

## Incidence of STDs in HIV Patients Attending Health Facilities Supported by PEPFAR in Abuja, FCT, Nigeria

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**Abstract:** HIV positive patients are more at risk of acquiring Sexually Transmitted Diseases (STDs) due to similar modes of transmission and so it's no surprise that a substantial number of people are co-infected. A study of the incidence of HIV and STD co-infection was carried out among patients attending health facilities that are supported by the President's Emergency Plan Fund for AIDS Relief (PEPFAR) already providing HCT and ART services. 344 sera samples were collected for the study and screened for HBsAg, HCV and VDRL using rapid test kits according to CDC's recommendations. The overall co-infection occurrence was 49 (14.24%), HIV-HBV co-infection showed the highest prevalence of 11.05%. The prevalence of HCV and Syphilis were 2.62% and 0.58% respectively. The co-infection was higher in men 36 (25.17%) than female 13 (6.47%). Abuja Municipal Area Council (AMAC) reported the highest rate of co-infection 17(16.83%) while Kwali had the least 4(10.26%). Regular screening sessions to monitor and control the current situation of the epidemics should be implemented as well as intensifying public awareness of the mode of transmission and prevention of these deadly viral diseases.

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### 1. Introduction

Human immunodeficiency virus (HIV) is a virus that progressively reduces the immune system responses. HIV can be transmitted by sharing of needles, sexual activity and breastfeeding; therefore HIV is counted as one type of STDs (Cohen, 2004). Sexually transmitted diseases (STD), also known as sexually transmitted infections (STI), refer to illnesses that are mainly transmitted by sexual activity but may also be transmitted through childbirth and breastfeeding. STD is a public health concern which affects millions of people (Cates, 1999). Sexually Transmitted Diseases (STD) are among the most well-established risk factors for HIV infection. The prevalence of HIV infections has been on the increase since the description of the four cases in San Francisco in 1981. Accumulative evidence suggests that concurrent infections with STDs increase the transmission, so there will be greater prevalence of STD co-infection among HIV clinic attendees (Piot and Logo, 1989; Greenblatt *et al.*, 1988). STDs facilitate HIV transmission by breaching protective mucosal barriers and recruiting susceptible immune cells (e.g. CD4 T-helper cells, macrophages) to the site of infection (Ward and Ronn, 2010). Ulcerative and non-ulcerative STD also creates portals of entry for HIV to access susceptible cells. The association between ulcerative STI and HIV transmission is well established, with as many as half of newly HIV infected people demonstrating herpes simplex virus type 2 (HSV-2) infections (Barbour *et al.*, 2007). STD

can also cause genital bleeding, further increasing the risk of exposure to HIV during sexual activity (Royce *et al.*, 1997; Boily *et al.*, 2009). Common mode of transmission of various infections can result in the simultaneous prevalence of these infections in the same human population. HIV and STD share the same risk behavior which is the unprotected sexual intercourse with multiple partners (Marks *et al.*, 2005). STD-infected individuals are more likely to acquire HIV infection due to the breaking in and the inflammation of genital ulcers (Risbud *et al.*, 1999). Moreover, individuals with STD and HIV co-infection are more likely to infect their sexual partners due to the increasing shedding of HIV in genital secretions (Cohen *et al.*, 1997). Many people who are infected with HIV or STD show no symptoms; as a result, more infected individuals can transmit the virus or bacteria to their partners (Haggerty *et al.*, 2010). As the infections occur globally, it is essential to implement regular screening sessions to monitor and control the current epidemiological situations of HIV and STDs. The aim of the study, therefore, is to determine the co-infection rate of STDs among HIV positive patients attending health facilities that are supported by the president's emergency plan fund for AIDS relief (PEPFAR) already providing HCT and ART services in FCT.

### 2. Material and Methods

The study was carried out in the Federal Capital Territory of Nigeria (FCT). It is located in the center

of Nigeria, lying between latitude 8.25 and 9.20 North of the equator and longitude 6.45 of the Greenwich Meridian. Bordered by Kaduna to the northeast, Nasarawa to the East and South and Kogi to the southwest. It is situated within the savannah region with moderate climatic conditions with an area of 7,315km. FCT has 90,000 people living with HIV infection (UNAIDS, 2014), and 8.6% of the total population of people living with HIV/AIDS in Nigeria. A total of fifteen health facilities were used for the study randomly sampled from four of the six area councils in FCT: Abuja Municipal Area Council (AMAC), Gwagwalada Area Council, Bwari Area Council and Kuje Area Council.

