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HIV RELATED RISK BEHAVIOURS AMONG MALE PRISONERS IN SELECTED PRISONS IN GHANA

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DECLARATION

I, PRINCE BAAH VAN-ESS, declare that except for other people's investigations which have been duly acknowledged, this work is the result of my own original research, and that this dissertation, either in whole or in part has not been presented elsewhere for another degree

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PRINCE BAAH VAN-ESS

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DR AUGUSTINE ANKOMAH (SUPERVISOR)

DEDICATION

To **God Almighty**, the I am that I am who has brought me this far and is taking me to my expected end.

With much appreciation I dedicate this work to **Dr Kofi Ablorh**, the medical superintendent of Nsawam Government Hospital for being instrumental in my academic and professional life.

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ABSTRACT

The disparity in the seroprevalence of HIV infection between prison environments and the general population is gross, and this picture is documented worldwide. However, the population is usually neglected in terms of prevention and control programs even though they are a high risk group, providing a 'fertile reservoir' for HIV transmission.

This study therefore sought to assess the knowledge of male inmates, identify the HIV related risk behaviours existing in the prison environment and assess the availability of health services to identify needs.

The study was a descriptive cross-sectional study of five prisons selected by stratified sampling depending on the level of security. A total 1083 male inmates were surveyed from Ankaful New prisons (Maximum security), Nsawam male prisons (medium security), Ankaful main central prisons, Akuse local and James Camp prisons.

The survey showed a young population of prisoners with a mean age of 34.8 years, range, 18-87 years and a standard deviation of 11.6 years. There is universal (99.4%) awareness of HIV/AIDS but a significantly low (21.1%) comprehensive knowledge due to a high proportion of inmates having misconceptions about the disease; (57.4 percent think HIV can be transmitted by witchcraft / supernatural means while 48.9 percent think it can be transmitted by mosquito bites). There is a significant relationship between comprehensive knowledge and the level of education, length of stay in prison as well as the type of prison in which the inmate is found.

HIV related risk practices do occur among inmates but rarely occur in prison suggesting that HIV positive inmates may have contracted the disease prior to imprisonment. While 20 percent

had their tattoos before going to prison, only 0.5 percent had theirs whiles in prison. Injection drug use and homosexual behaviours are rarely practiced inside the prisons with only two (0.2%) inmates indulging in injection drug use and ten (0.9%) engaging in anal sex.

Health delivery service is grossly inadequate, and only 23.5 percent of inmates know about any HIV related service in the form of education, counseling and testing, treatment or support group.

In conclusion, there is universal awareness but significantly low comprehensive knowledge of HIV/AIDS.

HIV related risk behaviours do occur among male inmates but rarely occur within the walls of confinement and health services in general as well HIV related services are grossly inadequate within the prisons.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
BMI	Body Mass Index
CSW	Commercial Sex Worker
GAC	Ghana AIDS Commission
HIV	Human Immunodeficiency virus
HBV	Hepatitis B virus
HCV	Hepatitis C virus
IDU	Injection Drug Use(r)
MDG	Millennium Development Goals
MSM	Men having sex with men
NACP	National AIDS/STI Control Programme
STI	Sexually Transmitted Infections
TB	Tuberculosis
UNODC	United Nations Office on Drug and Crime
VCT	Voluntary Counseling and Testing
WHO	World Health Organisation

CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND

There exists a grossly disproportionate rate of HIV and confirmed AIDS cases in prisons and the general adult population with a prevalence ranging from six times in the USA to fifty times more than the general population in Mauritius (UNODC 2007). Not all the prison inmates stay behind bars forever; they finish serving their sentences and are released back into the general population, posing a threat to the population as they could serve as a reservoir of HIV infection. This situation if not addressed becomes a shot in the foot of measures to halt and reverse the rate of HIV infection as contained in the Millennium Development Goals(MDG). This section of the population may pose a threat in terms of HIV transmission to the general population. They have been neglected and in some cases ostracized in terms of interventions to address their needs as part of the general control measures in combating the HIV epidemic.

In 2001, Heads of state and Government representatives of one hundred and eighty-nine (189) nations gathered at the first ever special session of the United Nations general assembly on HIV-AIDS and unanimously adopted the declaration of Commitment on HIV-AIDS, acknowledging that the epidemic constitutes a "Global Emergency and one of the most formidable challenges to human life and dignity".

In addressing this emergency, there needs to be an urgent analysis of the situation in all spheres of the human population, especially the most at risk groups which includes prison inmates.

Prison inmates, though, have their liberties taken away from them, they still are entitled to the same standard of physical and mental health as all persons as pertains outside the prison walls. This is guaranteed under the international law in article 25 of the United Nations Declaration of Human rights and article 12 of the international Covenant on Economic, Social and Cultural rights. It is therefore an obligation for the powers that be to implement legislation, policies and programs consistent with international human rights to ensure that prisoners are provided a standard of health care similar to that available to the general population.

Prison inmates are a peculiar group of people as they are exposed to all sorts of HIV related risk behaviors, including; tattooing, with the sharing of cutting instruments, sharing of razor blades, injection drug use and forced sexual encounters especially, men having sex with men (Veeken, 2000). These peculiar situations make the prison environment an ideal breeding ground for HIV infection. It is therefore vital to assess the situation in these environments and identify the gaps that need to be addressed and the good practices that need to be supported and encouraged if the MDG with respect to HIV is to be achieved.

This study therefore seeks to assess the level of knowledge of HIV transmission among inmates, and identify the risk behaviors and practices predisposing them to HIV infection and the relationship between these variables.

1.2 PROBLEM STATEMENT

HIV infection is still a global epidemic from which our society cannot be isolated although a lot of measures in the form of control programs have been put in place to curb the epidemic. Prison environments in Africa, including Ghana, are arguably the hardest hit as indicated in the work done by Prof. *Adjei* in 'Prevalence of Human Immunodeficiency Virus, Hepatitis B, Hepatitis C, and Syphilis among prison inmates and officers in Nsawam and Accra, Ghana.'(Adjei et al, 2005)

A lot of work has been done in the area of HIV in prisons globally but relatively few in Africa and still fewer can be said about Ghana. Until the work done by Adjei et al,(2005) there was no such data in existence in Ghana.

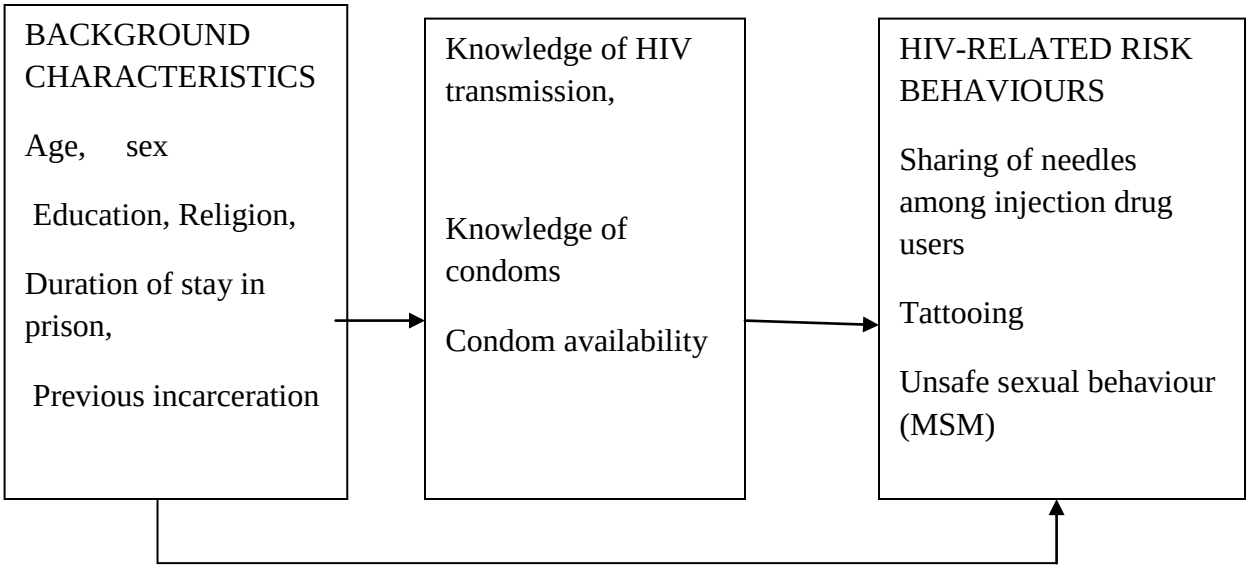
This study done in 2005, sought to estimate the prevalence of HIV, Hepatitis B, Hepatitis C, and Syphilis among prison inmates and officers in three (3) out of the forty-six (46) prisons in Ghana then. Only 16 percent (3770) of the total of 23980 prison inmates then were eligible and of these 7.5 percent (281) participated. Again, for the prison officers, only 82 out of a total of 4910 in the country participated.

It is quite obvious that although the work brought to light what the situation was like on the ground, it wasn't the true reflection of the situation. He therefore widened the scope to include prisons in eight (8) out of the ten (10) regions in Ghana.

Six years after the work was done, no other work in this area has been published. If we are to be able to fight this epidemic, halt and reverse its spread by 2015 as specified by the Millennium

Development Goal – 6, then a better representation of the situation in this potential source of the HIV epidemic is required to inform policies and measures needed to be put in place

Fig. 1.0 CONCEPTUAL FRAMEWORK



In reference to the conceptual framework in Fig 1.0, the background of inmates such as age, education, religion duration of stay in prison and the experience of previous incarceration determine their level of knowledge of the transmission of HIV and knowledge of condoms and its use during sexual encounters. These on the other hand, determine the kind of risk behaviours they engage in. Also, the background of the respondent could determine their indulgence in the HIV related risk behaviours or not.

1.3 VARIABLES

1.3.1 DEPENDENT VARIABLES

This includes the HIV-risk related behaviours identified in the prisons:

1. male- to – male sexual activity without condom
2. Injection drug use with sharing of needles
3. Tattooing

1.3.2 INDEPENDENT VARIABLES

1. Knowledge of HIV transmission
2. Knowledge and use of condoms
3. Condom availability

1.3.3 BACKGROUND VARIABLES

1. Age
2. Level of Education
3. Nationality
4. Religion
5. Length of stay in prison
6. Previous incarceration

1.4 JUSTIFICATION

This study is part of a national survey of prison inmates in Ghana conducted by Ghana AIDS Commission (GAC), Ghana Prison Service, National AIDS/STI Control Programme (NACP) and German International Cooperation (GIZ)[Regional Coordination Unit for HIV and TB], working in partnership with the School of Public Health, University of Ghana, Legon, which aimed to assess the prevalence and situation of HIV, HBV and other key illnesses such as Malaria, Diabetes, Hypertension and Underweight amongst inmates.

The results of the survey would add to the relatively scanty information available on HIV in prisons in Ghana and in a way enable the stakeholders in HIV control and prevention to institute appropriate measures to prevent and control HIV infection among inmates and society as a whole.

1.5 OBJECTIVES

1.5.1 MAIN OBJECTIVE: To assess the HIV – related risk behaviours among male prisoners.

1.5.2 SPECIFIC OBJECTIVES:

1. To assess the level of knowledge of HIV transmission among male inmates.
2. To describe HIV related risk behaviours and practices among male inmates.
3. To assess the knowledge on the availability of health services to address risks.

