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Sero-prevalence of HIV-1 Among Commercial Sex Workers in Abuja, Federal Capital Territory, Nigeria

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Abstract

The role of Commercial Sex Workers (CSWs) in facilitating transmission of sexually transmitted infections (STIs) including HIV is a subject of continued interest. Sex for money has varied structures across the world usually found in organized and semi-organized type of residence and in some cases as freelance. This study was aimed at determining the prevalence of HIV-1 among CSWs in Abuja, FCT, Nigeria. A non-randomized, non-bias study was conducted among 400 CSWs (age brackets 16-50 years) who voluntarily consented to participate in the study. The recruitment was done in brothels, hotels and in settlement camps among 143 male sex workers (MSWs) and 257 female sex workers (FSWs). The test was carried out using Uni-Gold HIV 1/2 test kit (Trinity Biotech, Ireland) and Serocard HIV 1/2 test kit (Trinity Biotech, Ireland) using serial algorithm. 124(31%) of the CSWs tested were HIV antibody positive. Based on gender, 25(17.5%) of the MSWs were positive while 99(38.5%) of the FSWs were tested positive. Considering the age of the volunteers, those within the age brackets of 31-35 years has the highest prevalence of 41(32%) of the total positives. Male sex workers had the highest prevalence within the age bracket of 31-35 years with 9(36%) positive while the FSWs within the age brackets of 26-30 years has the highest prevalence of 35(35.4%). This study indicated that there is epidemics of HIV-1 among CSWs but higher among the FSWs. It is therefore concluded that commercial sex workers are major source of heterosexual transmission of HIV-1 in Abuja.

Keywords: CSWs, HIV, MSWs, FSWs, Prevalence

Introduction

The role of Commercial sex workers (CSWs) in facilitating transmission of sexually transmitted infections (STIs) including HIV is a subject of continued interest (Josephat *et al.*, 2012). Sex for money occupation has varied structure across the world. This group of people who sell sex are found in organized or semi-organized and in some cases as freelance. In organized (eg, pimp,

manager) through establishments such as bars, brothels, or saunas, or in more public spaces such as parks, streets and festivals. Additionally, a growing portion of sex work is arranged through the internet (UNAIDS, 2009; Logie *et al.*, 2017). Most sex workers worldwide are women; however, substantial populations of male and transgender sex workers exist in many countries (van Veen *et al.*, 2010).

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The dynamics of HIV transmission among male and transgender sex workers could be further complicated by the heightened biological risks of anal intercourse, high prevalence of HIV in some subgroups of MSM, and the large proportion of male and transgender sex workers who report bisexual practices. (Stefan *et al.*, 2012).

Sexual transmission accounts for a majority of cases of human immunodeficiency virus (HIV) infection worldwide (Maria *et al.*, 2006). Sexually transmitted infections (STIs) other than HIV have been found to enhance the transmission of HIV and to be more prevalent among female commercial sex workers (FSWs) (Mwumvaneza *et al.*, 2017). Behaviours such as multiple sex partners, irregular condom use by clients, and co-infection with other STIs constitute potential risk factors associated with HIV infection among CSWs (Maria *et al.*, 2006) Commercial sex workers are therefore, considered a risk group for heterosexual spread of human immunodeficiency virus (HIV) worldwide (van Veen *et al.*, 2010). Regular partners or non-commercial partners of the female sex workers (FSWs) are another important risk group. As such, FSWs are often categorised among the populations “most-at-risk” to HIV due to behaviours that heighten their exposure to the virus (Josephat *et al.*, 2012). Talbott, (2007) opined that the number of HIV-infected sex workers in any country is highly significant for explaining the HIV prevalence levels across countries.

