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## **Incidence of Asymptomatic Human Immuno-Deficiency Virus Infections among Women Delegate in a Christian Conference in Niger State, North Central, Nigeria**

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### **Authors' contributions**

*This work was carried out in collaboration between all authors. Author AOA designed the study and wrote the first draft of the manuscript. Authors ARO, ISA, AIO, AASF and IEA performed the subjects, collection of samples and analysis of samples. Author ORO Gynecologist in-charge of health talk and counseling of subjects. Authors AMA, OSO, UEO and AEC performed the proof read of the manuscript. All authors read and approved the final manuscript.*

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## ABSTRACT

**Background:** The global HIV/AIDS epidemic has killed an estimated 21.8 million people and another 36.1 million are living with HIV infection. Sexual transmission is by far the most common mode of transmission globally.

**Aim:** To study the prevalence rate of HIV among the women delegate in the conference and to determine the incidence rate among the age group as well as occupational category of participants.

**Materials and Methods:** About 2 ml venous blood samples was collected from each subject and inoculated in a micro-container evacuated blood collection System with additive (K2EK2EDTA-Greiner bio-one USA). The serum samples were screened according to the manufacturer instruction using Determine kit HIV 1 & 2 and reactive serum was further confirmed with Uni-Gold. Data was coded, computed and analyzed using SPSS version 16.0 and p values  $\leq 0.05$  is considered to be statistically significant.

**Results:** Out of the 327 women delegates within the age group 16 & 65years in this studied population, our research showed that the prevalence rate of HIV infections was 2.8%, statistically not significant ( $p=0.837$ , mean value=4.91, median=5.00, S.D=  $\pm 2.03$ ).

A higher percentage of (8.7%) and (4.2%) with HIV positive in relation to age were found within the age brackets 26 – 30 years and 36 – 40 years respectively. The highest number of HIV positive individual were found among the house wives (9.5%) followed by civil servant (3.7%).

**Conclusion:** Overall HIV infections prevalence rate of 2.8% in this conference population is a serious health challenge. Therefore, we recommend sex education in our religious communities at all level to both teenagers and adults; sex education should not be over spiritualized to reduce the menace in our society. Also, private sectors such as non-governmental organization need to provide support so as to reduce the financial burden on government.

*Keywords: HIV; asymptomatic; infections.*

## 1. INTRODUCTION

The global HIV/AIDS epidemic has killed an estimated 21.8 million people and another 36.1 million are living with HIV infections [1]. The estimated 57.9 million people who have been infected with HIV since the pandemic began have, with a few exceptions, caught the virus by one of three modes of transmission: Sexual, parenteral and mother-to-child. HIV-1 is the virus type responsible for the global pandemic. HIV-2 is less easily transmitted than HIV-1 and is confined mainly to West Africa, with foci in Angola and Mozambique, and some cases in Europe, America and India [2]. Sexual transmission is by far the most common mode of transmission globally [3]. Sexual transmission of HIV is enhanced by the presence of another sexually transmitted infection (STI), especially an ulcerative one such as Chancroids, Syphilis or herpes simplex virus 2 (HSV2) [4]. Within countries, there are sub-populations who are particularly vulnerable to HIV infection, such as sex workers and their clients.

The HIV virus is often found predominantly within these subpopulations at the beginning of an epidemic when prevalence is extremely low in the general population [5].

Heterosexual transmission is predominant and sub-Saharan Africa is the only region where more women than men are infected. Patterns of sexual behavior whereby young women have sex with older men, in combination with high susceptibility to infection in very young women, has resulted in extremely high infection rates in young women in some parts of Africa [6].

### 1.1 Aim

To study the prevalence rate of HIV among women delegates in a Christian conference in Niger state, North Central, Nigeria and to determine HIV incidence rate among the age group as well as occupational category of participants.