CHAPTER TWO

2.0 LITERATURE REVIEW

The HIV epidemic has fast become and still is a menace to global health with Africa unarguably being the hardest hit. AIDS, the disease caused by the Human Immunodeficiency Virus (HIV) was first recognized in the US in 1981 when the US Centres of Disease Control and Prevention (CDC), reported the unexplained occurrence of Pneumocystis carinii Pneumonia in five previously healthy homosexual men in Los Angeles and Kaposi's sarcoma in 26 previously healthy homosexual men in New York and Los Angeles (Harrison, 2004).

Within months, the disease became recognized in male and female injection drug users (IDUs) and soon thereafter, in recipients of blood transfusions and in Haemophiliacs. As the epidemiologic pattern unfolded, it became obvious that the virus was transmissible by sexual (homosexual and heterosexual) contact and blood or blood products as well as by infected mothers to their infants either perinatally or via breast milk. After more than thirty years of scrutiny, there is no evidence that the HIV can be transmitted by casual contact or by insects such as mosquitoes. Globally, there is a gross disproportion in rates of infection and confirmed AIDS cases in prisons (UNODC, 2007), with international data revealing a prevalence among prisoners ranging between six to fifty times higher than that in the general adult population (Macher & Goosby, 2004). Catalan-Soares and his team, in a study done in 63 prisoners in Manhaucu, Minas Gerais, Brazil to compare the HIV seroprevalence to data from eligible blood donors, found the HIV seroprevalence to be 3.2 percent (2/63) which was higher than among the blood donors and explained that it probably may have been due to low socio-economic level,

illiteracy, higher proportion with prior history of intravenous drug use and / or unsafe sexual behaviour, concluding that prisoners constituted a high risk group and recommended routine screening and counseling (Catalan-Soares et al. 2000)

In Ghana, the prevalence rate of HIV in three prisons in Nsawam and Accra was found to be 19.2 percent (Adjei et al., 2006) as compared to 1.5 percent and 3.8 percent among blood donors; regular and replacement donors respectively, living in and around Accra (Ampofo et al, 2002, Sarkodie et al, 2001). He also found the HIV prevalence to be 5.9 percent after expanding the study to involve prisons in eight regions in the country. The prison population has rapidly grown with high incarceration rates leading to overcrowding and poor physical conditions, posing significant health concerns with respect to HIV prevention and control (Walmsley, 2003). It is well known that behaviours such as sex, tattooing and injection drug use are illegal at the prison sites but these behaviours do occur in ways that put inmates at risk of blood-borne infections including HIV and HBV.(Veeken, 2000)

An account by an HIV positive inmate describes how there are a lot of risky sexual activity, with some being homosexual and others, being “curious” bisexual and experimenting (Okie, 2007). Veeken, on his visit to Lurigancho, the largest prison in Lima found that it accommodated 6000 prisoners though originally built to accommodate 1600 prisoners (Veeken, 2000), posing significant threats of public health concern. In Ghana most prisons are currently accommodating two to three times their original capacity (Adjei et al, 2005).

2.1 INJECTION DRUG USE AND RISK OF HIV

Injection drug use has been reported to be one of the principal modes of HIV transmission in many regions and injection drug use with contaminated equipment accounts for the largest number of HIV cases in prisons worldwide (Martin, Cayla, Morris, Alonso, Perez., 1998). A cross-sectional survey was carried out in six European prisons in France, Germany, Italy, Netherlands, Scotland and Sweden to demonstrate the feasibility of HIV infection and related risk behaviour surveillance. Of the 847 inmates who participated, 817 had their saliva taken for HIV antibodies. 27 percent were IDUs and of these 49 percent injected drugs whilst in prison. Eighteen percent had tattooed in prison which was found to be higher in the IDUs. One percent and sixteen percent had homosexual and heterosexual intercourse respectively in prison. Concerning HIV prevalence, four percent of IDUs were positive as against one percent in non-IDUs. (p=0.02) (Rotily, 2001).

With the background of incarceration being a known risk for HIV infection in Thai drug users, a study assessed HIV and incarceration risks for injection drug users (IDU) and non-IDUs in a large treatment centre cohort in northern Thailand to investigate HIV and prison risks between 1992 and 2000. Among 1865 drug users in the cohort, 503(27%) had ever been jailed. IDU (OR 6.3) and men who have sex with men (MSM) (OR 3.4) were more likely to have been jailed. In a multivariate model, the study found that, incarceration and ever being an IDU remained independently associated with HIV infection, concluding that having been jailed is an important independent risk for HIV infection among Thai male drug users and called for HIV prevention and drug treatment in Thai prisons (Beyrer, 2003).

In a medical evaluation of all men receiving prison sentences of more than two years in Connecticut, at a single reception centre 59 out of 975 subjects tested HIV positive. In this population, the predominant risk behaviour for HIV infection was injection drug use associated with a 16.7- fold increase in risk over those who used no drugs. Although subjects who reported daily 'crack' cocaine use had a 4.4 fold risk of HIV infection over those using no drugs, non injection drug use in general, was not associated with significant increases in HIV seropositivity (Altice et al, 1998).

A cross-sectional study undertaken in eight Italian prisons on correlates of infection for HIV, HBV and HCV using a sample of 973 inmates with 30.4 percent being IDUs and 0.6 percent MSM found a strong association between HIV and HCV seropositivity with intravenous drug use reporting an odds ratio (OR) of 5.9 for HIV and 10.5 for HCV. After excluding IDUs and male homosexuals the HIV prevalence dropped from 7.5 percent to 2.6 percent and concluded that the high rates of HIV, HBV, and HCV infections among inmates are in part attributable to the high proportion of IDUs (Badudieri et al, 2005). With the background of limited access to sterile syringes and condoms in correctional facilities making them high risk environments, Pollini et al, (2009) examined correlates of incarceration, infection inside and syringe sharing among male injection drug users recruited in Tijuana, Mexico using 898 respondents in an interviewer administered survey between April 2006 and April 2007. The authors in collecting data on socio-demographic, behavioural and contextual characteristics found that 76 percent of IDUs had been incarcerated, of whom 61 percent injected whilst in prison and of these, three-quarters (75%) admitted to sharing syringes. They also noted that injection inside was

independently associated with receptive syringe sharing and having sex with a man while incarcerated (Pollini et al, 2009)

In another cross-sectional survey using face-to-face interviews in six provincial correctional centres in Ontario, Canada, researchers found that among those with prior history of injecting drugs, 22.5 percent (20/89) of prisoners injected drugs while incarcerated in the year prior to the study and the rates of injection with used needles was 32 percent and concluded that the possibility of transmission of HIV, HCV and other blood-borne diseases existed in the Ontario Correctional Centres (Calzavara et al, 2003). Choopanya et al, (2002) in assessing the potential multiple relationships between incarceration and HIV infection among IDUs in Bangkok using IDUs seen at Methadone treatment programs followed respondents every four months between 1995 and 1996. They found an HIV incidence of 5.8 per 100 person years of follow up. In their study, a 4-step 'infection risk' scale was constructed, including; less frequent than daily injection, daily injection, daily injection with needle sharing and injection while incarcerated. The scale was found to be strongly related to HIV incidence with the incidence approximately doubling for each step of the scale. They also found that the incidence rate for follow ups that contained drug injection while incarcerated was 35 per 100 person years at risk. From their results, the researchers concluded that incarceration was related to incident HIV infection through multiple pathways (Choopanya et al, 2003). A paper that reviewed HIV/AIDS related data on IDUs and drug use trends in Latin America and policies and strategies developed to face the HIV epidemic noted IDU as a major mode of transmission of HIV accounting for 34.3 percent in the Southern Cone, 20.2 percent in Brazil, 2.8 percent in Latin Carribean 0.9 percent

in Central America, 0.6 percent in Mexico and 0.2 percent in the Andean area. (Rodriguez et al, 2002)

2.2 HOMOSEXUALITY AND HIV RISK

Homosexuality is illegal in most countries in Sub Saharan Africa and political as well as social acceptance of this phenomenon in society is rare resulting in the lack of their needs with respect to HIV prevention and control being addressed. Adrian and colleagues in the article, 'Men who have sex with men and HIV/AIDS in Sub-Saharan Africa' concluded that the silence driven by cultural, religious, and political unwillingness to accept MSMs as equal members of society with their denial from effective HIV/AIDS prevention and care was detrimental to national HIV/AIDS responses, the effect of which is borne not only by MSM but by everyone (Smith, 2009). Most prisons around the world have a greater male population and separated from female prisons with inmates denied conjugal visits. This results in frequent male to male sexual activity as documented by Human Rights Watch., (2002), and Veeken (2000), though the actual number of instances may be much higher than is reported, as noted by Shara Abraham, (2001). In her article, she recorded that in responding to requests for statistics from Human Rights Watch, prison officials in New Mexico had no recorded incidents of male rape over the past few years but three states, Florida, Ohio and Texas had reported more than fifty incidents in a given year. Though prisoners may engage in sex by mutual consent, there are reported instances of rape and sexual abuse, with data from the USA indicating that rape in prison is eight to ten times higher than in the general population (Stemple, 2002). Among prisoners, the rate of sexual abuse is as high as 27 percent including rape by prison officers, which is used as a form of disciplinary, control mechanism or punishment tool (Berger, 2002).

Prison inmates who had been victims of forced sex in prison had this to say; "I had no choice but to submit to being an inmate's prison wife. Out of fear for my life, I submitted to sucking his dick, being fucked in my ass, and performing other duties as a woman, such as making his bed" (Wyatt, 2005). Gregorio A. Millet and colleagues in reviewing literature to examine 12 hypotheses that might explain the disparity of HIV infection rates between black MSMs and other MSMs found that high infection rates among black MSMs were partly because of high incarceration rates and subsequent homosexual contact while in prison (Millet et al, 2006).

In African male prisons, homosexual activity is not uncommon, though the reported numbers is likely to be much lower than the actual figures for the same reasons as pertains globally, including denial, fear of being exposed and the criminalization of homosexuality in our environment (Gear and Ngubeni, 2002). Poor physical conditions and inadequate food and nutrition seriously increase the prevalence of HIV in the prisoners as they often exchange basic goods and food for sex. "With the breakdown of socioeconomic barriers emerge new norms of dominance and power particularly between male prisoners. These norms often alter traditional gender identities and roles, with same sex relations including 'marriages' between male prisoners becoming common (Gear and Ngubeni, 2002). Gang rape and sexual abuse take place frequently, with the victims of continual rape consequently resorting to prostitution as a survival or coping mechanism (UNODC, 2007)

2.3 TATTOOS AND BODY PIERCINGS AND RISK OF HIV

Other modes of transmission known include; tattooing, skin piercings and blood brotherhood rituals involving blood exchange and blood mixing (UNODC, 2007).

A study to document self-reported tattooing and body piercings among a sample of 860 adolescent detainees and to examine the relationship of alcohol and drug use to tattooing and body piercings used adolescents participating in a substance use and HIV reduction intervention and noted that, 29 percent of the detainees had at least one tattoo and 69 percent had at least one body piercing. Of these 21 percent had unprofessionally administered tattoos and two percent knowingly shared needles for their tattoos (Braithwaite et al, 2001).