UNAIDS estimates that over 33 countries including 22 sub-Saharan African countries have achieved declines in HIV incidence of over 25% (UNAIDS, 2010). The decrease in incidence of HIV in sub-Saharan Africa can be attributed to advancement in global fight against the infection but could mask sustained or expanding spread among populations who are most at risk including sex workers, men who have sex with men (MSM), and intravenous drug users (IDUs). HIV prevalence among female sex workers in sub-Saharan Africa varies between 21% and 75% (Bimal *et al.*, 2013) and sex work is assumed to have had a significant impact on the spread of the infection in this area (van Veen *et al.*, 2010). HIV prevalence among Female Sex Workers in India at

national level were from 5.0% in 2007 to 2.2% in 2015 (NACO, 2016). Understanding the dynamics of HIV infection in this key population is critical to developing appropriate prevention strategies for the control of HIV in the sub-region. The aim of this study is to describe the prevalence of HIV among Commercial Sex Workers in Federal Capital Territory Abuja, Nigeria.

Materials and Methods

Study Area

This research work was conducted in Abuja, the Federal Capital of Nigeria. Abuja is located at the centre of Nigeria with land mass of 8,000 square meters. It has boundary with Kaduna in the North, Plateau State in the East and South East, Kogi State to the South West and Niger State to the West. It is divided into six administrative area councils; Abaji, Kwali, Gwagwalada, Bwari Kuje and Municipal area councils. Abuja climate is regarded as favourable throughout the year which further encourage the influx of the people. Because of this migration there are lots of social interactions among the people of sexually active group (Henry, 2008). This interaction predisposes so many people to high risk factors that aid HIV transmission.

Study Population

Four hundred volunteer commercial sex workers in hotels, brothels and in settlement camps in Abuja were recruited for this study. They were counseled and those that voluntarily consented were recruited for the study. Community based recruitment was done at Nyanya, Kado, Mabushi among commercial sex workers while the brothel and hotel recruitment were done at Nyanya, Kubwa Zuba and Gwagwalada. The recruitment was non-randomised without bias of sex and questionnaires were administered on those that consented to participate in the study.

Demographic information was collected using questionnaires. For the purposes of this study, the information collected from the participants includes age, sex, occupation and residential address.

Ethical Consideration

Ethical clearance for the study was sought from the Institutional Review Board of the National Institute for Pharmaceutical Research and Development (NIPRD), Idu-Abuja, Nigeria in

accordance with the code of ethics for biomedical research involving human subjects. The participants were sufficiently counseled and informed consent obtained with the assurance that all information would be treated with utmost confidentiality during and after the study.

Sample collection

Sample collection was done by finger pricking according to the standard practice. Briefly this was done by choosing a finger and swabbing the tip of the finger using cotton wool soaked in 70% alcohol. The alcohol is allowed to dry off and a disposable lancet was used to pierce the finger deep enough to allow adequate flow of blood. Two capillary tubes were filled with blood and used for the test.

Sample Analysis

All the four hundred samples collected were tested for HIV-1 antibody using Unigold™ (Trinity Biotech, Ireland) and Serocard HIV1/2 (Trinity Biotech, Ireland) HIV Test kits. All the test was carried out according to the manufacturer's instructions using serial algorithm. The test was carried out with Unigold™, and those that nonreactive to HIV antibody are reported as negative while those that are reactive with the Unigold kits are repeated using Serocard HIV-1/2 Antibody Test kit. For the purpose of quality assurance every tenth negative sample was repeated with Serocard. The reactive samples were reported as positive, while the non-reactive were reported as negative.

Statistical Analysis

All statistical analyses were performed using Statistical Product and Service Solution (SPSS) software (version 17.0, SPSS, Chicago, USA).

Prevalence was expressed as percentages and the level of significance was set at $p < 0.05$.

Result

Out of four hundred commercial sex workers tested, 124(31.8%) were HIV-1 positive (Figure 1). The volunteers were segregated by gender and 143 were males while 257 were females. The male population consist of men who have sex with men, hotels and brothel workers who are regular customers of the female commercial sex workers. 25(6.25%) of the males were also positive to HIV-1 antibody, while out of the 257 female sex workers tested, 99(24.8%) were positive. There was significant difference between the prevalence of HIV-1 among the male and female sex workers ($p \leq 0.05$). A total of 124(31%) of the commercial sex workers tested were positive. The prevalence of HIV-1 among commercial sex workers was statistically significant ($p \leq 0.05$).

