: Tick as appropriate-(DO NOT ASK RESPONDENTS): Already determined during sampling

- ✓ **Convict [__]**
- ✓ **Awaiting Trial [__]**

No.	Questions and filters	Coding categories	Skip to
Q1	**[RECORD SEX OF THE RESPONDENT]**	Male……1	
Q2	How old were you as at your last birthday?	Age in completed years [___|___]	
Q3	What is your occupation i.e. what kind of work were you mainly doing?	Employed……..……1 Self employed……..……2 Unemployed……3 Student……4 Others specify[ ]…5 Write occupation----------	
Q4	Have you ever attended school?	Yes…….. ….. 1 No……. ….. 2	 **If No →Go to Q7**
Q5	What is the highest level of school you attended: Quranic only, primary, secondary or higher?	Quranic only……1 Primary …….. …..2 Secondary ……..….. 3 Higher …….. 4	**If 1 (Quaranic) →Go to Q7**
Q6	What was the highest class/form/year you completed at that level? **[CALCULATE TOTAL YEAR OF STUDY AND RECORD]**	Class (Primary) [___] Form (Secondary) [___] Year (Tertiary) [___] Total year= [___][_____]	
Q7	You are an indigene of which state in Nigeria?	[ ]……....1 Non Nigerian……2	
Q8	Where were you living before you came here?	Abuja [___] Northen Nigeria [___] Southern Nigeria [___] Outside the country [___]	
Q9	How many times have you been in Prison including this one	Once[___] Twice[___] 3-5 times[___] More than 5 time[___]	
Q10	How long have you been in this place for this episode (Kuje prison)?	Less than 1 week [___] 1week- less than1 month [___] 1 month-less than1 year [___] 1 year-3 years [___] More than 3 years-6 years [___] More than 6 years-9 [___] More than 9 years [___]	
Q11	What is your religion?	Islam……. 1 Christianity…….2 Traditional…….. 3 No religion ……. 4 Others specify.[ ]…5 No Response……99	

Q12	How often do you attend religious congregational services?	Everyday……..….1 More than once a week…….……..2 Once a week only ……..…….3 Less than once a week……..……..….4 Not at all…… ……..….5	
Q13	How important is religion to you in helping you deal with problems?	Very important……..1 Somewhat important……2 Not important…….……..3	
Q14	[**LOOK AND RECORD THE TYPE OF CELL/PRISON DWELLING STRUCTURE THE RESPONDENT LIVES IN**]	Single Cell house……..1 Upstairs……2 Dormitory ……3 Mini flat……4 Mud house with thatched roof…..7 Mud house with zinc roof……8 Wood and makeshift structures…..9 Others Specify[ ]..10	
Q15	What is the number of inmates in your cell?	[___|___]____]	
Q16	Where do you get your **main** source of water supply (for drinking, cooking/washing utensils etc)? **[SINGLE RESPONSE ONLY**]	From the stream… ……1 From the well……...……..2 From the street tap water…….3 From the in-house tap…….……...4 From a tanker…….…….5 From the borehole…….……..6 Rain water……...7 Water vendors…….……8 Others Specify[ ]….9	
Q17	What is your **main** method for sewage (urine and feaces)disposal?	Bush/field/river……1 Pit toilet…….……2 Ventilated improved pit latrine…….3 Bucket toilet……4 Water closet (WC)……..……..5 Others Specify[ ]…,6	
Q18	How many meals per day are you given here?	[___|___]	
Now I would like to ask you some questions on marriage.			
Q19	Which of these best describes your marital status? **[READ OUT]**	Currently married……1 Living with a sexual partner..……2 Never married…….. …..3 Separated……..….4 Divorced……5 Widowed……6 No Response……..…9	**If never married→Go to Q22**
Q20	How old were you when you first married or started living with a sexual partner?	Age in years [___|___] Can't remember/Don't know ……..88	**Check 19. If not currently married in Q19 go to Q22**

Q21	**[IF CURRENTLY MARRIED, ASK:]** How many wives do you have?	NUMBER [___]___]	

Section 2: Knowledge, opinions, and attitudes about HIV/AIDS

No.	Questions and filters	Coding categories	Skip to
Q22	Have you ever heard of AIDS or HIV (the virus that causes AIDS)?	Yes……..……..1 No…….…..……2	**If No→Go to Q30**
Q23	Does AIDS have a cure?	Yes, it has a cure……1 No, it does not have a cure…….2 I don't know …….3	
Q24	Do you know someone who has HIV virus /AIDS or died of AIDS?	Yes……..1 No……2	
Q26	How can a person get the virus that causes AIDS? **[PROMT AFTER SPONTANEOUS RESPONSE].**	**Yes** / **No** Sexual Intercourse 1 2 Blood transfusion 1 2 Mother to unborn child 1 2 Sharing toilets 1 2 Sharing sharp objects like needles/razors 1 2 Sharing eating utensils 1 2 Mosquito bites/bed bugs 1 2 Witchcraft 1 2 Kissing 1 2 Hugging 1 2 Others specify[ ]…1	
Q27	Is it possible that a healthy-looking person has the virus that causes AIDS?	Yes……1 No……..2	
Q28	What can a person do to avoid getting the virus that causes AIDS? **[PROBE FULLY.**	Yes / No Staying with one Faithful uninfected partner 1 2 Using condoms every time 1 2 Abstaining from sex 1 2 Delaying the onset of sexual intercourse 1 2 Avoiding sex with CSWs 1 2 Reducing number of sexual partners 1 2 Avoiding sex with people who have many sexual partners 1 2 Avoid sharing of sharp objects like needles, razors 1 2 Praying to God 1 2 Using antibiotics 1 2 Seek protection from a traditional healer 1 2	