## 2. MATERIALS AND METHODS

This is a prospective study carried out between July 17<sup>th</sup> to 23<sup>rd</sup>, 2014, among women in a Christian conference held in Niger State, north central, Nigeria. Delegates were represented from twenty six (26) local government area councils of Niger State. A total of three hundred and twenty seven (327) delegates, age between 16 and 65 years, all were married except

students, volunteered for the screening after their informed consent were sort. Behavioral, Pregnancy and social economic factor were not considered as a factor.

HIV pre-counseling, social, and medical benefits were given before the screening.

In this study, about 2 ml venous blood sample were collected in a micro-container evacuated blood collection System with additive (K2EK2EDTA- Greiner bio-one USA).

The participants were invited and to return after 2 weeks to collect their HIV results.

All subjects involved in the study were provided with medical consultations and post testing HIV counseling by physician associated with the project.

The serum samples were screened according to the manufacturer instruction using Determine kit HIV 1 & 2 (Alere Medical Co., Ltd., 357, Matsuhidai, Matsudo-shi, Chida, 270-2214, Japan), [7] and reactive serum was further confirmed with Uni-Gold™ HIV (Trinity, Biotech plc Bray, Wicklow, Ireland). [8] The statistics for the computation and analysis was SPSS version 16 and p-values ≤ 0.05 is considered to be statistically significant.

### 2.1 Ethical Issue

This study was approved by the church board council; all participants provided verbal consent before HIV testing.

### 3. RESULT

Out of 327 Sera Samples screened in this study, 9(2.8%) was positive for both HIV 1 & 2 antigen.

Table 1 showed the incidence rate of HIV 1 & 2 in relation to age of the subjects.

A higher percentage of 6(8.7%) and 3(4.2%) with HIV positive in relation to age were found within the age brackets 26 – 30 years and 36 – 40 years respectively.

Table 2 showed the incidence rate of HIV 1 & 2 in relation to occupation of the participant.

The highest number of HIV positive individual were found among the house wives 6(9.5%) followed by civil servant 3(3.7%) while other occupational groups showed negative reaction.

### 4. DISCUSSION

Out of the 327 women delegates within the age group 16 & 65 years that volunteered for this study, our research showed that the prevalence rate of HIV 1 & 2 infections in this population was 2.8%, statistically not significant (p=0.837, mean value=4.91, median=5.00, S.D= ±2.03).

Results in previous studies were comparable to those obtained in this study.

In this study, overall prevalence rate of HIV reactive, 9(2.8%) is in agreement with other findings by Bulterys et al. [9] who reported (2.7%) in rwanda among urban and rural women in 1994 and Ramjee et al. [10], reported (2.6%) in Zambia among urban adult women.

However our report is higher than Djomand et al. [11] who reported (2.3%) in Botswana among urban high risk women, Wolday et al. [12] reported (2.0%) in Ethiopia among urban pregnant women, Peterson et al. [13] reported (1.2%) in Ghana among urban adult women and Feldblum et al. [14] reported (1.4%) in Nigeria among urban adult women.

**Table 1. Age Frequency of HIV positive and negative individuals**

Age interval	No tested	% Positive	% Negative
16 – 20	6	0 (0.0)	6(100)
21 –25	21	0(0.0)	21(100)
26 – 30	69	6(8.7)	63(91.3)
31 – 35	51	0(0.0)	51(100)
36 –40	72	3(4.2)	69(95.8)
41- 45	36	0(0.0)	36(100)
46 –50	36	0(0.0)	36(100)
51 –55	9	0(0.0)	9(100)
56 – 60	24	0(0.0)	24(100)
61 – 65	3	0(0.0)	3(100)
Total	327	9(2.8)	318(97.2)

**Table 2. HIV incidence rate by occupation**

Occupation	Total	%Positive	%Negative
Farmer	75	0(0.0)	75(100)
Trader	93	0(0.0)	93(100)
Employed	81	3(3.7)	78(96.3)
House wife	63	6(9.5)	57(90.5)
Clergy	6	0(0.0)	6(100)
Student	9	0(0.0)	9(100)
Total	327	9(2.8)	318(97.2)

*Employed= (Civil servant and Private sector.)*

Contrary, our report is lower than Kumwenda et al. [15] in Malawi who reported (4.9%) among urban women, Bultery et al. [16] in Rwanda, reported (5.7%) among urban young women and Padian et al. [17] in South Africa, reported (7.0%) among urban and semi urban women.