In another publication where Prof Strang and colleagues sought to explore the extent by which tattoos might constitute a route of transmission of HIV, 1009 adult male prisoners were interviewed in13 establishments across England and Wales. They found out that, 53 percent (536/1009) had been tattooed at least once in their lifetime with 21 percent (111) being done whilst in prison and another half being self administered using a wide variety of instruments. For a quarter of the inmates, the tattoo had been applied at the same time as that of another prisoner (Strang et al, 2000). Abiona in studying body art practices among inmates and their implications for transmission of blood-borne infections including HIV, conducted a cross-sectional survey among 1819 inmates in 17 state prisons in Illinois and a focus group discussion with 47 ex-prisoners and identified the factors associated with tattooing in prison to include, incarceration for a year or longer and being incarcerated four or more times among other factors. He concluded that tattooing and body piercing practices do exist in prisons and could constitute risks for the transmission of blood-borne viral infections including HIV (Abiona, 2010). Elsewhere in Victoria, Australia, researchers, in measuring the frequency of tattoo acquisition inside and outside the prison and the association between tattooing, injection drug use and HCV concluded that, acquiring a tattoo in prison was common and the sharing of tattooing needle and ink was

high, placing prisoners at risk of acquiring blood-borne viral infections such as HCV and HIV (Hocking et al, 2007).

2.4 HEALTH SERVICES IN PRISON

Health services in prisons are generally poor in terms of staff and equipment and most have no access to HIV or other STI prevention and treatment programmes (Veeken, 2000). In contrast to when they were in the community, inmates are thought to be logistically easier to reach with prevention and education programs; they are supposedly encountering fewer situations of risk (e.g., sex while under the influence of drugs or alcohol and anonymous sex) that are easier to indulge in without restrictions in the community; some may be reevaluating their life choices; they have access to medical and mental health services for little or no cost; and they have fewer demands being made on their time. Nevertheless systematically evaluated HIV prevention programs in correctional settings have been slow to develop over the past 2 decades (Braithwaite & Arriola, 2003). Access to Voluntary Counseling and Testing and HIV treatment and prevention commodities such as condoms is often nonexistent (UNODC, 2007).

WHO however advances the following position on harm reduction strategies:

'Since penetrative sexual intercourse occurs in prisons even when prohibited, condoms should be made available to prisoners throughout their period of detention. In countries where bleach is available to injection drug users (IDUs) in the community, diluted bleach, eg. Sodium hypochlorite solution or another effective veridical agent, together with specific detailed instruction on cleaning injecting equipment, should be made available in prisons housing IDUs

or where tattooing or skin piercing occurs. In countries where clean syringes and needles are made available to IDUs in the community, consideration should be given to providing clean injecting equipment during detention and on release to prisoners who request this' (Braithwaite &Arriola, 2003).

The unfortunate lack of knowledge and education about the risks of HIV transmission among prisoners coupled with the absence of protective mechanisms and adequate medical care increases the risk of HIV infection which is further increased for those in contact with the prisoners such as; prison staff, spouses and partners and by extension the broader population. With this magnitude of a problem, African prisons somehow have been neglected by HIV prevention and treatment programs.

Previous studies in Ghana and in other parts of Africa have addressed knowledge of HIV among prisoners in terms of awareness but not their comprehensive knowledge. The previous HIV studies done among inmates in Ghana failed to address the HIV risk related practices that actually occurred whiles inmates were in custody and also did not assess the HIV related services available to the inmates. This study therefore sought to address these gaps in knowledge to help in efforts to address the HIV epidemic.

CHAPTER THREE

3.0 METHODS

3.1 TYPE OF STUDY

This study is a descriptive cross-sectional study of five selected prisons in Ghana chosen by stratified sampling of the different kinds of prisons in Ghana depending on their level of security. Prisons in Ghana are classified into Maximum security, Medium security, Central, local and open camp/ Agricultural camp prisons. Each of these levels of security was taken as a distinct stratum of homogenous members. One prison was then chosen from each of the five strata by simple random selection. There is only one maximum and medium security prisons respectively in Ghana, hence were purposefully chosen.

3.2 STUDY LOCATIONS/POPULATION

In Ghana prisons are classified based on level of security and activities undertaken at the various prison establishments. The categories therefore include; maximum security prisons, medium security prisons, central prisons, local prison, open camp prisons and agricultural camp prisons.

There is only one Maximum security prison facility (Ankaful New) that provides the highest level of prison security and holds those considered the most dangerous inmates as well as inmates deemed too high-profile or too great a national security risk for a normal prison. As at the end of July 2012, there were two hundred and sixty-four inmates in the maximum security prisons.

There is also one medium security prison (Nsawam prisons) which is a custody level in which design and construction as well as inmate classification reflect the need to provide secure external and internal control and supervision of inmates. Inmates here present a moderate escape risk or pose a threat to other inmates, staff, or the orderly running of the institute and supervision remains constant and direct. The total population of the medium security prison as at the end of July was three thousand, seven hundred and three, made up of three thousand, five hundred and seventy males and one hundred and thirty three females.

In Central Prisons, trade training facilities are provided to equip prisoners with employable skills for their effective reintegration into the society. They take custody of long sentenced prisoners and are the central point for all categories of prisoners with the exception of condemned prisoners. Each region has a central prison making ten central prisons in all with a total population of four thousand, nine hundred and ninety seven.

Local Prisons concentrate on safe custody and welfare of inmates due to lack of space for trade training activities. There are fourteen local prisons with a total population of three thousand three hundred and nine. They take custody of short sentenced prisoners.

Open Camp Prisons undertake agricultural activities to provide food and train inmates in modern agricultural practices. Prisoners who are about to go on discharge are transferred to these facilities as a transit to prepare them for their final release into the larger society.

In Agricultural Settlement Camps, the security arrangement is very relaxed. They are usually not fenced. The main objective is to train inmates who are about to go on discharge in agricultural activities and to produce enough food to supplement the feeding of inmates and generate some income for the Service.

A total of ten open/agric camps housed one thousand, three hundred and fifteen inmates.

There are seven female prisons with a total female inmate population of two hundred and fifty nine.

The study was undertaken in the following prisons randomly selected from each of the different levels of security respectively:

1. Ankaful New Prison (Maximum Security)
2. Nsawam Prisons (Medium Security)
3. Ankaful main (Central)
4. Akuse Male Prisons(Local)
5. James Camp (Agric Camp)

3.3 SAMPLING

The sample size for each of the prisons was determined by proportion depending on the population of the prison.

3.3.1 SAMPLE SIZE DETERMINATION

The sample size formula used in calculating the sample size for each of the selected prisons is as follows;

$N = z^2 * p(1-p)/d^2$

N= sample size

Z= z-value of 95% confidence level = 1.96

P= prevalence of outcome variable

d= margin of error (0.05)

For the three outcome variables, condom use had the highest prevalence and hence used in the calculation of the sample sizes in each of the prisons

Condom use prevalence in high risk sex in the previous 12 months in Ghana was 26% (GSS et al, 2009])

Design effect of 1.5 was incorporated in the sample size calculation as the method of sampling was not simple random sampling. The sample determination formula used is best for simple random sampling technique. There is a reduction in precision when used for other techniques as in this study. A design effect factor is therefore incorporated to increase the precision when applied to non simple random techniques.

3.3.2 SAMPLING PROCEDURE

In the prison, the first respondent was chosen by simple random from the inmates' register. At each prison station, a systematic selection procedure was used to select individual participants. A complete list of inmates covering the entire population in each selected prison was obtained from the local prison authorities. The list comprised unique inmates' identity numbers (ID No.) and names. Using the list as a sampling frame, an appropriate sampling interval (*k*) was computed based on pre-determined sample size for each selected station. Thereafter, a random starting

point was selected after which every k^{th} inmate was chosen until the entire sample size was exhausted. Respondents were selected depending on the sample interval of the respective prisons which was eight (8) across the prisons. Hence every 8^{th} inmate was selected as a respondent after the first respondent had been randomly selected. If a selected inmate is not available, the next inmate that follows directly in the register is chosen without altering the sample interval.

The total male population of the five selected prisons was approximately 4719 inmates out of which a total of 1083 was sampled. The sample interviewed was more than the calculated minimum sample needed because the survey was embedded in a national survey. A breakdown of the population size and sample size of each of the prisons respectively is as follows:

Table 3.1: DISTRIBUTION OF THE MALE POPULATION AND SAMPLE SIZES FOR THE SELECTED PRISONS

PRISON	TOTAL MALE POPULATION	SAMPLE SIZE	SAMPLE INTERVIEWED
Ankaful New	264	33	49
Nsawam	3570	446	651
Akuse	185	23	126
Ankaful Main	370	46	116
James Camp	330	42	141
Total	4719	590	1083

3.4 DATA COLLECTION METHODS AND TOOLS

A face- to- face interview using a structured questionnaire was used to collect data pertaining to the demographic characteristics of the respondents, their duration of stay in prison, previous incarcerations and knowledge of HIV transmission. Data was collected between the months of February and March of 2013. The questionnaire (see appendix A), covered questions on the prison environment; availability of HIV related medical services, (HIV campaigns, Condom availability, VCT and Treatment). It also included questions relating to risk behaviours such as; men having sex with men (MSM), Tattooing and injection drug use with the sharing of needles.

3.4.1 INCLUSION CRITERIA

All prisoners, above 18 years, and willing to participate in the study.

All forms of sentencing with all lengths of imprisonment

3.4.2 EXCLUSION CRITERIA

Prisoners in segregation, juveniles and those unwilling to participate in the study and those not intellectually competent and could not speak English nor any other Ghanaian language. Prisoners who were considered a risk to themselves and to others were left out for security reasons.

3.5 ETHICAL CONSIDERATIONS AND ISSUES

Permission was sought, first from the School of Public Health and then, ethical clearance from the Ethical Review Committee of the Ghana Health Service, Research and Development Division, Accra. Ethical clearance was also obtained from Noguchi Memorial Institute for Medical Research. Approval was obtained from Ghana Prisons Service as well as the officers- in Charge of the various prisons.

3.6 CONSENT

Respondents gave their voluntary informed consent by signing or thumb printing of written consent forms and could withdraw from the study at any point that they so wished before the interview began.

In conducting the interviews, respondents were assured privacy and confidentiality of all data collected which would be stored in hard copy in the library of the School of Public Health under anonymous conditions.

No compensation was available to respondents except for a bottle of soft drink as refreshment.

3.7 QUALITY CONTROL

In ensuring the quality of data collected and analysis, the following measures were put in place;

- Training of research assistants who helped in data collection and analysis to ensure uniformity
- Supervision of research assistants to ensure the correct implementation of the methodology
- Pretesting to identify any unforeseen challenges in the questionnaire and the research process as a whole.

- Editing of questionnaire after the pretest to refine and address any issues that were encountered in the pretest.
- Ensuring privacy of interviews and assuring respondents of confidentiality in order to get credible information as much as possible, especially for the sensitive questions.

3.8 VARIABLES AND THEIR MEASUREMENTS

Most of the variables were measured directly with the questionnaire. However, some were categorized and redefined and others combined to generate composite variables.

The variable 'age' was elicited directly using the questionnaire as single years as at respondents' last birthday. These were then categorized in to ten- year age-groups starting with those less than 20 years, 20-29, 30-39, 40-49,50-59 and then those 60 years or more.

'Duration of stay in prison' was also elicited directly in single years with the questionnaire and categorized into those who had been in prison less than a year, 1-5 years and 6 years or more.

Previous incarcerations was elicited directly with the questionnaire and categorized into one previous time and 2 or more previous times.

Comprehensive knowledge about HIV is a composite variable generated by the combination of five independent questions. An inmate was deemed to have comprehensive knowledge about HIV if he knew the following about HIV transmission; that consistent use of condom during sexual intercourse and having just one uninfected partner who has no other sex partner can reduce the chances of getting HIV/AIDS; if he knew that a healthy looking person can have HIV/AIDS, and rejected the two most common misconceptions about HIV/AIDS transmission or prevention. A right answer to any of the five questions was coded as one (1) and a wrong answer coded as zero (0). These were then summed up and scored over a total of five (5). A respondent

scoring 5 was deemed to have comprehensive knowledge of HIV and any score less than 5 deemed not to have comprehensive knowledge of HIV.

