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Sero-Prevalence of Human Immunodeficiency Virus (HIV) Antibodies Among Pregnant Women Attending Primary Health Care Center (PHCC) Jajere

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Abstract: HIV/AIDS, also known as acquired immunodeficiency syndrome and human immunodeficiency virus infection, continue to be a global public health concern. A total of 150 pregnant patients at the PHCC clinic had their blood tested for the presence of HIV 1/2 antibodies. The DetermineTM HIV-1/2 in vitro diagnostic kit was used for the detection of human immunodeficiency virus antibodies (HIV). Using a pipette with arrows pointing in their direction and dropping the plasma samples onto the test strips, the reaction was allowed to occur for 15 minutes. Negative samples only display a color band in the control zone, while positive samples produce a red color band in both the test and control portions of the strips. The results showed that only 1 (0.7%) pregnant woman of the 150 tested positive for HIV. On the age group distribution of pregnant women tested for HIV in PHCC Jajere, it showed that 0 (0.0%) women aged 10–20 tested positive for HIV, 1 (0.7%) of those aged 21–30 were tested positive, 0 (0.0%) of those aged 31–40 were tested positive, and 0 (0.0%) of those aged 41–50 were tested positive for HIV. Whereas, the distribution of pregnant women tested positive for HIV in PHCC Jajere based on their locations showed that only 1 (0.7%) pregnant woman from Ganji was tested positive for HIV. It's therefore concluded that the sero-prevalence of HIV 1/2 in the study area is low, and thus, screening pregnant women for HIV/AIDS is recommended despite the low prevalence.

Keywords: Sero-Prevalence, HIV, Antibodies, PHCC Jajere

1. Introduction

Human immunodeficiency virus infection and acquired immunodeficiency syndrome, or HIV/AIDS, are an ongoing global public health concern. They first emerged in 1981. [1-3] The World Health Organization (WHO) estimates that as of 2021, HIV/AIDS has claimed the lives of over 40.1 million people worldwide and that there are currently about 38.4 million individuals living with the virus. [1] 75 percent of the 38.4 million persons receiving antiretroviral therapy. [4] In 2018, [5] there were almost 770,000 fatalities from HIV/AIDS, and in 2020, there will be 680,000. [1] The occurrenceAccording to the Global Burden of Disease Study, the annual incidence of HIV infection reached a peak of 3.3 million in 1997. From 1997 to 2005, the global incidence decreased steadily to 2.6 million per year. [6] Incidence of HIV has continued to fall, decreasing by 23% from 2010 to 2020, with progress dominated by decreases in Eastern Africa and Southern Africa. [7] As of 2020, there are approximately 1.5 million new infections of HIV per year globally. [8]

Human immunodeficiency virus infection and acquired immunodeficiency syndrome, collectively known as HIV/AIDS, are an ongoing global public health concern. [1, 2, 3] The World Health Organization (WHO) estimates that as of 2021, HIV/AIDS has claimed the lives of over 40.1 million people worldwide and that there are currently about 38.4 million individuals living with the virus. [1] Seventy-five percent of these 38.4 million individuals are taking antiretroviral therapy. [6] In 2018, [5] there were

approximately 770,000 HIV/AIDS-related deaths, and in 2020, there will be 680,000. [1] According to the 2015 Global Burden of Disease Study, 3.3 million people worldwide were infected with HIV annually at its highest point in 1997. From 1997 to 2005, the global incidence declined sharply, reaching 2.6 million annually. [6]

From 2010 to 2020, the prevalence of HIV decreased by 23%, with drops primarily occurring in Eastern and Southern Africa. [7] Globally, there will be 1.5 million new HIV infections every year by the year 2020. [10]

The World Health Organization (WHO) estimates that as of 2018, there were 1.1 million HIV-positive individuals in the Africa Region. [9] Two thirds of all HIV cases worldwide are concentrated in the African Region. [9]

The continent of Subsaharan Africa is where HIV is most prevalent. As of 2020, more than two thirds of people with HIV reside in Africa, where an estimated 61% of new HIV infections occurred in 2018 [10].