The result was disaggregated by age bracket; HIV-1 prevalence was highest among the respondents in the age bracket of 31-35 years of age with prevalence of 6.5%, followed by those in those within the age bracket of 21-25 years with prevalence of 6.25%. The result also showed that respondents in the age bracket of 36-40 has prevalence of 3.25% and 16-20 and 41-45 years both had prevalence of 2.25% each while those within the age bracket of 46-50 years had the least prevalence of 0.25%. Analysis showed that there is no significant difference between the age brackets of 26-30 and 31-35 years while there was significant difference between these groups and within the age brackets of 16-20, 36-40, 41-45 and 46-50 years ($p \leq 0.05$) (Table 1).

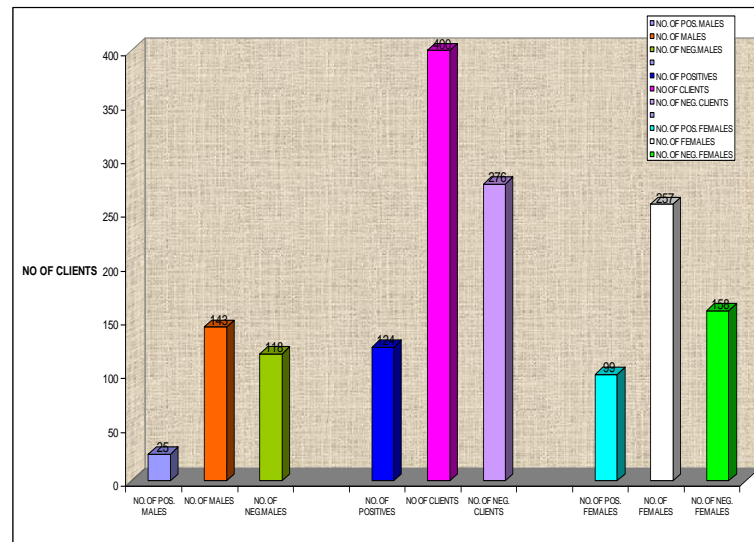


Figure 1: Distribution of HIV-1 among Commercial Sex Workers in Abuja.

Table 1: Prevalence of HIV-1 among CSW in Abuja disaggregated by age brackets.

Age Brackets (Years)	Number of Volunteers	Number of positive volunteers
16-20	47	9 (2.25%)
21-25	93	25 (6.25%)
26-30s	102	41 (1.5%)
31-35	75	26 (6.5%)
36-40	37	13 (3.25%)
41-45	25	9 (2.25%)
46-50	21	1 (0.25%)
Total	400	124 (31%)

Table 2 represents the prevalence of HIV infection among commercial sex workers disaggregated by gender and age. The result of this study showed that the rate of infection is higher in females than among the males and the analysis showed that there was significant

difference between the rate of infection among the male and female commercial sex workers ($p \leq 0.05$). The males within the age range of 31-35 had the highest prevalence while the females in the age range of 26-30 had the highest prevalence.

Table 2: Distribution of HIV-1 among CSW in Abuja disaggregated by gender and age.

Age Brackets	Number of Male Sex Workers		Number of Female Sex Workers	
	No. of Respondents	No. positive MSW	No. of Respondents	No. positive FSW
16-20	9	1 (0.25%)	38	8 (2%)
21-25	27	1 (0.25%)	66	24 (6%)
26-30	33	6 (1.5%)	69	35 (8.75)
31-35	27	9 (2.25%)	48	17 (4.25%)
36-40	17	4 (1.0%)	20	9 (2.25%)
41-45	16	4 (1.0%)	9	5 (1.25%)
46-50	14	0	7	1 (0.25%)
Total	143	25 (6.25%)	257	99 (24.75%)