		Nothing	
Q29	Do you know of a place where you can go to get an AIDS test?	Yes……..1 No…….2	
Q30	Have you ever been tested to find out if you have the virus that causes AIDS? **[PLEASE DO NOT ASK FOR THE RESULT]**	Yes……..1 No…….2	**If No→Go to Q34**
Q31	Do you know your HIV status	Yes…..……..…1 No……..……2	
Q32	When was the last time you were tested?	Less than 12 months ago……..1 12 to 23 months ago……2 24 months or more ago……3	
Q33	Did you get the results of the test then?	Yes……..1 No…….2	
Q34	Would you like to have a test to find out if you have the virus that causes AIDS?	Yes…….. 1 No…….. 2	**If No→Go to Q36**
Q35	What is the **main reason** why you would like to have a test?	To know status----------1 I just have interest----------2 Anxious/afraid----------3 No reason----------4 Others----------5	**If answered, Skip to Q37**
Q36	What is the **main reason** why you would not like to have a test?	Afraid----------1 I know my status----------2 Not necessary----------3 Others----------4	
Q37	Would you rate your chances of getting AIDS (or the virus that causes AIDS) as high, low or no chance at all?	High……..1 Low…… 2 No risk at all……..3 Already have AIDS……..……..4 No response……..……9	**Go to →Q39** **→Go to Q40**
Q38	**(For those with high chance only)** Why do you think you have a high chance of getting AIDS (or the virus that causes AIDS)? **[DO NOT READ OUT OPTIONS; PROBE FULLY** **MULTIPLE CODES POSSIBLE]**	Yes No Share sharp objects……..1 2 Do not use condoms……1 2 I have more than one sex partner……1 2 Sex with sex workers……...1 2 My Spouse/partners has other partners……..1 2 Had blood transfusions……1 2 Have had injections……..1 2 Others specify[ ]…1	**Go to Q40**
Q39	Why do you think you have a low chance or no chance at all of getting AIDS (or the virus that causes AIDS)? **[DO NOT READ OUT OPTIONS; PROBE FULLY** **MULTIPLE CODES POSSIBLE;]**		

	Yes	No
I abstain from sex	1	2
I use condoms	1	2
I trust my partner	1	2
I have a limited number of sex partners	1	2
I have only one sex partner	1	2
I avoid sex with sex workers	1	2
Spouse/partners has no other partner	1	2
I ensure safe blood transfusion	1	2
I ensure injection with sterile needles	1	2
I seek protection from a traditional healer	1	2
God will protect me/It is not my destiny	1	2
Others specify [ ]….1		

Section 3: Sexual history before imprisonment

No.	Questions and filters	Coding categories	Skip to
	[TELL THE RESPONDENT] **I need to ask you some personal questions about sexual activity in order to gain a better understanding of some life issues.**		
Q40	At what age did you first have sexual intercourse if ever?	Age in years [___|___] Never…….87 Can't remember…….. 88 No Response……99	**If never→Go to Q66**
Q41	Have you ever had sex in exchange for money/ favours or gifts?	Yes…… ….... 1 No …… 2 No response…….9	
Q42	Surveys reveal that many people have had more than one sexual partner at the same time. Would you say this has ever happened to you?	Yes …….. 1 No ……..… 2 No Response---------3	
Q43	Have you had sexual intercourse in the last 12 months? **(For the purpose of this study, sexual intercourse is defined as Vaginal, Anal or Oral sex)**	Yes …….. 1 No …….. 2 No Response……9	
Q44	How many sexual partners did you have in the last 6 months before you came here?	0[__] 1[__] 2-3[__] More than 3[__] No Response……..99[__]	
Q45	Of the sexual partners you had in the last 6 months before you came here how many were females?	0[__] 1[__] 2-3[__] More than 3[__] No Response……..99[__]	**If Q45 is equal to Q44, skipQ46& Q47**
Q46	Of the sexual partners you had in the last 6 months before you came here how many were males?	0[__] 1[__] 2-3[__] More than 3[__] No Response……..99[__]	
Q47	Of the sexual partners you had in the last 6 months before you came here how many were transgender (Sex change/both male and female in one person)?	0[__] 1[__] 2-3[__] More than 3[__] No Response……..99[__]	
Q48	Have you ever had sexual intercourse with a prostitute?	Yes …….. 1 No …….. 2 No Response……9	**If No→skip to Q50**
Q49	How many prostitutes did you have sexual intercourse with 6 months before you came here?	0[__] 1[__] 2-3[__] More than 3[__] No Response……..99[__]	

Section 4: Sex practice in prison

No.	Questions and Filters	Coding categories	Skip to
Q50	While in Prison have you had sexual intercourse?	Yes…….1 No……..2 No Response……9	**If No→Go to Q65**
Q51	If you had sexual intercourse in prison since you came in here, were they males or females **(Multiple choices)**	Males [__] Females [__] Transgender[__]	**If males only →Go to Q54,** **If females only →Go to Q52 thenQ59**
Q52	**(For those that had sex with females only, or females with any other options)** How many of the sexual partners you have in prison since you came in here, were females?	**NUMBER** 0[__] 1[__] 2-3[__] More than 3[__] No Response……..99[__]	**If females only →Go to Q59**
Q53	**(For those that had sex with transgender only, or transgender with any other options)** How many of the sexual partners you have in prison since you came here were transgender (sex change/both male and female in one person)?	**NUMBER** 0[__] 1[__] 2-3[__] More than 3[__] No Response……..99[__]	**If transgender only →Go to Q60**
Q54	**(For those that had sex with males only, or males with any other options)** How many of the sexual partners you have in prison since you came in here, were males?	**NUMBER** 0[__] 1[__] 2-3[__] More than 3[__] No Response……..99[__]	
Q55	How long have you been having sex with a male partner in prison?	Less than 1 month[__] 1 month -3 months [__] More than 3months-1 year [__] More than 1 year[__]	
Q56	When you had sex with a male in Prison, was it?	Anal only---------1 Oral only---------- 2 Both Anal and oral……..3	
Q57	When you had anal sex with a male while in prison, were you the--	(Top)Insertive[ ] (Bottom)Receptive [ ] Both [ ]	
Q58	Thinking back over the last 3 months, how many times did you have sex with your male partner in prison in total? **[RECORD ABSOLUTE NUMBER]**	[___]___]___]	**Skip Q59, Go to Q60**
Q59	**(For those that had sex with females only, or females with any other options)** When you had sex with a female in Prison, was it?	Anal only---------1 Oral only---------- 2 Vaginal only----------3 Both Anal and oral……..4 Vaginal and Oral…….5 Anal and Vaginal…….6 All three (anal, oral, vaginal) .7	

Q60	Have you ever had sexual intercourse with a prostitute while in prison?	Yes …….. 1 No …….. 2 No Response……9	**If No skip (Go to)→ Q62**
Q61	How many prostitutes did you have sexual intercourse with while in prison?	0[__] 1[__] 2-3[__] More than 3[__] No Response……..99[__]	
Q62	**NOT FOR THOSE WITH MALE PARTNERS ONLY; FOR THOSE WITH FEMALE PARTNERS ONLY OR MALE AND FEMALE PARTNERS** Have you had sexual intercourse with a female in the last ---- month	1 month: Yes 1, No 2, No response 9 3 months: Yes 1, No 2, No response 9 6 months: Yes 1, No 2, No response 9 12 months: Yes 1, No 2, No response 9	**If No to all skip →Go to Q64**
Q63	Thinking back over the last 3 months, how many times did you have sex with your female partner while in prison in total? **[RECORD ABSOLUTE NUMBER]**	[___]___]___]	
Q64	While in Prison, Tick all that apply for having sex while in prison **Multiple choice.**	Had Sex because I wanted it Forced to have sex Never had	
Q65	What is your sexual orientation	Heterosexual(man with woman) [___] Bisexual(sex with both men and women [___] Homosexual: Gay (sex with men only)[___] Homosexual: Lesbian(sex with women only)[___] Transgender(sex change) [___] Others……	

Section 5: Condom knowledge, access and use.