HIV-risk related behaviour was defined as engaging in any of the three main HIV risk related behaviours, thus, tattooing, MSM, and IDU. Engaging in either of these was scored one (1) and abstaining from them scored zero (0). Any respondent scoring one (1) was deemed to engage in the HIV-risk behaviour and a score of zero (0) deemed as not engaging in HIV-risk related behaviour.

3.9 DATA PROCESSING AND ANALYSIS

3.9.1 STATISTICAL METHODS

Data was entered into a database and processed using Census and Service Processing System (CSPro version 5.01). It was then analysed using Statistical Package for Social Sciences (SPSS) version 18 and Microsoft Excel 2007

Background variable were described using frequencies and proportions which were then displayed in tabular form.

Associations and strength of associations (bivariate analysis) were determined by Chi-square test and predictions (multivariate analysis) by logistic regression models and presented in tables.

3.10 PRETEST

The questionnaire was pretested at the Winneba local Prisons, a male - only prisons in the Central Region with similar characteristics as the prisons sampled for the study. Appropriate changes and revisions were then made to the questionnaire.

CHAPTER FOUR

4.0 RESULTS

4.1 SOCIODEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Table 4.1 shows a summary of the socio-demographic characteristics of the inmates surveyed. These characteristics are described in the following sections.

4.1.1 PRISONER DISTRIBUTION

The survey involved 1083 respondents from five different prisons that differed in level of security, including 49 (4.5%) from Ankaful New (Maximum security), 652 (60.2%) from Nsawam male (Medium security), 125 (11.5%) from Ankaful main (central), 116 (10.7%) from Akuse local prisons and 141 (13.0%) from James camp prisons (Agricultural camp). The age structure of the inmates is typical of a young population with a mean age of 34.82 years with an age range 18-87 years and Standard Deviation (SD) of 11.6 years. Approximately five percent of inmates are in the older age group of 60 years and above and only two percent are less than 20 years. About a tenth (11.7%) of the inmates have never received any form of formal education whiles a twentieth (5.5%) had some form of tertiary education. A fifth each have had primary (19.9%) and senior high education (21.0%) respectively and two-fifths (41.8%) attaining education to the junior high level.

Concerning religion, majority of the inmates are Christians (79.0%) and a fifth (19.7%) are Muslims while the rest subscribed to other religions, including six traditionalists, but seven inmates did not subscribe to any religion. A higher proportion of the inmates, (46.2%) are

currently married and10.2 percent have ever married but currently divorced or separated, leaving 43.6 percent who have never married. Almost all the inmates are Ghanaians with only about five percent being foreigners.

Majority of the inmates are convicted prisoners (86.1%) with 151(13.9%) awaiting trial. The mean length of stay in prison among the inmates is 4.36 years with a range of less than a month to fifty years in custody, excluding life imprisonment and a standard deviation (SD) of 4.7 years. Eighty of the inmates surveyed had served previous jail terms. Of these, 70 percent have been incarcerated one previous time (i.e, second time in prison) with 30 percent being incarcerated two or more previous times.

TABLE 4.1: Socio-demographic characteristics of respondents (N=1083)

Characteristics	Frequency	Percent
Age (years)		
Less than 20	21	1.9
20-29	414	38.3
30-39	349	32.3
40-49	180	16.6
50-59	66	6.1
60 and above	52	4.8
Education		
No education	127	11.7
Primary	216	19.9
Junior High	453	41.8
Senior High	227	21.0
College / University	60	5.5
Religion		
Christian	856	79.0
Traditionalist	6	0.6
Muslim	213	19.7
No Religion	7	0.6
Other	1	0.1
Marital status		
Never married	470	43.6
Married	499	46.2
Ever married	110	10.2
Nationality		
Ghanaian	1021	94.3
Non-Ghanaian	59	5.4
No response	3	0.3
Type of Prison		
Maximum Security	49	4.5
Medium security	652	60.2
Central prison	125	11.5
Local prison	116	10.7
Agricultural camp	141	13.0
Type of sentence		
Remand/awaiting trial	151	13.9
Convicted	932	86.1
No of years in prison		
Less than 1 year	290	26.8
1-5 years	601	55.5
6 years or more	192	17.7
Previous incarcerations		
One previous time	56	70.0
2 or more times	24	30.0

4.2 AWARENESS, KNOWLEDGE AND MISCONCEPTIONS ABOUT HIV/AIDS

Inmates participating in this survey were asked if they had ever heard of HIV/AIDS to determine their level of awareness. Those who admitted to have heard of the disease were then asked a series of questions about the transmission and prevention, beliefs and misconceptions of HIV/AIDS to determine their general and comprehensive knowledge of the disease.

4.2.1 KNOWLEDGE OF HIV/AIDS

Comprehensive knowledge was defined, using the Demographic and Health Survey criteria as knowing that consistent use of condom during sexual intercourse and having just one uninfected partner who has no other sex partner can reduce the chances of getting HIV/AIDS, knowing that a healthy looking person can have HIV/AIDS and rejecting the two most common misconceptions about HIV/AIDS transmission or prevention.

From the survey, there is a universal awareness of HIV /AIDS (99.4%) among the inmates but a significantly low level of comprehensive knowledge (21.1%). Table 4.2 shows respondents' knowledge about HIV transmission and prevention as well as their comprehensive knowledge of HIV. General knowledge about HIV transmission and prevention was relatively high among the inmates as depicted in their responses to questions concerning HIV transmission and prevention.

More than 90 percent (91.5%) knew that HIV could be prevented by abstinence. Almost all the inmates (97.1%) agreed that HIV could be transmitted by injection with used needles and 89.8 percent thought it could be transmitted through the common use of tooth brushes. 98 percent knew that HIV could be transmitted through the common use of razor blades, 86.9 percent knew

it could be transmitted by tattooing with same implements as used by others and 83.1percent knew it could be transmitted through brotherhood rituals such as blood covenants.

4.2.2 MISCONCEPTIONS/STIGMA

Misconceptions about HIV/AIDS are quite common in the general population as well as in the prison environment resulting in the significant low level of comprehensive knowledge. These misconceptions contribute to the stigma and discrimination towards people living with HIV/AIDS. The two most common misconceptions are: AIDS can be transmitted by mosquito bites and that it can be transmitted by witchcraft/supernatural means

From table 4.2, more than half of the inmates (57.4%) believe HIV could be transmitted by supernatural means while 41.3 percent think it could be transmitted by mosquitoes

However, 83.3 percent of respondents were willing to take care of family members with AIDS in their household,77.5 percent would not mind sharing a cell with an inmate with AIDS but only a little more than half of the inmates (55.4%) were willing to disclose their status if they were found to be HIV positive

Table 4.3 show the distribution of comprehensive knowledge among inmates based on their socio-demographic characteristics.

TABLE 4.2: Comprehensive knowledge of HIV transmission

	FREQUENCY	PERCENT
Can people reduce their chance of getting HIV by having just one uninfected sex partner who has no other sex partners		
Yes	1040	97.8
No	23	2.2
Total	1063	100.0
Can people reduce their chance of getting HIV by using a condom every time they have sex		
Yes	964	94.0
No	61	6.0
Total	1025	100.0
Is it possible for a healthy looking person to have HIV		
Yes	929	91.7
No	84	8.3
Total	1013	100.0
Can people get HIV from mosquito bites		
Yes	372	41.3
No	529	58.7
Total	901	100.0
Can people get HIV by witchcraft or other supernatural means		
Yes	527	57.4
No	391	42.6
Total	918	100.0
Comprehensive knowledge		
With comprehensive knowledge	229	21.1
Without comprehensive knowledge	854	78.9
Total	1083	100.0

TABLE 4.3: Comprehensive knowledge by background characteristics

	Can people reduce their chance of getting the HIV by having just one uninfected sex partner who has no other sex partners?	Can people get HIV from mosquito bites	Can people reduce their chance of getting HIV by using a condom every time they have sex	Can people get HIV because of witchcraft or other supernatural means	Is it possible for a healthy looking person to have HIV	Comprehensive knowledge
Age Groups						
Less than 20	1.8	1.9	1.8	2.6	1.9	1.7
20-29	38.4	35.2	37.8	34.0	37.3	32.8
30-39	32.2	33.6	33.0	31.2	33.8	34.9
40-49	16.7	18.1	17.1	19.7	16.4	20.1
50-59	6.1	5.9	5.9	6.6	5.8	6.1
60 and above	4.7	5.3	4.4	5.9	4.7	4.4
Marital status						
Never Married	43.8	42.4	44.1	45.9	43.5	45.0
Married	45.9	46.4	45.9	43.3	46.6	45.4
Ever Married	10.3	11.2	10.0	10.8	9.9	9.6
Nationality						
Ghanaian	94.1	93.0	93.8	89.8	94.2	88.2
Non Ghanaian (Foreigner)	5.6	6.8	5.9	9.7	5.6	11.4
No response	.3	.2	.3	.5	.2	.4
Education level						
No education	11.1	6.4	10.2	5.1	9.3	3.5
Primary	19.3	18.5	19.5	14.3	18.7	12.7
Junior High	42.5	38.4	42.4	41.4	42.5	37.1
Senior High	21.4	27.0	21.9	27.4	23.3	31.0
College/University	5.7	9.6	6.0	11.8	6.2	15.7
Are you on remand or convicted?						
On Remand /awaiting trial	14.3	12.1	14.1	13.3	13.0	11.4
Convicted	85.7	87.9	85.9	86.7	87.0	88.6
How long have you been in prison?						
Less than one year	26.6	22.9	26.9	24.6	26.3	22.3
1-5 years	55.5	56.5	55.3	52.4	55.4	52.8
6 years or more	17.9	20.6	17.8	23.0	18.3	24.9

4.3 VARIATION OF COMPREHENSIVE KNOWLEDGE WITH INMATES BACKGROUND

There exists a significant relationship between inmates' comprehensive knowledge and their level of education, length of stay in prison as well as the level of security of the prison in which they are found. (Table 4.4)

Comprehensive knowledge increases with increasing level of education, being highest among inmates who have had College/University education (60%), ten times higher than those with no formal education (6.3%),(p=0.0001).

With regards to the length of stay in prison, a higher proportion of inmates who have been incarcerated for six or more years (29.7%) had comprehensive knowledge compared to a relatively lower proportion (19.3%) among those who have been in prison for five years or less. (*p*=0.0001)

The level of security of the prison also presents a significant relationship with comprehensive knowledge. Inmates of the medium security prison (25.2%) had the highest proportion with comprehensive knowledge, followed by the inmates of the central prison with a likelihood of 17.6 percent. The proportion of inmates with comprehensive knowledge of HIV/AIDS transmission and prevention did not vary much between the rest of the prisons; Maximum security (14.3%), Agricultural camp (14.2%) and Local prisons (13.8%).

There were some variations of comprehensive knowledge among the other background variables but these relationships were not significant. These include previous incarceration where comprehensive knowledge of HIV is lower among those who have been in prison one previous

time, (5.4%) before, compared to those who have been in prison two or more times before (16.7%), (p=0.189). A higher proportion of inmates who are convicted (21.8%) had comprehensive knowledge compared to those on remand, (17.2%) awaiting trial. (p= 0.203). There is not much difference in the proportions of Christians (21.1%) and Muslims (21.6%) with comprehensive knowledge of HIV. However, a relatively smaller proportion of traditionalists (16.7%) and those with no religion (12.5%). (p=0.222) had comprehensive knowledge of HIV/AIDS transmission and prevention.