Our studies showed high incidence rate of HIV infection between the age groups of 26-30 years 6(8.7%) followed by 36-40 years 3(4.2%). Our report is higher than Feldblum et al. [18] who reported 4.2% among women (25-29 years) in Bloemfontein, South Africa and Rehle et al. [19] reported 5.6% among women between ages (20-29 years) in South Africa. However, our report is lower than Zacarias et al. [20] who reported incidence rate of 9.2% of HIV-1 among women between ages 25-34 years in 2006 and 10.6% of HIV 2 in 1987 among women of same age groups. According to CDC 2004, [21] HIV was the 6th leading cause of death among all women aged 25–34 years. Recent data suggested that AIDS is emerging as a leading cause of death in adults aged 25-44 years in substantial areas of the developed and developing world [22]. Also, Public Health Agency of Canada, [23] reported that Females aged 30 to 39 years had the highest number of positive HIV test reports in 2011.

Our research showed high HIV incidence of 6(9.5%) among house wives followed by 3(3.7%) among the employed. Our report is higher than Mohan Kumar et al. [24] who reported (0.58%) among married women with migrant spouse and (0.39%) among married women without migrant spouse in India. Also, Hargreaves et al. [25] reported (2.3%) in 2001, and (7.2%) in 2004, among married women with multiple sexual partners in South Africa. Najimudeen and Mat, [26] reported (3.3%) among house wife in Malaysia from 1986 to 2009. However, our report is lower than Kiwanuka et al. [27] who reported (32.1%) among house wives of fishermen in Uganda.

Booyesen and Summerton, [28] stated that women of low socioeconomic status are economically dependent on male partners, limiting their ability to negotiate condom use in relationships. According to Bangladesh Demographic and Health Survey [29] reported that married men who have unprotected sex with sex workers continue to have unprotected sex with their wives, exposing them to HIV infection and other sexually transmitted diseases. Also, many people have heard of HIV but their knowledge is limited in regards to how it is transmitted and how they can protect themselves.

Further, we observed HIV incidence rate of (3.7%) among women employed in either Public or Private sector in this study. Our report is higher than Borgdoff et al. [30] who reported (0.8%) among female urban factory workers in northwest, Tanzania. However, our report is lower than Kapiga et al. [31] who reported (9.6%) among Mamalishe and (19.6%) among waitress, and women working in food and recreational facilities in northern, Tanzania.

Shelton et al. [32], stated that an increase in socioeconomic status also increase the risk of HIV infection because wealthy or educated people have more resources with which to attract and maintain multiple partners. Also, women working in hotels, restaurants, bars and other food and recreational facilities have substantially higher HIV prevalence and incidence than women in the general adult population [33,34].

Our study has several limitations, the research work was self funded; human resource, materials and screening kits provided are limited to the available fund. The reported statistics do not truly represent the prevalence or incidence of HIV-1 & 2 in the conference population because these statistics do not include HIV-positive individuals who have not been tested for HIV among the delegate.

## 5. CONCLUSION

In conclusion, overall HIV infections prevalence rate of 2.8% in this conference population is a serious health challenge. We also observed incidence rate of 9.5% among house wives and 3.7% among employed, this calls for the attention of all stake holders in the health industry such that more public enlightenment program is required for HIV infection.

Therefore, we recommend sex education in our religious communities at all level to both

teenagers and adults; sex education should not be over spiritualized to reduce the menace in our society. Also, private sectors such as non-governmental organization need to provide support so as to reduce the financial burden on government.

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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