No.	**Questions and filters**	Coding categories	Skip to
Q66	Before I started talking to you, have you ever heard of male condoms? [**DESCRIBE WHAT MALE CONDOMS ARE TO THE RESPONDENT**]	Yes……1 No…… 2	**If No skip→Go to Q82**

Q67	Please tell me if you agree or disagree with the following statements. **[READ OUT OPTIONS]**		Agree	Disagree	Don't know	
		Male condoms protect against unplanned pregnancy	1	2	8	
		Male condoms protect against the virus that causes AIDS	1	2	8	
		Male condoms protect against diseases that are transmitted through sexual intercourse	1	2	8	
Q68	Do you have access to male condoms here in this environment (prisons)	Yes……1 No…… 2 If yes where----------				
Q69	Would you say male condoms are affordable?	Yes……..1 No……..2 Don't Know……8				
Q70	Have you ever used male condoms?	Yes …….. 1 No ……. ……. 2 No Response……9				**If No skip→Go to Q79**
Q71	During the 6 months before you were brought here, how often did you or your partner use a condom?	I did not have sex----------1 Rarely----------2 Sometimes----------3 Most times----------4 Always----------5				
Q74	The last time you had sex with male or female partner while you are in prison, was a condom used?	Yes…….1 No……..2 I did not have sex……..3 No Response……9				**If No or I did not have sex skip →Go to Q77**
Q75	Who suggested condom use that time?	Myself……1 My partner……2 Joint decision……3 Can't Remember…..8				
Q76	What is the **Main** reason why you are using male condoms? Is it because you want… **[READ OUT]**	To protect yourself from HIV ……...1 To protect yourself from STIs……...2 To protect your partner from pregnancy……...3 To protect yourself from both HIV/STI..……4 Others specify[ ]……...5				
Q77	Why didn't you use a condom with your male sexual partner that time? **[MULTIPLE CODES POSSIBLE; PROBE FULLY; DO NOT READ OUT OPTIONS]**	Y I did not have sex……1 Not available…….1 Too expensive……..1 Partner objected……..1 Don't like them……..1 Trust my partner…….1 Didn't think it was necessary…….1 Didn't think of it……1 Don't know condoms…..1 Others specify[ ]…1				N 2 2 2 2 2 2 2 2

		No Response ……..1		
Q79	How confident are you that you will be able to use (wear) a condom each time you have sex with your partner in prison, if you want to?	Confident……..1 Not confident……..2 No Response.....9		
Q80	If you want to use a condom with your partner, how confident are you that you would be able to convince your partner to use a condom every time you want to have sex?	Confident……1 Not confident……..2 No response----------8		
Q81	You said you had sex (……..give number stated in **Q58)** with your male partner in prison in the last 3 months. Was a condom used with your male partner in prison every time you had sex, sometimes or never? **[ALSO RECORD ABSOLUTE NUMBER]**	Every time…….1 Sometimes……..2 Never……..3 No Response…….9 [___]___]___]		

Section 6: Other practices related to HIV/AIDS

No.	Questions and filters	Coding categories	Skip to
	[PLEASE TELL THE RESPONDENT] **I am going to ask you some sensitive and personal questions. Your answers are completely confidential and will not be divulged to anyone.**		
Q82	Do you have a tattoo(drawing on body)	Yes……..…1 No……..…2	**If No skip →Go to Q87**
Q83	If yes, how many do you have	1-2 3-4 5-6 7-8 More than 8	
Q84	Did you have tattoo before coming to the prison	Yes……..…1 No……..…2	**If No skip →Go to Q86**
Q85	If yes, how many did you have	1-2 3-4 5-6 7-8 More than 8	
Q86	While in Prison have you gotten a tattoo?	Yes……..…1 No……..…2	
Q87	Do you have a body piercing(body pin and rings)	Yes……..…1 No……..…2	**If No skip →Go to Q92**
Q88	If yes, how many do you have	1-2 3-4 5-6 7-8 More than 8	
Q89	Did you have body piercing before coming to the prison	Yes……..…1 No……..…2	**If No skip →Go to Q91**

Q90	If yes, how many did you have	1-2 3-4 5-6 7-8 More than 8	
Q91	While in Prison have you gotten a body piercing?	Yes……..….1 No……..…2	
Q92	Some people take alcohol, others don't. During the last 4 weeks how often have you had drinks containing alcohol? **[SINGLE CODE ONLY]**	Every day…… 1 At least once a week…….. 2 Less than once a week…… 3 Never…….. 4 Not Sure…….. 8 No response…….. 9	
Q93	Some people have tried a range of different types of Psychoactive drugs **(Drugs that make a person feel high**). Which of the following, if any, have you tried? **[READ OUT; PROBE FOR OTHERS; MULTIPLE CODES POSSIBLE]**		

	Yes	No	No response
None	1	2	9
Cigarrette (Tobacco)	1	2	9
Marijuana	1	2	9
Glue (Solution)	1	2	9
Cocaine	1	2	9
Heroin	1	2	9
Pentazocine	1	2	9
Tramadol	1	2	9
Amphetamines	1	2	9

Others specify[ ] ….1

Q94	Have you ever injected any street /illegal drugs into your system? **[DRUGS INJECTED FOR MEDICAL PURPOSES OR TREATMENT OF AN ILLNESS DO NOT COUNT]**	Yes ….. ……..1 No. …...……2 No response ……..9	**If No skip →Go to Q98**
Q95	Some people have tried injecting cocaine or heroine or any illegal drug using a syringe and needle. Have you done this in the last 12 months? **[DRUGS INJECTED FOR MEDICAL PURPOSES OR TREATMENT OF AN ILLNESS DO NOT COUNT]**	Yes……..…1 No……..…2 Name of drug injected---------- ----------	**If No skip →Go to Q98**
Q96	During the 6 months before you were brought here, did you inject any illegal drug into your system?	Yes……..…1 No……..…2	
Q97	While in Prison have you injected any drug into your body?	Yes……..…1 No……..…2	