TABLE 4.4: Comprehensive knowledge of HIV/AIDS by background variables

BACKGROUND CHARACTERISTIC	TOTAL	PERCENTAGE	Statistical test
AGE-GROUPS (YEARS)			*P*=0.391
Less than 20	21	19.0	
20-29	414	18.1	
30-39	349	22.9	
40-49	180	25.6	
50-59	66	21.2	
60 and above	52	19.2	
Total	1082	21.2	
LEVEL OF EDUCATION			*P*=0.0001
No education	127	6.3	
Primary	216	13.4	
Junior high	453	18.8	
Senior high	227	31.3	
College/university	60	60.0	
Total	1083	21.1	
RELIGION			*P*=0.222
Christian	856	21.1	
Muslim	213	21.6	
Traditionalist	8	16.7	
No religion	7	12.5	
Total	1083	21.1	
TYPE OF SENTENCE			*P*=0.203
Remand	151	17.2	
Convicted	932	21.8	
Total	1083	21.1	
LENGTH OF STAY IN PRISON			*P*=0.0001
≤ 5 years	891	19.3	
≥6 years	192	29.7	
Total	1083	21.1	
PREVIOUS INCARCERATION*			*P*=0.189
1 previous time	56	5.4	
2 or more previous times	24	16.7	
Total	80	8.8	
TYPE OF PRISON			*P*=0.002
Maximum security (Ankaful New)	49	14.3	
Medium security (Nsawam male)	652	25.2	
Central prison	125	17.6	
Local prison	116	13.8	
Agricultural camp	141	14.2	
Total	1083	21.1	

*** Sample size refers to those who have ever been incarcerated before present incarceration**

4.4 HIV RISK RELATED PRACTICES

Prisons are known to be a high risk environment for the spread of blood borne and sexually transmitted infections and reports suggest the indulgence of practices such as injection drug use, men having sex with men (MSM), and tattooing with the sharing of sharp instruments (Veeken, 2000). It is therefore important to identify which practices exist in the Ghanaian prison environment, in designing and monitoring intervention programmes to control the spread of HIV/AIDS. This survey therefore included questions on inmates' sexual behaviour prior to incarceration and during their term in prison as well as practices involving blood contact. (see Appendix A, Sections 4 and 5)

4.4.1 HIV RISK RELATED PRACTICES (BLOOD CONTACT)

Table 4.5 shows the frequencies and proportions of inmates engaging in HIV risk related practices involving blood contact such as tattooing, blood brotherhood rituals (blood covenant) and injection drug use.

Whereas a fifth (20%) of inmates have ever been tattooed, only five (0.5%) inmates had their tattoos while in prison. Though two-fifths (39.3%) of inmates tattooed outside the prison had used the same implements used for other people only one admitted to using the same implements used by others within the walls of the prison.

Concerning blood brotherhood rituals, only one inmate (0.1%) admitted to have had a blood covenant in prison whereas twenty two (2.1%) inmates had engaged in blood covenants before coming to prison. However, forty-two inmates (4.1%) knew other inmates who had been involved in a blood covenant.

Contrary to the general rule of not using drugs in the prison environment, as much four-fifths (80.6%) of inmates claimed to know inmates who use drugs in prison with almost all of them using drugs such as Marijuana and alcohol frequently. Sharply contrasting this view is the fact that only two (0.2%) inmates know other inmates who inject the drugs. On the issue of the inmates own practices, whereas more than half (63.4%) had used drugs outside prison, less than a fifth (15.7%) had actually used drugs while in custody. These inmates almost universally admitted using the drugs frequently outside (95%) and within the prison (90%). For IDUs 16.7 percent shared needles outside the prison while 33.3 percent shared needles whiles in prison.

TABLE 4.5: HIV RISK–RELATED PRACTICES (BLOOD CONTACT)

HIV risk- related practices	FREQUENCY	PERCENTAGE
Sharing razors/blades		
No	796	73.9
Yes	281	26.1
Ever been tattooed or pierced outside prison		
Yes	215	20.0
No	860	80.0
Ever been tattooed or pierced in prison		
Yes	5	0.5
No	1069	99.5
Same implement used for other people outside prison		
Yes	64	39.3
No	94	57.7
No response	5	0.5
Blood covenant outside prison		
Yes	22	2.1
No	1042	97.9
Blood covenant within prison		
Yes	1	0.1
No	1058	99.9
Know other inmates who have made a blood covenant		
Yes	42	4.1
No	974	95.7
No response	2	0.2
Ever shared needles with other IDUs outside prison		
Yes	1	0.1
N o	4	0.4
No response	1	0.1
Ever shared needle with other IDUs within prison		
Yes	2	0.2
No	4	0.4

4.4.2 HIV RISK RELATED PRACTICE (SEXUAL CONTACT)

Sexual intercourse with a non-marital, non-cohabiting partner is known to be associated with an increased risk of contracting sexually transmitted diseases including HIV/AIDS. The survey included questions on inmates, ever having casual sex partners whiles outside the prison, the number of casual partners and condom use in these casual sex encounters (see Appendix A, Section 6).

Table 4.6 shows HIV risk related practices involving sexual contact. The survey found that 60.4 percent of the inmates had been involved in casual sexual encounters outside prison. Of these more than half (55.1%) had had two or more casual sex partners with 44.9 percent having had only one casual sex partner within the 12 months prior to the survey. Nearly three-fifths (58.6%) of these inmates having engaged in casual sexual intercourse outside the prison did not use condoms, about a third (30.2%) had used condoms inconsistently, leaving only a tenth (11.3%) who consistently used condoms in casual sex encounters.

With regards to sex behind bars, only eleven inmates (1%) had ever had sex in prison with other inmates even though fifty-seven inmates reported knowing other inmates who have sex with other inmates.

Only one inmate reported to have engaged in oral sex with four admitting to have had anal sex with other inmates. In all of these encounters condom was inconsistently used. Only one inmate had used a condom in the last sexual encounter in prison.

Transactional sex, i.e., the exchange of sex for money, favours or gifts is known to be associated with a high risk of contracting HIV and other STIs because of a compromised power relations and the likelihood of having multiple partners. In this survey, only three inmates admitted to have paid or received money or goods for sex in prison. Two-thirds (66.4%) of inmates reported to have heard of other inmates being forced to have penetrative sex. However, only ten inmates (0.9 percent), admitted to have been forced into having anal sex and only eight (0.7 percent) had been forced into oral sex.

TABLE 4.6: HIV RISK–RELATED PRACTICES (SEXUAL CONTACT)

HIV risk- related practices	FREQUENCY	PERCENTAGE
Ever had casual sex partners before prison		
Yes	654	60.4
No	429	39.6
Number of casual sex partners in the past 12 months		
Single partner	288	44.9
2 or more partners	353	55.1
Had sex with other inmates		
Yes	11	1.0
No	1066	99.0
Had oral sex with other inmates		
Yes	1	0.1
no	1082	99.9
Had anal sex with other inmates		
Yes	4	0.4
No	1079	99.6
Ever paid/received money or goods for sex in prison		
Yes	3	0.3
No	1080	99.7
Used condom during last sex in prison		
Yes	1	0.1
No	1082	99.9
Heard of inmates being forced to have penetrative sex		
Yes	718	66.4
No	363	33.6
Ever been forced to have anal sex before		
Yes	10	0.9
No	1066	99.1
Ever been forced to have oral sex		
Yes	8	0.7
No	1069	99.3
Know inmates who have sex with other inmates		
Yes	57	5.3
No	1026	94.7

TABLE 4.7: MULTIPLE LOGISTIC REGRESSION OF COMPREHENSIVE KNOWLEDGE

Variables					95% C.I. for OR	
	B	S.E.	p-value	OR	Lower	Upper
6 years or more	ref	ref	ref			
Less than one year	-0.484	0.244	0.047	0.62	0.38	0.99
1-5 years	-0.452	0.203	0.026	0.64	0.43	0.95
College/University	ref	Ref	ref			
No education	-3.103	.454	0.001	0.05	0.02	0.11
Primary	-2.220	0.335	0.001	0.11	0.06	0.21
Junior High	-1.862	0.294	0.001	0.16	0.09	0.28
Senior High	-1.195	0.304	0.001	0.30	0.17	0.55
Agricultural Camp	ref	ref	ref			
Maximum security Prison	-0.015	0.492	0.976	0.99	0.38	2.59
Medium security Prison	0.606	0.273	0.026	1.83	1.07	3.13
Central Prison	0.0378	0.352	0.283	1.46	0.73	2.91
Local Prison	0.105	0.381	0.782	1.11	0.53	2.34
Constant	0.321	0.406	0.429	1.38		

NOTE: -2Log likelihood = 1012.24; Cox &Snell *R* square = 0.09, Nagelkerke *R* square = 0.14

OR- odds Ratio, B=Unstandardized regression coefficient S.E.- Standard Error CI- Confidence interval

A logistic regression was conducted to assess whether the three predictor variables of comprehensive knowledge, thus; length of stay in prison, level of education and type of prison, significantly predicted whether or not a prisoner had comprehensive knowledge of HIV transmission and prevention. Comprehensive knowledge of HIV was used as the dependent variable in place of HIV risk related behaviour because the population engaging in these behaviours was found to be very small (as shown in table 4.5 and table 4.6) and statistically inappropriate to use in analysis. All the variables were entered at a go, and Hosmer and Lemeshow statistic used to assess the model fit.

Table 4.7 presents the results of logistic regression to determine the association between comprehensive knowledge of HIV and selected variables. These variables were selected because they had a statistically significant association with comprehensive knowledge of HIV from the bivariate analysis.

The results show that there is a direct relationship between comprehensive knowledge and the level of education, suggesting that, the higher the level of education the higher the likelihood of having comprehensive knowledge.

For example inmates with no education were 95% less likely to have comprehensive knowledge, (OR=0.05, 95% CI=0.02-0.11). Similarly, compared with inmates with College / University education, inmates with senior high education were about 70% less likely to have comprehensive knowledge (OR=0.30,CI=0.17-0.55).

Concerning the length of stay in prison, inmates who have been in prison for less than 1 year were about 38 percent less likely to have comprehensive knowledge of HIV (OR=0.62, CI=0.38-0.99) and those who have been in prison for 1-5 years had 36 percent (OR=0.64, CI=0.43-0.95) less likelihood of having comprehensive knowledge of HIV compared to those who have stayed more than 6 years in custody. In reference to the Agricultural camp, inmates housed in the maximum security prisons have a 1% (CI= 0.38-2.59) less likelihood of having comprehensive knowledge. However, inmates in local, central and medium security prisons have a 1.11(C1=0.53-2.34), 1.46(CI=0.73-2.91) and 1.83(CI=1.07-3.13) times likelihood of having comprehensive knowledge.

The logistic regression therefore showed the following:

- Comprehensive knowledge of HIV has a direct relationship with, and could be predicted by inmates' level of education, length of stay in prison and the type of prison where the inmate is found.
- The higher the inmates' level of education, the greater the likelihood of him having comprehensive knowledge.
- Inmates in the medium security prisons have the greatest likelihood of having comprehensive knowledge of HIV using those with College/University education as a reference.
- Inmates who have been in prison for less than a year are the least likely to have comprehensive knowledge with those who have been in prison for six or more years as the reference.