#### Sample Population and Size

The samples were gotten from HIV positive patients of all ages and gender attending health facilities that are supported by the president's emergency plan fund for AIDS relief (PEPFAR) already providing HCT and ART services in FCT. A total of 344 samples, 143 males and 201 females, were collected and tested from fifteen health facilities across four Area Councils in FCT. For the purpose of this study, the three most prevalent STDs in FCT, according to Nigeria Demographic and Health Survey, NDHS (2013) were worked on; these are Hepatitis B, Hepatitis C and Syphilis.

#### Blood Sample Collection and Analysis

The area to be lanced was cleaned with an alcohol prep pad swab. The end of the finger tip was squeezed and pierced with a sterile lancet. The first drop of blood was wiped away with sterile gauze. Micropipette was used to obtain 100ul fresh blood and added to a sample well. One drop of whole blood was added into a sample pad. After all the blood is completely absorbed, one drop of blood diluent (buffer) was added. The result was observed in 5-20 minutes for HIV, HBV and HCV and 5-30 minutes for Syphilis.

#### Interpretation of Results

**Negative:** Number of bands in the test region (T) for HBV, HCV and Syphilis and patient region (p) for HIV only pink band appears in the control region (c). This indicates HBsAg/HCV/HIV/Syphilis is not detected.

**Positive:** In addition to the band in the control region (c), another band in the test (T) region for HBV, HCV and Syphilis and patient region (p) for HIV will appear. This indicates that the specimen contains HBsAg/HCV/HIV/Syphilis.

**Invalid:** If no band appears in the control region (c) regardless of the presence or absence of line in the test region (T) for HBV, HCV, Syphilis and patient region(p) for HIV. It indicates a possible error in performing the test; the test is repeated using a new test strip.

#### Statistical Analysis

In this study the occurrence of HIV and STD co-infection depending on the age group and sex of the patients were subjected to descriptive statistics such as: percentages, multiple bar chart and histogram for further explanation on the prevalence of the co-infections.

#### 3. Results

Out of the 344 samples analyzed, 49(14.24%) had HIV/STDs co-infection. Table 1 showed that 38(11.04%) tested positive to Hepatitis B (HBV) while 9(2.62%) tested positive to Hepatitis C (HCV) and 2(0.58%) tested positive to syphilis. 36 (25.17%) out of 143 males had co-infection, 29 (20.28%) tested positive to Hepatitis B (HBV), 5 (3.50%) tested positive to Hepatitis C (HCV) and 2 (1.40%) tested positive to Syphilis. 201 females were tested and 13(6.47%) had co-infections, 9 (4.48%) tested positive to HBV, 4 (1.99%) tested positive to HCV while none tested positive to Syphilis.

Table 1: HIV/STD Co- Infection in Relation to Sex

Sex	Num Exam.	HBV (%)	HCV (%)	SYPHILIS (%)	TOTAL (%)
Male	143	29(20.28)	5(3.50)	2(1.40)	36(25.17)
Female	201	9(4.48)	4(1.99)	0(0)	13(6.47)
Total	344	38(11.05)	9(2.62)	2(0.58)	49(14.24)

Table 2 showed the co-infection of STDs (HBV, HCV & Syphilis) among HIV positive patients attending health facilities in relation to age. Age group 20-29 had the highest prevalence of co-infection (16.48%) while age groups 10-19 and >50 recorded no co-infection.