Q98	Have you ever shared injecting needle or any injection works/materials for street/illegal drugs to inject into your body?	Yes……..…1 No……..…2	**If No skip →Go to Q102**
Q99	During the 6 months before you were brought here, did you share injecting needle or any injection works/materials for street/illegal drugs to inject into your body	Yes……..…1 No……..…2	
Q100	While in Prison have you shared injecting needle or any injection works/materials for street/illegal drugs to inject into your body?	Yes……..…1 No……..…2	
Q101	**FOR THOSE THAT INJECT DRUGS** How do you get your injecting needle or any injection works/materials for street/illegal drugs	Rent……1 Buy new ones every time……2 Clean old ones…….3 Share with peers……4 Others.....……5	

Section 7: HIV/AIDS Stigma and Discrimination

No.	Questions and filters	Coding categories	Skip to
Q102	Would you be willing to eat from the same dish with a person you knew had the virus that causes AIDS?	Yes ……. 1 No ……. 2 Don't know …….. 8	
Q103	If a relative of yours became ill with AIDS, would you be willing to care for him in your household?	Yes …… 1 No …… 2 Don't know……. 8	
Q104	If a cell mate of yours became ill with AIDS, would you be willing to care for him?	Yes …… 1 No …… 2 Don't know……. 8	
Q105	If a member of your family became ill with the virus that causes AIDS, would you want it to remain a secret or not?	I would want it to remain secret ……. 1 I would not want it to remain secret …….. 2 Don't know ……. 8	
Q106	If a colleague in your work place /prison has the virus that causes AIDS but is not sick, should he or she be allowed to continue working/staying with you?	Yes, should be allowed to work ……. 1 No, should not be allowed to work …….. 2 Don't know ……. 8	
Q107	If a child has the virus that causes AIDS should he or she be allowed to attend school with other children?	Yes, should be allowed to attend school…. 1 No, should not be allowed to attend school…….. 2 Don't know ……. 8	
Q108	Should people who have AIDS (or the virus that causes AIDS) be given more health care, equal health care or less health care than people with other serious diseases?	More health care ……. 1 Equal health care …….. 2 Less health care ……. 3 Don't Know…….8	

Section 8: Other STIs and STI treatment seeking behaviours

No.	Questions and filters	Coding categories	Skip to
Q109	Have you ever heard of diseases that can be transmitted through sexual intercourse (STIs-	Yes……1	**If No skip →Go to**

No.	Questions and filters	Coding categories			Skip to
	example syphilis, gonorrhea)?	No……..2			**Q115**
Q110	Can STIs prevent a woman from getting pregnant in future?	Yes……..1 No…….……..2 Don't Know……8			
Q111	Can STIs prevent a man from fathering children in future?	Yes…….……1 No……2 Don't Know……8			
Q112	Can you describe any symptoms of STIs in women? **[DO *NOT* READ OUT THE SYMPTOMS** **MULTIPLE CODES POSSIBLE; PROBE FULLY]**		Yes	No	
		Lower abdominal pain	1	2	
		Genital discharge	1	2	
		Foul smelling discharge	1	2	
		Burning pain on urination	1	2	
		Genital ulcers/sores	1	2	
		Swellings in groin area	1	2	
		Itching	1	2	
		Painful Sexual Intercourse	1	2	
		Others specify[ ]…1			
Q113	Can you describe any symptoms of STIs in men? **[DO *NOT* READ OUT THE SYMPTOMS** **MULTIPLE CODES POSSIBLE; PROBE FULLY]**		Yes	No	
		Genital discharge	1	2	
		Burning pain on urination	1	2	
		Genital ulcers/sores	1	2	
		Swellings in groin area	1	2	
		Others specify [ ]..1			
Q114	Have you ever had any sexually transmitted diseases (STIs)?	Yes…….1 No……..2			
Q115	Have you had a genital **discharge** during the past 12 months?	Yes……..1 No…..…….2			
Q116	Have you had genital **itching** during the past 12 months?	Yes……..1 No……2			
Q117	Have you had a genital **sore/ulcer** during the past 12 months?	Yes ……..1 No…….2			
	FILTER: CHECK Q 115 &Q116 & Q1117 IF YES TO ANY OF Q115, Q116 OR Q117 THEN CONTINUE… YES/ IF NO→→→→→→→→→ →→ →→→→→→→→→→ ↓↓	**IF NO TO ALL OF Q 115 &Q116 & Q117 THEN → Go to Q123**			**Go to →Q123**
Q118	How many times in the past 12 months did you have any of these symptoms?	[___[___]___]			

No.	Questions and filters	Coding categories		Skip to
Q119	The last time you had the genital sore/discharge/ itching, where did you seek treatment? **[READ OUT. MORE THAN ONE ANSWER POSSIBLE.]**	From a clinic or hospital?.....1 From a registered private pharmacy?.....2 From a Patent Medicine store?.....3 From Drugs/Medicine Hawkers…..4 Prayers from a Pastor/Imam?.....5 From a traditional healer?.....6 No treatment……..7		
Q120	Did you….**[READ OUT OPTIONS]** a. Tell your sexual partner about the discharge/ STI? b. Stop having sex when you had the symptoms? c. Use a condom when having sex during the time you had the symptoms?	**Yes** 1 1 1	**No** 2 2 2	**If No treatment in Q119→Go to Q122**
Q121	**[ASK ONLY THOSE THAT WENT TO A CLINIC, HOSPITAL OR REGISTERED PRIVATE PHARMACY]** Did you finish all the medicine you were given?	Yes……...1 No……..2		
Q122	Why did you not seek treatment? **[MULTIPLE CODES]** **[DO NOT READ OUT]**	I was pregnant……..…1 Took medicine I already had at home?.....1 I felt it was normal…….……1 I did not have money for treatment….1 There were no facilities for treatment…1 It is my usual monthly discharge……1 Others specify[ ]…1		