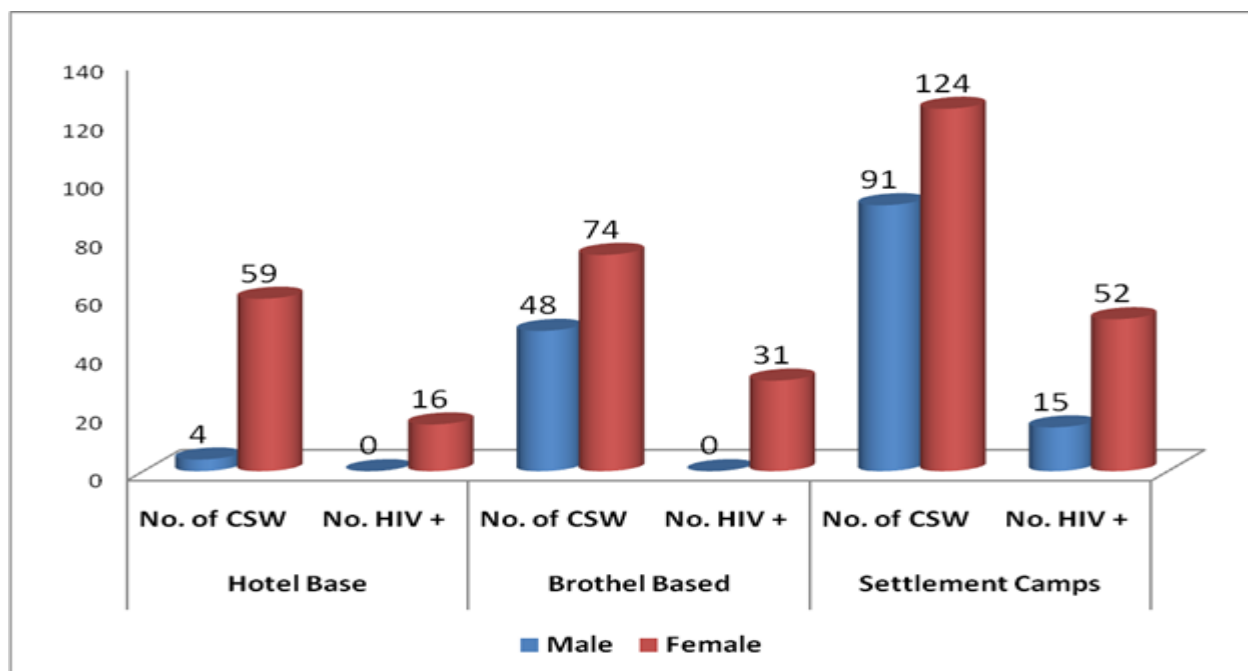


Figure 2: Prevalence of HIV-1 AMONG commercial sex workers according to type of residence.

Commercial sex workers were disaggregated by gender and compared according to the class of residence. In all the classes, the females were more infected. Among those residing in hotels 16(4%) of the females were positive to HIV-1. The brothel based female sex workers had 31(7.75%) HIV-1 prevalence while 13% of the females residing in settlement camps were positive. There was no infection recorded among those residing in hotel and brothel while 3.75% of the males tested at the settlement camps were HIV-1 positive (Figure 2).

Discussion

In the developing world, commercial sex workers (CSW) and their clients have been well identified as core groups that play a major role in the propagation of sexually transmitted diseases (STDs) and HIV (Michel *et al.*, 2002). The findings of this study of CSWs in Abuja the Federal Capital Territory of Nigeria indicate that there is HIV epidemics among this vulnerable group. The prevalence of 31% among commercial sex workers in Abuja though lower, is comparable to the result of a study of 51% prevalence among commercial sex workers in Rwanda by Mwumvaneza *et al.* (2017). Also a study in Senegal reported prevalence of 19.8% (Wang *et al.*, 2007). This is however much higher than the result of the study by van Veen *et al.* (2010) where the prevalence of HIV among sex workers was 5.7% in Netherlands.