In Abuja municipal Area Council, a total of 101 samples were tested, 44 males and 57 females. 17 (16.83%) out of 101 had co-infections, 9 (20.45%) males and 8 (14.04%) females (Tables 3&4). The

tables also showed the co-infection of STDs (HBV, HCV and Syphilis) among HIV positive patients attending health facilities in Gwagwalada Area council of FCT. A total of 138 samples were tested in this Area Council, 60 males and 78 females.19(13.77%) out of 138 had co-infections,17 (28.33%) males and 2 (2.56%) females.15 (10.87%) tested positive to Hepatitis B(HBV),13 (21.67%) males and 2 (2.56%) females, 3 (5.00%) and 1 (1.67%) males tested positive to HCV and Syphilis

respectively, but no female in this council tested positive for both viral diseases. 75 samples were tested in Bwari Area council, 25 males and 41 females, 9 (13.64%) had co-infections, 7(28.00%) males and 2 (4.89%) females. 6 (9.09%) tested positive to Hepatitis B(HBV), 5 (20.00%) males and 1(2.44%) female. 2 (3.03%) tested positive to

Hepatitis C (HCV), 1(4.00%) male and 1(2.44%) female. 1(4.00%) male tested positive to Syphilis. A total of 39 samples were tested in Kwali Area Council, 14 males and 25 females. 4 (10.26%) tested positive to Hepatitis (HBV), 3 (21.43%) males and 1 (4.00%) female, non tested positive to Hepatitis C(HCV) and Syphilis (Tables 3&4, Figures 1&2).

Table 2: HIV/STD co- infection in relation to age

Age group	Number Examined	HBV (%)	HCV (%)	SYPHILIS (%)	TOTAL (%)
10-19	3	0(0)	0(0)	0(0)	0(0)
20-29	91	10(10.99)	4(4.40)	1(1.10)	15(16.48)
30-39	125	15(12.00)	2(1.60)	1(0.80)	18(14.40)
40-49	117	13(11.11)	3(2.56)	0(0)	16(13.63)
Above 50	8	0(0)	0(0)	0(0)	0(0)
Total	344	38(11.05)	9(2.62)	2(0.58)	49(14.24)

Table 3: HIV/STD co- infection rate by area council

Area Councils	Number Exam.	HBV (%)	HCV (%)	SYPHILIS (%)	TOTAL (%)
AMAC	101	13(12.87)	4(3.96)	0(0)	17(16.83)
Gwagwalada	138	15(10.87)	3(2.17)	1(0.72)	19(13.77)
Bwari	66	15(9.09)	2(3.03)	1(1.52)	9(13.64)
Kwali	39	4(10.26)	0(0)	0(0)	4(10.26)
Total	344	38(11.05)	9(2.62)	2(0.58)	49(14.24)

Table 4. HIV/STDs co-infection in different area council in relation to sex

Area Councils	Sex (num examined)	HBV (%)	HCV (%)	SYPHILIS (%)	TOTAL (%)
AMAC	M (44)	8 (18.18)	1 (2.27)	0 (0)	9 (20.45)
	F (57)	5 (8.77)	3 (5.26)	0 (0)	8 (14.04)
Gwagwalada	M (60)	13 (21.67)	3 (5.00)	1 (1.67)	17 (28.33)
	F (78)	2 (2.56)	0 (0)	0 (0)	2 (2.56)
Bwari	M (25)	5 (20.00)	1 (4.00)	1 (4.00)	7 (28.00)
	F (41)	1 (2.44)	1 (2.44)	0 (0)	2 (4.89)
Kwali	M (14)	3 (21.43)	0 (0)	0 (0)	3 (21.43)
	F (25)	1 (4.00)	0 (0)	0 (0)	1 (4.00)