Section 9: Other HIV/AIDS related health issues

Q123	Both males and females may undergo circumcision. **What about you? Are you circumcised?**	Yes……..1 No…….……2					
Q124	I would like to ask you some other questions Have you ever heard of an illness called Tuberculosis or TB? **[USE LOCAL WORD FOR TUBERCULOSIS]**	Yes……1 No……..2					If No Skip to Q129
Q125	How does Tuberculosis spread from one person to		Yes	No	DK		

	another? **[PROBE FULLY]**	a. Through the air when coughing	1	2	3		
		b. Through mosquito bites	1	2	3		
		c. Through the air when sneezing	1	2	3		
		d. Through sharing eating utensils	1	2	3		
		e. Through touching a person with TB	1	2	3		
		f. Through food	1	2	3		
		g. Through sexual contact	1	2	3		
		Others specify[ ]…1					
Q126	Can Tuberculosis be cured?	Yes……1 No……..2 Don't know……..3					
Q127	If a member of your family has Tuberculosis, would you like it to remain a secret or not?	Yes…….1 No…….2					
Q128	If a member of your family has Tuberculosis, would you care for the person or not?	Yes…….1 No…….2					
Q129	Is there any one in your cell who has been coughing for the past 3 months or **(and who has been diagnosed to be having Tuberculosis- if respondents have heard of Tuberculosis**)? **[PROBE]**	Coughing for the past 3 months……1 Diagnosed as having TB……..2 Both Coughing & Diagnosed as having TB…3 No……..4					<u>If No skip→GO TO Q131</u>
Q130	[**IF YES]** How many have been coughing for the last 3 months, and how many have been diagnosed as having tuberculosis? **[RECORD NUMBER FOR EACH. IF NONE RECORD 00]**	Coughing for past 3 months [___[___|___] Diagnosed as having TB[___[___|___]					
Q131	Have you heard of nets that can be used to cover a person when sleeping to protect the person from mosquitoes? **[DESCRIBE A MOSQUITO NET FOR THOSE WHO HAVE NOT HEARD OF NETS**	Yes……..…1 No……..…2					<u>If No skip→GO TO Q133</u>
Q132	**Some of these nets are treated with a substance/chemical that is used to kill mosquitoes when they touch the net.** Last night did you sleep under a net that has been treated with these substances?	Yes……..…1 No……..…2					
Q133	Do you currently have a skin infection?	Yes……..…1 No……..…2					

Q134	How often do you have your bath?	2 times or more daily……1 Once daily……1 3 time -6 times weekly……1 1-2 times weekly……1 Less than once weekly……1	
Q135	**Do you currently have a mouth or tooth infection?**	Yes……1 No……2	
Q136	How often do you brush/clean your teeth / mouth?	2 times or more daily……1 Once daily……1 1-2 times weekly……1 3 time -6 times weekly……1 Less than once weekly……1	

Section 10: HIV/AIDS related communications

Q137	Is it acceptable or not acceptable to you for information on HIV, and other sexuality related issues to be provided in prisons **[READ OUT OPTIONS]**		Acceptable	Not acceptable	Don't know	
		a. Radio	1	2	3	
		b. Television	1	2	3	
		c. Print such as newspapers, leaflets	1	2	3	
Q138	During the past 12 months has anybody/organisation or the prison authority discussed with you individually or as a group on HIV?	Yes……1 No……2				
Q139	Are you required to have mandatory or voluntary test for HIV, the virus that causes AIDS when you were brought here (kuje prisons) (Mandatory means when people are required to get tested for HIV by the authorities. Voluntary means at your own will)	Mandatory……1 Voluntary……2 `Both……3 None……4				
Q140	For what offence were you arrested and brought here.	…… ----------				

THANK YOU VERY MUCH FOR YOUR TIME.
[NOTE: INTERVIEWERS EXPLAIN THAT SOMEONE ELSE WOULD MEET THE RESPONDENTS TO CONTINUE THE PROCESS]

Take Respondent to Counselor Tester

FINAL REMARKS ON THE QUESTONNAIRE

INTERVIEW CLOSING TIME…….DATE……..

LANGUAGE (s) THAT THE INTERVIEW WAS CONDUCTED IN…….CODE……

INTERVIEWER'S COMMENTS……..

……

…….

…….

SUPERVISOR'S COMMENTS……..

……

Name……. Signature/Date……..

Appendix 3: Focus Group Discussion Guide

HIV PREVALENCE AND ASSOCIATED RISK FACTORS AMONGST PRISON INMATES IN KUJE FEDERAL PRISON, FEDERAL CAPITAL TERRITORY, ABUJA, NIGERIA. 2012

Qualitative Study with Kuje Prison Inmates: Focus Group Discussion Guide

PREAMBLE TO INTERVIEW AND VERBAL INFORMED CONSENT

My name is……., I am a resident with the Nigerian Field Epidemiology and Laboratory Training programme in the Ahmadu Bello University and Federal Ministry of Health. We are interviewing people here in Kuje prisons to find out about certain behaviors that affect people's health in prisons.

We want to have a better understanding of the experiences of Nigerian Prison inmates in Kuje Prison on issues on HIV/AIDS and health as a whole. We would appreciate your full participation and your honest views of the different subjects that will be discussed.

Participation is entirely voluntary. Should a participant choose not to participate, this will not affect his/her rights and will not result in him/her being treated differently by the Prison Authorities and/ or co-inmates.

This study has the permission of the Comptroller general of Prisons and has been approved by the Ahmadu Bello University ethics committee.

If you have any question or concerns about your rights or questions ,you can contact this person- Dr Adebobola Bashorun, 08029068808, Nigerian Field Epidemiology and Laboratory Training Program, 50 Haile Sellasie street Asokoro Abuja.

What we will do.

These interviews will be conducted as an informal meeting of individuals or groups of people who are identified as having a lot in common. If you do agree to take part in this meeting, a trained interviewer will ask questions to obtain some relevant information.

Your decision to take part in this meeting is entirely voluntary and your answers are completely confidential. Your name will not be needed so be assured that it will not appear on any of the information you provide and everything you tell me today will be treated with high confidentiality. Please answer all questions you can answer honestly. The information will be used purely for research purposes. None of the information you provide will be given to the prison authority, law enforcement or court system. You will not be prosecuted because of the answer you provide. The answers to these questions will help us better understand what people think, say and do about certain kinds of behaviors and HIV. It will help to find solution to some health problems affecting people in this environment. We would greatly appreciate your help in responding to this survey.

Only members of the research team will have access to the raw data and information collected. The information gathered from this meeting will be used to complement the quantitative study (questionnaire administration and HIV testing) that is currently being conducted here by this same research group.

***To be read to or by the participants*.**
I have heard all about the study and I am satisfied with the information given. By giving a verbal consent witnessed by the interviewer, I am giving my consent to participate in the focus group discussion.

Interviewer Name and Signature:_____ Date_____
(Interviewer to sign only if the respondent agrees to continue with the interview and gives a copy of the document to the individual/individuals).