4.5 HIV – RELATED HEALTH SERVICES IN PRISON

Ghana's low HIV prevalence is attributed to a number of factors such as increased accessibility and affordability of antiretroviral therapy (ART) coupled with increased uptake of counseling and testing (GSS et al, 2009). Knowledge of HIV status helps in making specific decisions that would reduce the risk of getting HIV if one is negative and for those who are positive, knowing the status helps to take action in protecting sexual partners and accessing treatment, all of which helps to reduce the spread of the disease. The survey therefore included questions (see Appendix A, Sections 4.1,4.2 and 7) to determine the HIV related health services such as HIV testing, education, access to razor blades to prevent sharing of these razors, condom accessibility and HIV support groups to identify gaps in designing and monitoring implementation programmes in HIV prevention and control in these prisons.

From table 4.8, almost all the inmates (96.1%) said health services were provided in the prisons, however, only a fifth (23.5%) had seen HIV/AIDS services being offered. Of these, 93.8 percent had seen some form of education on HIV transmission, prevention and control. One hundred and ninety seven inmates (82.4 percent of those who knew about HIV services offered in the prison) knew about the availability of HIV testing, whiles a hundred and ninety four (84.7 percent) knew about HIV treatment in the prisons. One hundred and forty-six inmates (65.5 percent) knew about HIV support groups within the prisons and about three-quarters (74.2%) thought these services were accessible to all prisoners. There is a nearly universal (97.1%) access to razors/blades. Almost all inmates (97.1%) admitted needing information about HIV/AIDS in prison as well as information about other health issues (98.2%) in prison

Concerning condoms, less than a tenth (6.7%) agreed with 90.5 percent opposing the idea of making it accessible in the prisons.

TABLE 4.8: KNOWLEDGE ABOUT HIV RELATED HEALTH SERVICES IN PRISON

HIV related health services in prison	FREQUENCY	PERCENTAGE
HIV/AIDS services offered in this prison		
Yes	251	23.5
No	685	64.3
Don't know	130	12.2
Total	1066	100.0
Activities /services seen-education		
Yes	226	93.8
No	15	6.2
Total	241	100.0
HIV Testing		
Yes	197	82.4
No	42	17.6
Total	239	100.0
HIV Treatment		
Yes	194	84.7
No	35	15.3
Total	229	100.0
HIV Support groups		
Yes	146	65.5
No	77	34.5
Total	223	100.0
Access to blades/razors		
Yes	1052	97.1
No	31	2.9
Total	1083	100.0
Are the services accessible to all prisoners		
Yes	178	74.2
No	50	20.8
Don't know	12	5.0
Total	240	100.0
Need information about HIV/AIDS in prison		
Yes	1052	97.1
No	31	**2.9**
Total	**1083**	100.0
Think condoms should be made accessible in prison		
Yes	72	6.7
No	976	90.5
Don't know	30	2.8
Total	1078	100.0

TABLE 4.9: SOCIODEMOGRAPHIC CHARACTERISTICS AND COMPREHENSIVE KNOWLEDGE VRS HIV RISK BEHAVIOUR

Socio-demographic Characteristic	Total	% with HIV risk behaviour	Statistical test
Age (years)			*P*=0.538
Less than 20	21	0.0	
20-29	414	1.4	
30-39	349	1.4	
40-49	180	0.0	
50-59	66	0.0	
60 and above	52	1.9	
Education			*P*=0.136
No education	127	3.1	
Primary	216	0.9	
Junior High	453	0.4	
Senior High	227	1.3	
College / University	60	1.7	
What is your religion			P=0.129
Christian	856	0.7	
Traditionalist	6	0.0	
Muslim	213	2.8	
No Religion	7	0.0	
Marital status			*P*=0.387
Never married	470	1.5	
Married	499	1.0	
Ever married	110	0.0	
Type of sentence			*P*=0.228
On Remand	151	2.0	
Convicted	932	1.0	
Type of Prison			*P*=0.4
Maximum Security	49	0.0	
Medium security	652	1.2	
Central prison	125	2.4	
Local prison	116	0.0	
Agricultural camp	141	0.7	
Length of stay in Prison			*P*=0.689
< 1 year	290	0.7	
1-5 years	601	1.3	
≥6 years	192	1.0	
Ever Imprisoned			*P*=0.009
Yes	80	5.0	
No	1003	0.8	
No of times in Prison			*P*=0.078
Once	56	1.8	
2 times	24	12.5	
Comprehensive knowledge			
With comprehensive knowledge	229	0.4	P=0.478
Without comprehensive knowledge	854	1.3	

CHAPTER FIVE

5.0 DISCUSSION

This chapter discusses the main findings of the survey in line with the study objectives

Inmates' knowledge of HIV transmission and prevention as well as the distribution of their HIV-related practices that occur in prison and outside prison is vital for the planning of preventive and control programs to reduce the seroprevalence of HIV documented among inmates worldwide and in Ghana.

The socio-demographic characteristics of the male inmates reveal a relatively young population with a mean of 34.8 years. Almost 3 out of 4 of the inmates (72.5%) are less than 40 years and this identified age bracket is of concern to the transmission of HIV. This agrees with similar studies conducted among male prison inmates in Kaduna state in North Western Nigeria (Sabitu et al. 2009). This section of inmates are the most sexually active age group as well as the ones most likely to be involved in HIV risk related practices both sexual and non-sexual and therefore needs special attention with respect to prevention and control programs

This survey identified only 13.9 percent of inmates awaiting trial probably due to incomplete investigation or lack of access to legal aid. A Nigerian study reported a higher proportion of inmates 67.3 percent on remand awaiting trial probably reflecting the differences in judicial systems. The mean length of stay in the prisons surveyed is 4.36 years and this conforms to the duration of stay in prisons in other African countries such as Nigeria where the average length of stay in prison is 2-7 years (Audu et al, 2013).

This study found that awareness of HIV/AIDS among the inmates was universal with almost all of them (99.4%) having heard of the disease. This is consistent with the trend of universal awareness in the general Ghanaian population as shown by the Ghana Demographic and Health survey (GSS et al, 2009). It suggests that interventions in the creation of awareness of HIV/AIDS are yielding some dividends. This may be explained by the massive proliferation of the audiovisual as well as electronic media in recent times. Radio and television stations abound and any information can be accessed even on a mobile phone handset including internet access making the world a global village.

It is important to identify incorrect beliefs about HIV to eliminate misconceptions as these are among the factors that result in discrimination and stigmatization. Although majority of the inmates knew about the ways in which HIV can be transmitted and prevented, they still harbored misconceptions. About 41.3 percent thought HIV could be transmitted by mosquito bites whiles about 6 out of 10 (57.4%) of the inmates believe HIV could be transmitted by supernatural means. This significant proportion of the inmates with these misconceptions resulted in the significant reduction in the proportion with comprehensive knowledge (21.1%) which is in conformity with trends documented in the general population as shown by the Ghana Demographic and Health Survey (GSS et al, 2009).

This trend may be due to the superstitious nature of most African societies including Ghana. Majority of the inmates had only basic education and a small proportion with higher education (tertiary). Comprehensive knowledge had a significant relationship with level of education ($p=0.0001$) as well as with length of stay in prison ($p=0.0001$) and the level of security of the prison ($p=0.002$).

The higher the inmates level of education, the more likely he is to possess comprehensive knowledge (as shown on table 4.7) and this may explain the low proportion of inmates with comprehensive knowledge about HIV/AIDS. The logistic regression also showed that there is a significant relationship between comprehensive knowledge of HIV and the type of prison in which an inmate may be found. In reference to the Agricultural camp, there is a one percent less likelihood for an inmate of a maximum security prison to have comprehensive knowledge of HIV. This may be explained by the greater security and less interaction between these inmates and other sources of information including the sharing of knowledge with other inmates. Unlike the inmates of the maximum security prisons, inmates in the other types of prisons have a greater likelihood of having comprehensive knowledge of HIV and this may be due to greater interaction in these prisons with relatively less restrictions and in some cases, the availability of educational programmes. Nsawam prisons (medium security) is the largest prison in Ghana and has the greatest population with greater interaction among inmates as well as the accessibility to formal education. This may account for inmates in this prison with the greatest likelihood (1.83 times) of having comprehensive knowledge about HIV.

It has been documented that a significant proportion of inmates engage in both sexual and non-sexual HIV risk related behaviours such as tattooing, men having sex with men and injection drug use in Ghana (Adjei at al 2005). This is also the case in prisons in Brazil, Iran and among an even greater proportion of inmates in US prisons (Catalan-Soares et al., 2000). This study shows that, these practices occur among inmates in Ghana though nearly all of these practices occur outside the prison environment, 20 percent engaging in skin

tattoos and piercings, and 4.1 percent in blood brotherhood rituals (blood covenant), as shown in tables 4.5 and 4.6.

Table 4.5 and 4.6 also show that only a small number of inmates engage in these HIV risk related practices while in custody. It is therefore likely, that inmates who are HIV positive may have contracted the infection prior to incarceration. This may be due to increased restrictions as a result of adequate monitoring and vigilance on inmates and maintenance of a high standard of security that prevents the smuggling in of drugs for IDUs and sharp instruments for tattoos. Abiona, in his study of body art practices among inmates and their implications for transmission of blood-borne infections including HIV identified the factors associated with tattooing in prison to include incarceration for a year or longer and being incarcerated four or more times. This may explain the low prevalence of tattoo within the prison environment in this study, as only 25 inmates (2.2%) have been incarcerated two or more times before their present incarceration.

Despite knowing the benefits of consistent condom use in HIV prevention, this study identified only 6.7 percent of inmates who thought condoms should be made accessible in the prisons. This is not at variance with the study undertaken in a male prison in Kaduna State, North Western Nigeria where 65.4 percent of the inmates stated that condom access in the prison will promote homosexuality with another 34.6 percent opposing it for religious reasons (Audu et al., 2000). In a Zambian Male prison, 68 percent of inmates also registered their opposition to free condom access with the same reason of it promoting homosexuality. This open and intended noncompliance to condom use, calls

for the intensification of HIV education as well as other prevention and control programs within the prison environment (Ronald & Kimberly, 2003).

This study in consonant with these other studies, identified that 3 out of 5 (60.5%) of the inmates had ever had casual sex partners and more than half (55.1%) of these had two or more partners in the 12 months preceding the survey. It is important to note that only one in ten, used condoms consistently with a casual partner and this is a wakeup call to intensify efforts in educating people to put their knowledge into practice.

Generally Ghanaian prisons have infirmaries within the prison environment that provides health services to inmates with minor ailments and refers those with more severe disease to the nearest Government Hospitals. These infirmaries are staffed by nurses and medical assistants and just as pertains in the general population, these facilities are understaffed and possess inadequate logistics placing a challenge on health care delivery in general and HIV prevention programmes in particular. In this study, even though there was a universal agreement (96.1%) that some general healthcare services are offered in the prisons only 251 inmates (23.5%) knew about any HIV/AIDS services in the prison. Of these, 226, inmates knew about HIV related education, 197 knew about HIV testing, 194 knew about HIV treatment and146 had knowledge of support groups available in the prison. This registers the inadequacy of HIV – related services available to the inmates and is in consonant with reports elsewhere, even in developed countries like the USA where only two state prison systems (Mississippi and Vermont) and five city/county jail systems make HIV prevention programs such as male condoms available to inmates (Ronald & Kimberly, 2003).