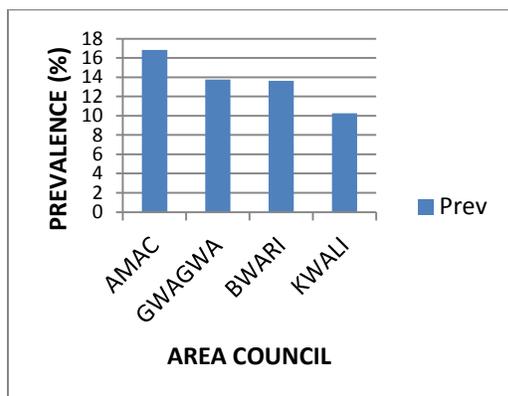


Figure 1: Prevalence of STD Co-Infection in HIV Patients by Location

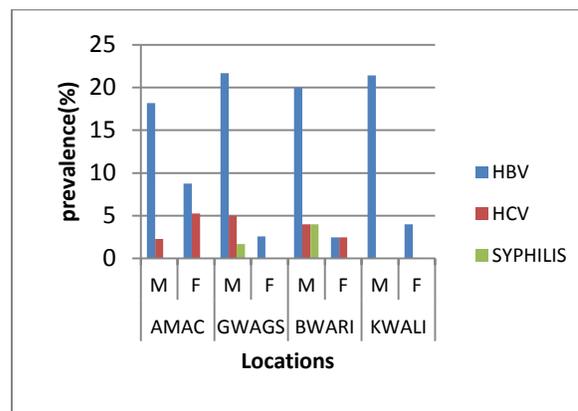


Figure 2: HIV/STDs co-infection in different area council in relation to sex

#### 4. Discussions

The overall prevalence of co- infection with HBsAg, HCV and Syphilis was 14.24%, and this was recorded in patients less than 50 years old which was in agreement with a study carried out by Adewole *et al.* (2009) at the National Hospital, Abuja. In this study, HBV in male showed the highest prevalence disagreeing with Adewole *et al.* (2009) who recorded highest prevalence of HCV in males and that females were the most infected with HBV. HBV in this study, however, showed lower prevalence (11.04%) than the 25.9% reported among HIV positive patients in Jos, Nigeria by Uneke *et al.* (2005).

The interaction between HIV and HCV has been well documented especially as it relates to transmission of HCV. HIV positive women, especially pregnant ones should be encouraged to have HBV and HCV screenings done. Risk factors in transmission of these epidemics include; multiple unprotected sexual exposure, scarification's marks, blood transfusion and unsafe injection needle, use of unsterilized instruments for acupuncture, piercing and tattooing. Because of the shared transmission pathways, synergistic effects of these viruses and the impact of HBV, HCV and Syphilis on presentations, morbidity and mortality of HIV, screening of HCV, HBV and Syphilis should be included in the armamentarium of investigations to be done pre-HAART. Screenings for HBsAg must be done at the point of screening for HIV especially in young middle-aged persons. This study didn't show any HIV/HBV/HCV co-infection in young people below the age of 20 years which is in agreement with the study carried out by Sadoh *et al.* (2011) who only recorded 5.2% prevalence among HIV/HCV in this age group. The high rate of HBV in HIV positive adults may be owing to the fact that HBV vaccine only became available in Nigeria in the year 2005, so young children born around and after that period have slimmer chances of acquiring the infection. Findings have also revealed that prevalence of hepatitis co-infection with HIV increases with progression in clinical staging of HIV (CDC, 2008). Untreated hepatitis may lead to liver cirrhosis and cancer and subsequently death (Benhamou *et al.*, 1999).

The sero prevalence of HIV and syphilis in this study was 0.58% which suggested that syphilis affects a low percentage of HIV patients, assenting to Omisakin *et al.* (2014) whose study recorded a prevalence of 0.05% of syphilis. On the other hand, this study is at variance with Ogbebor *et al.* (2013) who reported a prevalence of 20% co-infection of syphilis in HIV positive patients. Syphilis is caused by virus *Trepanonema palladum* and can affect organs if untreated. The risk of acquiring of syphilis

from an infected sexual partner ranges from 30% and 51%, because its widespread and mucous membrane manifestation provide the greatest likelihood for contagion (Wasserheit, 1992). Syphilis may increase HIV transmission by causing genital ulcers. Men and women who are sexually active are more at risk of acquiring syphilis infection. Age groups 20-29 and 30-39(16.48% and 14.40% respectively) showed highest occurrence rate of STD co-infection. This agrees with CDC's 1998 research findings that the prevalence of HIV and other STDs is highest among people between the ages of 21 and 40. These groups are also believed to be mostly sexually active.

The study's investigation has revealed that there is quite a significant level of prevalence of HIV and other STDs(14.58%), With the most prevalent being hepatitis B(HBV)(11.24%). The study also recorded higher prevalence of STDs in male than female. The evidence for the highest prevalence of hepatitis B (HBV) is consistent, and alarming because the age group most affected is the most productive sector of the society. Hepatitis C (HCV) had 2.6% of occurrence and syphilis 0.5% agreeing with NDHS, 2013's sequence of occurrence. The control of the prevalence of HIV and STD co infection would be simple public health measures to slow down the epidemics. Regular screening sessions of STDs should be implemented to monitor and control the current epidemiological situations of HIV and STDs.

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