FOCUS GROUP DISCUSSION GUIDE

Introductions: Thank you very much for agreeing to participate in this study.

- This exercise is an interview that will provide a better understanding of HIV/AIDS and related health issues amongst Nigerian Prison inmates in Kuje Prisons and Nigeria as a whole.

- This interview session will add value to the quantitative study that has been conducted in this kuje prison in the last few days by providing greater explanations and significance for information generated by the study and guide in developing policy directions.

- This discussion will take between 1-2 hours

Time started:

A. Background

1. *Can you tell me what you do on a typical weekday during the day? And during the evening?*
2. *Can you tell me what you do on a typical Saturday or Sunday during the day? And in the evening?*
3. *For how long have you been here?*
4. *How many people are in your cell?*
5. *How many meals per day do you take, where is the source and what is the quality of the meals?*

B. HIV/AIDS Knowledge, Attitudes, Practices in Prison

6. *What do you know about HIV and AIDS?*
7. *How can a person get the virus that causes AIDS?*
8. *How can a person be prevented from getting the virus that causes AIDS?*
9. *Do you know your HIV status/How many people in this interview know their HIV Status (Don't tell me the status)?*

10. *Why do you think it is important or not important to have an HIV test?*
11. *What do you know about condoms?*
12. *How effective is condom in preventing sexually transmitted infections, HIV and unwanted pregnancy*
13. *Do you think or know that there is sex in prison? Elaborate please. Is it with men or women?*
14. *Do you think or know that there is same sex sexual relationship in prison (in case of Kuje male only prison- Men having sex with each other).*
15. *What do you think or feel about different sexual orientations such as Heterosexual(man with woman) ,Bisexual(sex with both men and women ,Homosexual: Gay (sex with men only) ,Homosexual: Lesbian(sex with women only)and Transgender(sex change).*
16. *Do you think or know that there is use of illegal Drugs such as marijuana, cocaine and other injecting drug such Heroine in prison? If yes, is there sharing of material and needles?*
17. *What/where are the sources of marijuana, cocaine and other injecting drugs? Elaborate please.*
18. *What is your opinion about use of illegal Drugs such as marijuana, cocaine and other injecting drug such Heroine.*
19. *Is there practice of tattoo (drawing on body) or body piercing in this prison?*
20. *What is your opinion about those that have HIV and AIDS?*
21. *If a colleague in prison has the virus that causes AIDS but is not sick, should he or she be allowed to continue working/staying with you?*
22. *Should people who have AIDS (or the virus that causes AIDS) be given more health care, equal health care or less health care than people with other serious diseases?*
23. *Have you ever heard of diseases that can be transmitted through sexual intercourse (sexually transmitted infections -STIs)? Elaborate please.*
24. *What are the symptoms of STIs and how can they be prevented and treated?*
25. *What is the relationship between HIV and STIs.*
26. *What do you know about Tuberculosis?*
27. *What do you know about Tuberculosis and its relationship with HIV/AIDS?*
28. *What do you know about Malaria and mosquitoes*
29. *What do you know about insecticide treated nets? Do you use one?*
30. *Do you think prison inmates are at higher risk of Sexually Transmitted Infections and HIV?*
31. *Do you think prison inmates are at higher risk of Tuberculosis?*
32. *Do you think prison inmates are at higher risk of Malaria?*
33. *Do you know where you can go to get a confidential HIV test and results?*
34. *What about for STI exam and results?*

C. Network size

35. *In your view, what do you think is the number or proportion of those involved in same sex sexual relationship in prison?*

36. *In your view, what do you think is the number or proportion of those using illegal drugs such as marijuana, cocaine and other injecting drug such Heroine in prison?*
37. *About how many people do you personally know who are Men that have sex with men (MSM)*
38. *About how many people do you personally know who are Injecting Drug User (IDUs)?*

D. Communication/intervention/ Clinic services

39. *How often are you exposed to HIV communication /intervention programs and by who? How many/how often in the last 12 months.*
40. *Is it acceptable or not acceptable to you for information on HIV, and other sexuality related issues to be provided in prisons.*
41. *Are you required to have mandatory or voluntary test for HIV, the virus that causes AIDS when you were brought here (kuje prisons)*

E. System strengthening

42. *What is your opinion about the Nigerian prison system and what can be done to improve it?*
43. *What is your opinion about the Nigerian prison **health** system and what can be done to improve it?*

Time closed:

THANK PARTICIPANT FOR TIME AND INVITE THEM TO MAKE ANY COMMENTS ON THE INTERVIEW OR SURVEY AND ADDRESS THEM TO THE BEST OF YOUR ABILITY.

Appendix 4: Key Informant Interview Guide

HIV PREVALENCE AND ASSOCIATED RISK FACTORS AMONGST PRISON INMATES IN KUJE FEDERAL PRISON, FEDERAL CAPITAL TERRITORY, ABUJA, NIGERIA. 2012

Key Informant Interview Guide

For Use with a senior Prison staff

Introductions: Thank you very much for agreeing to participate in this study.

- This exercise is an interview that will provide a better understanding of HIV/AIDS and related health issues amongst Nigerian Prison inmates in Kuje Prisons and Nigeria as a whole.

- This interview session will add value to the quantitative study that has been conducted in this kuje prison in the last few days by providing greater explanations and significance for information generated by the study and guide in developing policy directions.

- This discussion will take between 1-2 hours

Time started:

A. Background

44. Can you tell me what the program is for inmates on a typical weekday during the day? And during the evening?
45. Can you tell me what the program is for inmates on a typical weekend during the day? And during the evening?
46. How many people are in each cell and what is the total number of inmates?
47. How many meals per day do you give inmates and what is the quality of the meals?
48. Do you have any intervention program for HIV in this prison? If yes, which ones?

B. HIV/AIDS Knowledge, Attitudes, Practices in prison

49. What do you know about HIV and AIDS?
50. How can a person get the virus that causes AIDS?
51. How can a person be prevented from getting the virus that causes AIDS?
52. Why do you think it is important or not important to have an HIV test?
53. Are condoms available for inmates?
54. Do you think or know that there is sex in prison? Elaborate please. Is it with men or women?
55. Do you think or know that there is same sex sexual relationship in this prison.
56. What do you think or feel about different sexual orientations such as Heterosexual(man with woman) ,Bisexual(sex with both men and women ,Homosexual: Gay (sex with men only) ,Homosexual: Lesbian(sex with women only)and Transgender(sex change).
57. Do you think or know that there is use of illegal Drugs such as marijuana, cocaine and other injecting drug such Heroine in prison? Elaborate please.
58. Is there practice of tattoo (drawing on body) or body piercing in this prison?
59. What is your opinion about those that have HIV and AIDS?
60. If an inmate has the virus that causes AIDS but is not sick, should he or she be allowed to continue working/staying with other inmates?
61. Should people who have AIDS (or the virus that causes AIDS) be given more

health care, equal health care or less health care than people with other serious diseases?