Unfortunately, even in places where prevention programs are available, especially for MSMs, they are considered situational in nature and individuals do not consider themselves gay or bisexual and may not respond to HIV prevention messages that target men who are openly gay or bisexual.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

6.1.1 KNOWLEDGE OF HIV

There is universal awareness of HIV/AIDS. Almost all the inmates know about HIV transmission and preventive methods, how HIV can be contracted and how it cannot be gotten. However, there is still a lack of comprehensive knowledge of HIV transmission among the male inmates. This is mainly due to misconceptions about the transmission of the disease, harbored by the inmates. These misconceptions are that; HIV could be transmitted by witchcraft/ supernatural means and also by mosquito bites.

Inmates' level of education varies directly with their comprehensive knowledge about HIV/AIDS. The higher the inmates level of education, the greater the likelihood of him having comprehensive knowledge of HIV. Comprehensive knowledge of HIV also varies with the inmates' length of stay in the prison as well as the type of prison in which the inmate is found. The study showed that inmates who have been in prison less than a year have a lesser likelihood of having comprehensive knowledge of HIV than those who have been in custody for one to five years. Inmates who have been in prison for less than a year have a 38 percent less likelihood of having comprehensive of HIV compared to inmates who have spent six years or more in custody. The study also showed that there is a relationship between inmates' comprehensive knowledge of HIV and the type of prison in which he is found. The likelihood of finding an inmate with comprehensive knowledge is

greatest in the medium security prisons, having a likelihood of 1.83 times compared to inmates in the Agricultural camp.

6.1.2 HIV RISK RELATED PRACTICES

Very few of the inmates engaged in HIV risk related practices such as tattooing, injection drug use and men having sex with men (MSM) in the prison environment. It however came to light that a higher proportion of the inmates engaged in these activities prior to incarceration with a very small proportion still engaging in them whiles in prison, contrary to general expectation, suggesting that, the high seroprevalence of HIV documented among inmates may have been contracted outside the prison walls.

6.1.3 HIV RELATED HEALTH SERVICES IN PRISON

There is a general inadequacy of health staff and services as well as HIV related services such as education, voluntary counseling and testing (VCT), prevention and treatment programmes for HIV infected inmates. Only 23.5 percent of the inmates knew about any form of HIV related service available in the prison. Despite knowing the preventive measures against HIV/AIDS transmission, there is an opposition to the introduction of free accessibility to condoms with an open intended non-compliance to its use.

However there is a universal need for more education about HIV/AIDS among the inmates.

6.2 RECOMMENDATIONS

Based on the findings of this study, the following recommendations are proposed to help in overcoming some of the challenges identified.

1. HIV related education should be intensified in the prisons as well as in the general population and focus on the facts of transmission, prevention and misconceptions instead of only creating awareness.

2. The health staff and medical logistics to the prisons need to be boosted; doctors, nurses and allied health professionals embarking on their national service programs could be posted to the prisons to augment health care delivery.

3. VCT centres in the prisons for pre- and post incarceration counseling and testing as well as treatment of identified HIV positive inmates would go a long way to help in fighting the epidemic. This will also facilitate case finding and subsequent treatment.

4. Liaising with NGOs and other community- based organizations and AIDS service organizations to gain access to the incarcerated population would help improve HIV service delivery to the inmates.

5. Controlled accessibility to razors/ blades should be sustained to prevent inmates from sharing these items.

6. Vigilance on the part of prison officers should be sustained to prevent the smuggling in of illicit drugs and syringes as well as other sharp instruments to

discourage injection drug use and tattooing as well as risky sexual encounters, especially forced penetrative sex.

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APPENDIX A: HIV –RELATED RISK BEHAVIOURS AMONG PRISONERS IN SELECTED PRISONS

QUESTIONNAIRE

Interview Information

Questionnaire Number : [___|___][___|___]

Name of Prison : _____

Type of Prison : [___] Maximum security (Ankaful New)

[___] Medium security (Nsawam)

[___] Central Prison

[___] Local Prisons

[___] Agricultural Camps

Region : _____

Date of Interview : Day:_____ Month :_____ Year:_____

Time of Interview : Started _____ Finished _____

Name of Interviewer : _____

Interview Status : [__] FULLY Completed [__] PARTLY Completed [__] Refused

Comments on Interview :

_____

INSTRUCTION: Please <u>circle</u> the appropriate answer the respondent gives for all closed-ended questions, and <u>write legibly</u> in the spaces provided answers to all open-ended questions.

NO.	QUESTIONS	CODING	SKIP TO
1.0	**<u>SECTION</u> 1: SOCIO-DEMOGRAPHIC**	**"I am going to start by asking some questions about your background"**	
1.1	What sex is the interviewee? ***[Circle from observation]***	Male 1 Female 2	
1.2	How old are you? ***[Age at last birthday]***	Age in years [___|___] Don't Know 88 No response 99	

1.3	In which country have you lived for most of your adult life?	Ghana 1 Nigeria 2 United Kingdom (UK) 3 Other..... 4 No Response 99	→ **1.5** → **1.5** → **1.5**
1.4	In which region did you live for most of your adult life before coming to prison?	Greater Accra 1 Ashanti 2 Western 3 Central 4 Brong Ahafo 5 Northern 6 Upper West 7 Upper East 8 Volta 9 Eastern 10 No response 99	
1.5	What is your nationality?	Ghanaian 1 Non Ghanaian (Foreigner) 2 No response 99	
1.6	Have you ever attended school?	Yes 1 No 2 No Response 99	→ **1.9**

1.7	Up to which level of schooling did you attend?	Primary 1 Junior High 2 Senior High 3 College / University 4 No Response 99	
1.8	What was the highest class you completed?	.... No response 99	
1.9	What is your religion?	Christian 1 Traditional 2 Muslim 3 Other..... 4 No Response 99	
1.10	How often do you attend a religious meeting?	More than once a Week 1 Once a Week 2 Few times a Month 3 Few times a Year 4 No response 99	
2.0	**<u>SECTION</u> 2 : PRISON ENVIRONMENT**	**"I would like to ask a few questions about your time in prison"**	
2.1	Are you on remand or convicted?	On Remand /awaiting trial 1 Convicted 2 No Response 99	→ **2.3**

2.2	How long is your prison sentence?	Number of Years [___|___] Number of Months [___|___] No response 99	
2.3	How long have you been in prison on this sentence or remand /awaiting trial?	Number of Years [___|___] Number of Months [___|___] No response 99	
2.4	How long have you been in <u>this</u> prison?	Number of Years [___|___] Number of Months [___|___] No response 99	
2.5	How many other prisons have you been in for this sentence ?	Number of Prisons [___|___] No response 99	**→ 2.7 if ans=0**
2.6	Can you give the names of other prisons you have been in during this sentence & for how many months / years	..... (_ yrs _ months) 1 ..... (_ yrs _ months) 2 ..... (_ yrs _ months) 3 ..... (_ yrs _ months) 4 ..... (_ yrs _ months) 5 No response 99	

2.7	Have you been in prison before this sentence?	Yes 1 No 2 No response 99	→ **3.0**
2.8	How many times have you been in prison before?	Number of Times Before [___|___] No response 99	
3.0	**SECTION 3 : HEALTH IN PRISON**	**"Next I will ask you some questions about the general health situation in this prison"**	
3.1	What are the common illnesses in this prison? ***Do not read out answers.*** ***Up to 3 multiple responses possible.*** ***Probe by asking: Any others?***	Malaria 1 Fever 2 Stomach Aches 3 Pneumonia 4 Diarrhoea 5 Urethral Discharge 6 HIV/AIDS 7 Jaundice 8 Tuberculosis (TB) 9 High Blood Pressure 10 Skin Diseases 11 Diabetes 12 ……..13 Don't Know 88 No Response 99	

3.2	What illnesses have you suffered from in this prison? ***Do not read out answers.*** ***Up to 3 multiple responses possible.*** ***Probe by asking: Any others?***	Malaria 1 Fever 2 Stomach Aches 3 Pneumonia 4 Diarrhoea 5 Urethral Discharge 6 HIV/AIDS 7 Jaundice 8 Tuberculosis (TB) 9 High Blood Pressure 10 Skin Diseases 11 Diabetes 12 ……..13 Don't Know 88 No Response 99	
3.3	Have you been coughing frequently (every hour) for the last 2 weeks?	Yes 1 No 2 Don't know 88 No response 99	
3.4	Have you been having fever and chills frequently in the last 2 weeks?	Yes 1 No 2 Don't know 88 No response 99	→ *3.6*
3.5	Have you had regular headaches with the fever?	Yes 1 No 2 Don't know 88 No response 99	

3.6	Have you been sweating a lot at night for the last 2 weeks?	Yes 1 No 2 Don't know 88 No response 99		
3.7	Have you experienced loss of appetite in the last 2 weeks?	Yes 1 No 2 Don't know 88 No response 99		
3.8	Have you noticed yourself losing a lot of weight in the last month?	Yes 1 No 2 Don't know 88 No response 99		
3.9	Have you ever had Sexually Transmitted Infections?	OUTSIDE PRISON Yes 1 No 2 No Response 99	WITHIN PRISON Yes 1 No 2 No Response 99	
3.10	Have you experienced any pains or ulcers in the genital areas?	OUTSIDE PRISON Yes 1 No 2 No Response 99	WITHIN PRISON Yes 1 No 2 No Response 99	
3.11	Have you experienced pain during urination?	OUTSIDE PRISON Yes 1	WITHIN PRISON Yes 1	

		No 2 No Response 99	No 2 No Response 99	
3.12	Have you ever experienced an unusual discharge?	<u>OUTSIDE PRISON</u> Yes 1 No 2 No Response 99	<u>WITHIN PRISON</u> Yes 1 No 2 No Response 99	
3.13	Does the prison offer health services	Yes 1 No 2 Don't know 88 No response 99		
4.0	**<u>SECTION</u> 4 : HIV RISK - BLOOD CONTACT**	**"I would like to ask you some questions about your experiences in prison"**		
4.1	Is there access to blades / razors for shaving in this prison?	Yes 1 No 2 Don't know 88 No response 99		
4.2	Do you share blade / razor *(for shaving or hair cut)* with other inmates in this prison?	Yes 1 No 2 No response 99		

4.3	Have you ever been tattooed or pierced?	OUTSIDE PRISON Yes 1 No 2 No Response 99	WITHIN PRISON Yes 1 No 2 No response 99	→ **4.5**
4.4	Was the same implement used for other people?	OUTSIDE PRISON Yes 1 No 2 No Response 99	WITHIN PRISON Yes 1 No 2 No response 99	
4.5	Have you ever made a (direct) blood covenant?	OUTSIDE PRISON Yes 1 No 2 No Response 99	WITHIN PRISON Yes 1 No 2 No response 99	
4.6	Do you know other inmates in this prison who have made a blood covenant?	Yes 1 No 2 No Response 99		
5.0	**SECTION 5** **HIV RISK – INJECTING DRUG USE**			
5.1	Do you know inmates in this prison who use drugs?	Yes 1 No 2 Don't know 88 No response 99		→ **5.7**

5.2	How often do they use drugs?	Every week 1 Every month 2 Few times a year 3 Less than every year 4 Don't know 88 No response 99	
5.3	Which drugs do you often see used? ***Read out each answer.*** ***Tick number if 'yes'*** ***Multiple responses allowed*** ***Also Specify Combinations***	('Wee') Marijuana 1 Crack / Cocaine 2 Heroin 3 Alcohol 4 Pethidine 5 Valium 6 Other..... ..... 7 Don't Know 88 No response 99	
5.4	Do you know people in prison who inject drugs?	Yes 1 No 2 Don't know 88 No response 99	→ **5.7**
5.5	Do these people have to share needles?	Yes 1 No 2 Don't know 88 No response 99	