According to the criteria of the Joint United Nations Programme on HIV/AIDS, the HIV epidemics in this group appear to have transitioned from low level to concentrated, because overall HIV prevalence among CSWs in Abuja is >5%. The study suggested significant roles played by sex workers in the rapid transmission of heterosexual HIV infection among Nigeria populace.

Although female sex workers have long been understood to be a key affected population, the scope and breadth of their disproportionate risk for HIV infection had to date not been systematically documented. The result of this study also indicated that the prevalence is higher among female sex workers than the male with prevalence of 6.25% among the male sex workers and 24.8% among the female sex workers. The prevalence of HIV among female sex workers in this study is higher than the findings of other studies by Thomas *et al.* (2008); Adithyan *et al.* (2017). These results are also higher than the 9% reported prevalence among the sex workers in Jamaica by Hope Enterprises (2005) and 4.9% by Jacqueline, (2014). The 2011 systematic review and meta-analysis on low and middle income countries found an overall HIV prevalence in FSWs of 12% and an odds ratio for HIV infection of 13.5% compared to other women of reproductive age (Baral *et al.*, 2012). 24.8% among FSWs in this study agreed with the findings

that HIV prevalence among female sex workers in sub-Saharan Africa varies between 21% and 75% (Bimal *et al.*, 2013) and sex work is assumed to have had a significant impact on the spread of the infection in this area (Cote *et al.*, 2004). In Western Europe, the prevalence of HIV in female CSW is generally below 2%, except for those who are injecting drug users (IDU) (Eurohiv, 2002). Higher HIV rates are also found in transgender CSW, ranging from 14 to 74% (Belza, 2005). Our result is in consonant with the result of van Veen *et al.*, 2010, where the prevalence of HIV among the transgender was 18.8%, while it was 1.5% among the female sex workers. The finding of this study of 6.25% among the male sex workers however is very low when compared to the work of Figueroa, (2015), that reported HIV infection rate of 52.9% among the male sex workers. It was reported that HIV infection is 9-fold higher among transgender sex workers than among non-transgender female sex workers (UNAIDS, 2014). A systematic analysis review findings suggest transgender women who are sex workers have significantly higher HIV infection rates in comparison with transgender women not involved in sex work (Operario *et al.*, 2008).

On considering the age brackets of the sex workers, the prevalence was found to be higher among the youth which is contrary to a report from India where the prevalence is higher among the older sex workers which is presumed to be as a result of level of exposure (NACO, 2016). Among the male sex workers, the prevalent was highest from the people in the age brackets of 31-35 years which can be best explain by the fact that they are the most economically viable class among the sexually active stage. The highest prevalence among the female sex workers in this study was higher among the people within the age range of 21-30 years which are the most active sexual stage. It can be postulated that this class may be receiving high patronage because of their youthful age and may be very well exposed to the infection because of lack of adequate knowledge of transmission of the virus.

The sex workers in the settlement camps were most affected in both the male and female sexes. Though from this study, there were more volunteers from the settlement camps than the brothel and hotels, the rate of infection may be attributed to lifestyle and the level of awareness about HIV transmission. The

result indicated that the better organized the sex workers are, the lower the rate of infection. The result of this study showed there is higher of HIV among females than males from the settlement camps. Prevalence of 3.75% and 13% among male and female sex workers in the settlement camp was recorded respectively. The trend is similar to that of Mafigiri *et al.*, (2017) where the prevalence was higher among the female sex workers in settlement camps (25.9%) than the male sex workers (12%) in Uganda.

The findings from this study have indicated that commercial sex workers are major source of heterosexual means of transmission of HIV/AIDS in Abuja. It is therefore recommended that for effective preventive and control measures, policies that will enhance the preventive measure of vulnerable population group like commercial sex workers should be developed and implemented immediately. It is also recommended that this type of survey to determine the sero-prevalence, knowledge of attitude and practice to HIV/AIDS should be conducted at time intervals. These will help in mitigation in the spread of the dreaded HIV/AIDS disease.

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