62. *How do you handle inmates that have HIV and AIDS?*
63. *How do you handle prolong cough of over three weeks/Tuberculosis cases?*
64. *What do you know about Tuberculosis and its relationship with HIV/AIDS?*
65. *How do you prevent inmates from Malaria and mosquitoes*
66. *Are insecticide treated nets provided in prisons?*
67. *How do you detect and handle / manage STI cases in this prison?*
68. *Do you think prison inmates are at higher risk of Sexually Transmitted Infections and HIV?*
69. *Do you think prison inmates are at higher risk of Tuberculosis?*
70. *Do you think prison inmates are at higher risk of Malaria?*

C. Network size

71. *In your view, what do you think is the number or proportion of those involved in same sex sexual relationship in prison?*
29. *In your view, what do you think is the number or proportion of those using illegal drugs such as marijuana, cocaine and other injecting drug such Heroine in prison?*
30. *About how many people do you personally know who are Men that have sex with men (MSM)*
31. *About how many people do you personally know who are Injecting Drug User (IDUs)?*

D. Communication/intervention/clinic services

32. *How often do you expose inmates to HIV communication /prevention intervention programs and by who? How many/how often in the last 12 months.*
33. *Is it acceptable or not acceptable to the prison authority for information on HIV, and other sexuality related issues to be provided in prisons.*
34. *Do you require mandatory or voluntary test for HIV for inmates in Kuje prisons.*

E. System strengthening

35. *What is your opinion about the Nigerian prison system and what can be done to improve it?*
36. *What is your opinion about the Nigerian prison **health** system and what can be done to improve it?*

Time closed:

THANK PARTICIPANT FOR TIME AND INVITE THEM TO MAKE ANY COMMENTS ON THE INTERVIEW OR SURVEY AND ADDRESS THEM TO THE BEST OF YOUR ABILITY.

Appendix 5: HIV Request and Result Form

HIV PREVALENCE AND ASSOCIATED RISK FACTORS AMONGST PRISON INMATES IN KUJE FEDERAL PRISON, ABUJA, NIGERIA. 2012

HIV Request and Result Form

Facility Name: _____Sample Test Date: _

Survey ID No._____ Sex (Circle or Tick): O **M** ☐

HIV serology ☐

HIV antibody negativ☐

HIV antibody positive

HIV Tests performed by (Name): ----------

Designation: ---------- Signature----------

Date: ----------

Referral to----------

Appendix 6: Participant information form

DEPARTMENT OF COMMUNITY MEDICINE,
AHMADU BELLO UNIVERSITY, ZARIA

HIV Prevalence and associated risk factors amongst prison inmates in Kuje Federal Prison, Federal Capital Territory, Abuja, Nigeria, 2012

PARTICIPANT INFORMATION

Introduction:
My name is Adebobola Bashorun from Ahmadu Bello University, Zaria and Nigeria Field Epidemiology and Laboratory Training Programme, Federal Ministry of Health, Abuja. We are undertaking a research to find out knowledge and level of Human Immuno-deficiency Virus (HIV) infection amongst inmates in this prison.

HIV and Acquired Immune deficiency Syndrome (AIDS) are diseases caused by an organism (a virus) that is transmitted through unprotected sex with an infected person, contact or transfusion of infected blood and sharing of sharp object with an infected person. It can also be transmitted from an infected mother to her child. The disease doesn't show until the person is tested or becomes very sick. HIV and AIDS constitute major public health problems. The load of these diseases is further compounded by the effect they have on other diseases and its link to other sexually transmitted diseases such as gonnorrhea. Considerable gaps remain in the quantity and quality of information available in Nigeria on HIV/AIDS in prisons. Those inmates that happened to be infected with the HIV virus will be sent to where they can be treated. We expect to have voluntary 150 participants in this study.

We are undertaking this study to learn whether or not you have some knowledge on HIV and also whether you are infected or not by the disease. We will also like to know the practices and risks that influence HIV and AIDS in prisons. None of the information you provide will be given to the prison authority, law enforcement or court system. You will not be prosecuted because of the answer you provide. The answers to these questions will help to find solution to some health problems affecting people in this environment.All these will be directed towards yielding insights into existing gaps that may require attention and inform the design, implementation and evaluation of the national response to HIV and AIDS; and to guide HIV prevention and program planning suited for the prisons.

We will ask you some questions and also take blood through finger pricks to test for the HIV virus.

Is participation in this study compulsory?

Participation in this study is voluntary. No name will be attached to the study. You are free to or not to participate in this study or to leave the study at any stage. However, we will greatly appreciate it if you will be part of this study as your participation will help in understanding the problem of HIV /AIDS in prisons and provide useful information that will assist in designing targeted public health interventions to control and prevent the infection in prisons. Should a participant choose not to participate, this will not affect his/her rights and will not result in him/her being treated differently by the Prison Authorities and/ or co-inmates.

Asking of Questions

Study workers will ask questions about knowledge, attitude, behaviours and practices using a small book that has the questions.

Testing the inmates:

Study workers will collect 3-5 drops of blood samples from the finger through finger pricking. The sample will be tested immediately for presence of HIV. New sterile instruments that are clean and completely safe will be used to prick the finger. After testing, the result will be given you immediately, if you wish. No one else will be able to know your test result except you tell them yourselves.

You will not be charged any money for the tests. In a situation where the inmate's blood shows presence of HIV, the person will be immediately referred to the prisons health facility for treatment.

Risks/compensation for participating in this study:

There is little/minimal risk in participating in the study. You will feel a slight pinch, slight pain when the finger is pricked for blood. This study is entirely voluntary. You will not receive compensation for participating in this study or for any inadvertent injury or harm from this test. The researcher (Dr Adebobola Bashorun) will be responsible for any inadvertent injury or harm while conducting the research.

However, you will know the results of your blood test immediately, if you wish. Where the inmate's blood shows presence of HIV, the person will be immediately referred to the prisons health facility for treatment

Benefits of participating in the study:

In addition to the benefit of you knowing your HIV status for participating in this survey, the country may further benefit from the information you give as this information will help the government to plan health services for the prisons.