5.6	Which drugs are usually injected by inmates? ***Read out each answer.*** ***Tick number if 'yes'*** ***Multiple responses allowed***	Heroin 1 Crack / Cocaine 2 Amphetamine 3 Pethidine 4 Other..... ..... 5 Don't Know 88 No response 99		
5.7	Have you ever used drugs?	<u>OUTSIDE PRISON</u> Yes 1 No 2 No Response 99	<u>WITHIN PRISON</u> Yes 1 No 2 No Response 99	→ **6.0**
5.8	How often have you used drugs?	<u>OUTSIDE PRISON</u> Every week 1 Every month 2 Few times a year 3 Less than every year 4 Don't know 88 No response 99	<u>WITHIN PRISON</u> Every week 1 Every month 2 Few times a year 3 Less than every year 4 Don't know 88 No response 99	

5.9	Which drugs have you used? ***Read out each answer.*** ***Tick number if 'yes'*** ***Multiple responses allowed***	<u>OUTSIDE PRISON</u> ('Wee') Marijuana 1 Heroin 2 Crack / Cocaine 3 Alcohol 4 Pethidine 5 Valium 6 Other..... 7 Don't Know 88 No response 99	<u>WITHIN PRISON</u> ('Wee') Marijuana 1 Heroin 2 Crack / Cocaine 3 Alcohol 4 Pethidine 5 Valium 6 Other..... 7 Don't Know 88 No response 99	
5.10	Have you ever injected drugs?	<u>OUTSIDE PRISON</u> Yes 1 No 2 Don't know 88 No response 99	<u>WITHIN PRISON</u> Yes 1 No 2 Don't know 88 No response 99	→ **6.0**

5.11	How often have you injected the drugs?	OUTSIDE PRISON Every week 1 Every month 2 Few times a year 3 Less than every year 4 Don't know 88 No response 99	WITHIN PRISON Every week 1 Every month 2 Few times a year 3 Less than every year 4 Don't know 88 No response 99	
5.12	Which drugs have you injected? ***Read out each answer.*** ***Tick number if 'yes'*** ***Multiple responses allowed***	OUTSIDE PRISON Heroin 1 Crack / Cocaine 2 Amphetamine 3 Pethidine 4 Other.. ..... 5 Don't Know 88 No response 99	WITHIN PRISON Heroin 1 Crack / Cocaine 2 Amphetamine 3 Pethidine 4 Other.. ..... 5 Don't Know 88 No response 99	
5.13	Have you ever had to share needles with other drug users?	OUTSIDE PRISON Yes 1 No 2 No Response 99	WITHIN PRISON Yes 1 No 2 No response 99	

6.0	**SECTION 6** **HIV RISK – SEXUAL CONTACT**	**"Some of the following questions will be about your personal life and sexual behaviour."**	
6.1	What is your marital status?	Single (never married) 1 Married – One Partner (monogamous) 2 Married – 2+ Partners (polygamous) 3 Divorced 4 Separated 5 Widowed 6 No Response 99	
6.2	Before you came to prison – did you ever have other casual partners at the same time as your spouse / long term partner?	Yes 1 No 2 Don't know 88 No Response 99	→ **6.5**
6.3	How often did you have casual partners – in the 12 months before you came to prison?	More than once a Week 1 Once a Week 2 Few times a Month 3 Few times a Year 4 No response 99	
6.4	How often was a condom used with a casual partner?	Never 1 A few times 2 Most times 3 Every time 4 Don't know 88	

		No Response 99	
6.5	Before you came to prison – did you ever have sex with a commercial sex worker?	Yes 1 No 2 Don't know 88 No Response 99	→ **6.8**
6.6	How often did you have casual partners – in the 12 months before you came to prison?	More than once a Week 1 Once a Week 2 Few times a Month 3 Few times a Year 4 No response 99	
6.7	How often was a condom used?	Never 1 A few times 2 Most times 3 Every time 4 Don't know 88 No Response 99	
6.8	At this prison – Have you had sex with other inmates?	Yes 1 No 2 No Response 99	→ **6.17**

6.9	Have you had oral sex with other inmates – in this prison?	Yes 1 No 2 No Response 99	→ **6.11**
6.10	How many times have you had oral sex in this prison in the last three months?	..... times 1 Don't Know 88 No response 99	
6.11	Have you had anal sex with other inmates – in this prison?	Yes 1 No 2 No Response 99	→ **6.13**
6.12	How many times have you had anal sex in this prison in the last three months?	..... times 1 Don't Know 88 No response 99	
6.13	How often was a condom used?	Never 1 A few times 2 Most times 3 Every time 4 Don't know 88 No Response 99	
6.14	Have you ever paid/received money or goods (e.g. cigarettes, drugs, blades) for sex in prison?	Yes 1 No 2 Don't know 88 No Response 99	

6.15	Have you ever engaged in sex with other inmates in this prison who inject drugs?	Yes 1 No 2 Don't know 88 No Response 99	
6.16	Did you use condom during your last sex in this prison?	Yes 1 No 2 Non-Applicable 77 No Response 99	
6.17	Have you heard of inmates being forced to have penetrative sex?	Yes 1 No 2 Don't know 88 No response 99	→ **6.19**
6.18	How often do you think inmates are forced to have penetrative sex within this prison?	every few days 1 every few weeks 2 every few months 3 Once a year 4 Don't know 88 No response 99	

6.19	Have you ever been forced to have anal or oral sex?	**Anal Sex** Yes 1 No 2 No response 99	**Oral Sex** Yes 1 No 2 No response 99	→ **6.21**
6.20	How many times have you been forced to have penetrative sex in prison?	..... Times No response 99		
6.21	Have you ever forced anyone to have anal or oral sex?	**Anal Sex** Yes 1 No 2 No response 99	**Oral Sex** Yes 1 No 2 No response 99	→ **7.0**
6.22	How many times have you forced anyone to have penetrative sex in prison?	..... Times No response 99		
7.0	**SECTION 7: HIV/AIDS KNOWLEDGE AND ATTITUDE**	**I am going to ask you some questions about HIV/AIDS. Please do not worry about getting the right answer, just say what you think is true**		
7.1	Have you ever heard of an illness called AIDS?	Yes 1 No 2 No Response 99		

7.2	Can people reduce their chance of getting the HIV by having just one uninfected sex partner who has no other sex partners?	Yes 1 No 2 Don't know 88 No Response 99	
7.3	Can people get HIV from mosquito bites?	Yes 1 No 2 Don't know 88 No Response 99	
7.4	Can people reduce their chance of getting HIV by using a condom every time they have sex?	Yes 1 No 2 Don't know 88 No Response 99	
7.5	Can people get HIV by sharing food with a person who has HIV/AIDS?	Yes 1 No 2 Don't know 88 No Response 99	
7.6	Can people reduce their chances of getting HIV by not having sexual intercourse at all?	Yes 1 No 2 Don't know 88 No Response 99	
7.7	Can people get HIV because of witchcraft or other supernatural means?	Yes 1 No 2 Don't know 88 No Response 99	

7.8	Do you think that HIV can be transmitted by injection with used needle?	Yes 1 No 2 Don't know 88 No Response 99	
7.9	Do you think that HIV can be transmitted by common use of razor blades?	Yes 1 No 2 Don't know 88 No Response 99	
7.10	Do you think that HIV can be transmitted by common use of tooth brushes?	Yes 1 No 2 Don't know 88 No Response 99	
7.11	Do you think that HIV can be transmitted by tattooing?	Yes 1 No 2 Don't know 88 No Response 99	
7.12	Do you think that HIV can be transmitted by sharing blood in brotherhood/ sisterhood rituals?	Yes 1 No 2 Don't know 88 No Response 99	
7.13	Is it possible for a healthy looking person to have HIV?	Yes 1 No 2 Don't know 88 No Response 99	

7.14	If a member of your family became sick with AIDS, would you be willing to care for her or him in your own household?	Yes 1 No 2 Don't know 88 No Response 99	
7.15	If you knew that someone is HIV infected, would you eat with him or her?	Yes 1 No 2 Don't know 88 No Response 99	
7.16	If you knew that someone is HIV infected, would you continue to meet or associate with him/her?	Yes 1 No 2 Don't know 88 No Response 99	
7.17	If you knew that someone is HIV infected, would you share a cell with him/ her?	Yes 1 No 2 Don't know 88 No Response 99	
	Have you ever had an HIV test, before this survey?	Yes 1 No 2 Don't know 88 No Response 99	→ **7.21**
7.19	If yes when was the last time you were tested?	Less than 12 months ago 1 1 to 2 years ago 2 2 or more years ago 3	

		Don't know 88 No Response 99	
7.20	What was your Test Result? - ***You do not have to share this if you are not comfortable***	Positive 1 Negative 2 Don't know 88 No Response 99	
7.21	Do you want to know your HIV status at the end of this Survey?	Yes 1 No 2 No Response 99	
7.22	If you were HIV positive do you think that you would feel comfortable disclosing your status in the prison?	Yes 1 No 2 No Response 99	
7.23	Have you seen HIV/AIDS services or activities in this prison?	Yes 1 No 2 Don't know 88	→ **7.25**
7.24	What activities or services have you seen? ***Answer yes/no for each service***	(a) Education - Yes 1 No 2 (b) HIV Testing - Yes 1 No 2 (c) Treatment - Yes 1 No 2 (d) Support Groups - Yes 1 No 2 No Response 99	

7.25	Do you need information about HIV/AIDS and other health issues in the prison?	Yes 1 No 2 Don't know 88 No Response 99	
7.26	Do you need information about other health issues in the prison?	Yes 1 No 2 Don't know 88 No Response 99	
7.27	Do you need access to free condoms in the prison?	Yes 1 No 2 Don't know 88 No Response 99	
7.28	What would you recommend to help reduce the risk of HIV in this prison? ***Multiple responses possible.***	Better Access to Condoms 1 Access to clean needles 2 Access to Razor Blades so not share 3 Educational Sessions 4 Educational Leaflets 5 Prevent Forced Sex from Happening 6 Other..... ..... 7 Don't know 88 No response 99	

Thank you for your help in answering this questionnaire.

APPENDIX B: CONSENT FORM

My name is Prince Baah Van-Ess, an MPH student of the School of Public Health doing a study on the topic: HIV RELATED RISK BEHAVIOURS AMONG MALE PRISONERS IN SELECTED PRISONS IN GHANA.

The main aim of the study is to assess the HIV-related risk behaviours among male prisoners.

The study involves a one on one interview to assess inmate's knowledge, attitude and behaviours on HIV.

This research will help the prison authorities in partnership with The Ghana AIDS Commission to know your level of knowledge on HIV and risk behaviours pertaining to the prison environment to institute measures that would improve and reduce your risk of acquiring HIV/AIDS.

I am therefore asking you to participate in this study to contribute to the national effort in preventing HIV and improving the health of inmates through the information you will provide.

I assure you that any information you provide will be strictly confidential; and will be used for purposes of this research and never against you.

Your participation is voluntary, and you may stop the interview at any time you wish to discontinue.

Do I have your permission to continue? [ ] YES [ ] NO

Respondent's signature: ……..

[If Yes] I, …… (interviewer) certify that the respondent has given permission to participate in this study

Interviewer's signature: ……

If you have any questions concerning this study, please feel free to contact me

Prince Baah Van-Ess (0206301493)

E-mail: vandimples@yahoo.co.uk