Hygiene specific items such as soaps, detergents, slippers and tooth brushes will be given as incentives to all sampled inmates whether they accept to participate or not. No cash will be given.

Participation in this study is completely free: you will not be charged anything for the tests or any other procedure in this study. Participation is entirely voluntary.

How is your privacy going to be protected?

The results of your participation and responses will be kept confidential to the extent permitted by law in the country. No name will be attached to your responses to questions and the HIV test. Unique codes/numbers will be used for individual responses and results just for the purpose of analysis and avoidance of mix-up. This study had been approved by an Ethics Committee in Nigeria and has the approval of the Comptroller General of Nigerian Prisons.

If you have further questions:

If you have further questions, you contact:

- Dr Adebobola T. Bashorun - Tel: 08029068808 Email: bashorunade2003@yahoo.com

Thank you very much.

Appendix 7: Evaluation Work-plan (Gantt Chart)

Activity and Evaluation work plan

Objective	**Activities**	**Implementation March 2012-Feb.2013**												**Means of Verification (MOV)**	**Responsible**
		M	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**	**J**	**F**	**M**		
The major objective of the study is to obtain accurate HIV prevalence estimates and information on behavioural and risk factors related to HIV infection and STI amongst prison inmates in Kuje Prison so as to yield insights into	Advocacy to stakeholders and meeting for buy in.	**X**	**X**												Report of meetings/permission letter from prison service	Resident and/Supervisors
	Protocol Development	**X**	**X**	**X**	**X**										finalized protocol available	Resident and/ Supervisors
	Ethical clearance								**X**	**X**					Ethical clearance letter	Resident /Supervisor
	Development /printing of tools, questionnaires and guides				**X**	**X**	**X**								Evaluation tools available	Resident and/Supervisor
	Training of assisting data collector (s)									**X**	**X**				Reports of trainings workshop and	Resident

existing gaps that may require attention and inform the design, implementation and evaluation of the national response to HIV and AIDS; and to guide HIV prevention and program planning suited for the prisons.	and pretest													pretest	
	Data collection and Field work									X	X			Questionnaire administration and testing	Resident and/Supervisor
	Analysis										X	X		Data analysis report	Resident
	Report writing										X	X	X	Finalized Report available	Resident
	Dissemination/ Defense												X	Thesis, Report of dissemination Developed advocacy materials and Report of meetings. Printed report.	Resident and/ Supervisor, stakeholders
	Logistics, meetings, transportation, communication.	X	X	X	X	X	X	X	X	X	X	X	X		Reports and Excel retirements	Resident and/Supervisor

Appendix 8: Permit from the Comptroller General of Nigerian Prison service

NIGERIAN PRISONS SERVICE

NATIONAL HEADQUARTERS

Bill Clinton Drive. Airport Road, Abuja
(P. M. B. 16, Garki - Abuja)

Phone:..... Our Ref: NPS.65/VOL.T/85

Your Ref:..... Date: 13th July, 2012.

Federal Ministry of Health
Department of Public Health
National AIDS/STDs Control
Ralph Sodeinde Street
Plot 75, Edo House, Cental Area,
P.M.B 083, Garki, Abuja.

ATTENTION: DR. U.M.ENE OBONG

RE: LETTER OF INTRODUCTION ON DR. ADEBOBOLA T. BASHORUN

Reference your letter dated the 11th June, 2012 on the above subject, I am directed to convey the Controller General of Prisons approval for Dr. Bashorun to carry out the study at Kuje Prisons.

2. Dr. Bashorun should liase with the Deputy Controller of Prisons in charge Kuje Prison and adhere strictly to all security details to enhance successful study in the Prison.

Kindly accept the warm assurances of the Controller General of Prisons.

HAKEEM DELE, ESQ.
CONROLLER OF PRISONS (STAFF)
for: CONTROLLER-GENERAL OF PRISONS

To whom it may concern
pls allow them access between 7th — 14th January 2013.

21/12/12

DEPUTY CONTROLLER OF PRISONS
SIGN
DATE 21/12/12
KUJE FCT ABUJA
MEDIUM SECURITY PRISON

Appendix 9: Ethical clearance certificate

Ahmadu Bello University Teaching Hospital
P.M.B. 06, Shika - Zaria, Kaduna State, Nigeria. 069-876305
website: www.abuth.org abuthshika@yahoo.com Abuthshika@gmail.com

Chairman of Board:
Chief Medical Director: **DR. LAWAL KHALID,** *MBBS, FMCS, FWACS, FRCS(ED) mni*
Chairman, Medical Advisory Committee: **DR. ABDULLAHI MOHAMMED,** *MBBS, FWACP FICS*
Director of Administration: **BARR. ISHAK BELLO,** *LL.B, BL, LL.M, PGDM, AHAN, FCAI*

Our Ref: ABUTH/HREC/TRG /36 28th May, 2013

FULL ETHICAL CLEARANCE AFTER COMMITTEE REVIEW

Re: ***"HIV Prevalence and associated risk factors amongst prison inmates in Kuje Federal prison, FCT Abuja Nigeria 2012"***

ABUTH Ethics Committee assigned number:	-	ABUTH/HREC/C29/2012
Name of the principal Investigator:	-	Dr. Adebobola, Toluwalashe Basharun
Address of the Principal Investigator:	-	Dept. of Comm. Medicine, ABUTH, Zaria
Date of receipt of valid application:	-	10th May, 2013
Date of meeting when final determination on ethical approval was made:	-	16th May, 2013

This is to inform you that the research described in the submitted protocol, the consent forms, and other participant information materials have been reviewed and ***given full approval by the ABUTH Ethics Committee.***

Please note: this approval dates from ***28th May, 2013*** to ***28th May, 2014***.

No participant recruitment into this research may be conducted outside these dates.

All informed consent forms in this study must carry the ABUTH HREC number assigned to this research and the duration of ABUTH HREC approval of the study.

This HREC expects that you submit your application as well as an annual report for ethical clearance renewal 3 months prior to expiration of study dates. This is to enable you obtain renewal of your approval and avoid interruption of your research.

If there is delay in starting the research, please inform the ABUTH HREC so that starting dates can be adjusted accordingly.

No changes are permitted in the research without prior approval by ABUTH HREC, except in circumstances outlined in national code for Health Research Ethics:http://www.nhrec.net.

ABUTH HREC reserves the right to conduct compliance assessment visits to your research site without prior notification.

Prof. J.U. Okpapi
Chairman, ABUTH