HIV prevalence has been declining in the area: new infections in eastern and southern Africa decreased by 38% between 2010 and 2020. [7] At 8.45 million, or 13.9% [11] of the population, South Africa has the highest percentage of individuals living with HIV of any nation in the world as of 2022. The anticipated adult HIV prevalence rate for 2022 is 6.2%, up 1.2% from the figures from the UNAIDS World Aids Day Report from 2011. [12, 13]

The first two cases of AIDS in Nigeria were discovered in 1985 and reported in Lagos in 1986, one of whom was a young female sex worker from a West African nation who was 13 years old. As AIDS was thought to be a sickness of American homosexuals, the news of this first AIDS case sparked terror, doubt, and denial throughout the whole country. There were various acronyms created at the time, like "American Idea for Discouraging Sex," because some individuals believed the AIDS tale was an American plot to discourage sex. In the introductory section of a relatively recent PhD thesis on "Modeling HIV/AIDS Epidemic in Nigeria," which is available online, it is extensively documented how prior perceptions, skepticisms, and reactions of the Nigerian public toward the "foreign" AIDS case and HIV/AIDS in general. [14, 15]

2. Methodology

2.1. Study Area

Jajere is located at latitude 11°58′57″N and longitude 11°26′24″E. Jajere is a populated village in Fune local government area of Yobe state, Nigeria, having about 7,356 inhabitants. The local government has an area of about 95,270 square kilometers. Jajere climate can be described under Sudan savanna climate, which is characterized by semi-arid conditions with a long dry season followed by a short period of rainfall. The wet season begins in June and lasts until September. The temperature is fairly consistent, and the hottest months are March and May, with average temperatures of 39° to 40°C.

2.2. Sampling

A total of one hundred and fifty (150) pregnant women attending PHCC Jajere were selected randomly based on their availability and willingness for HIV-1/2 antibody detection in this study.

2.3. Collection of Blood Samples/Plasma Preparation

Blood samples were collected aseptically by venipuncture using 5 ml sterile disposable hypodermic syringes and needles and transfered into anti-coagulated bottles. The samples were allowed to settle, and the plasma obtained were used for the test.

2.4. Determination for Detecting HIV 1/2 Antibodies

The DetermineTM HIV-1/2 in vitro diagnostic kit was used to detect human immunodeficiency virus antibodies (HIV). The test kit (strip) is a fast immuno-chromatographic technique for determining the presence of HIV 1/2 antibodies in human serum or plasma. The experiment was carried out at room temperature. Using a pippete with arrows pointing towards the samples, the plasma samples were dropped onto the test strips. The strips were set aside for 15 minutes. This is to give the reaction time to occur. Positive samples produced a red color band in the test section of the strips as well as another in the control zone, whereas negative samples produced only a color band in the control region.

2.5. Data Analysis

Data from the study were analyzed using SPSS version 20.0. Chi-square to compare significant differences between HIV prevalence. Significance was determined at $P < 0.05$ confidence level.

3. Result

3.1. Percentage of Patients Tested Positive for HIV in PHCC Jajere

Table 1 shows the percentage of pregnant women tested for HIV in PHCC Jajere. The results showed that 1 (0.7%) woman of the 150 tested positive for HIV.

Table 1. *Percentage of Patients Tested positive for HIV in PHCC Jajere.*

No. of Patients tested	No. (%) HIV Positive
150	1 (0.7)

3.2. Age Distribution of Pregnant Women Tested for HIV in PHCC Jajere

Table 2 shows the age group distribution of pregnant women tested for HIV in PHCC Jajere. The results showed that 0 (0.0%) women aged group 10-20 tested positive for HIV, 1 (0.7%) 21-30 were tested positive, 0 (0.0%) 31–40 were tested positive, and 0 (0.0%) of 41–50 were tested positive for HIV.

Table 2 *Age distribution of Pregnant Women Tested positive for HIV in PHCC Jajere.*

Age group	No. of Patients tested	No. (%) positive
11-20	43	0 (0.0)
21-30	60	1 (0.7)
31-40	37	0 (0.0)
41-50	10	0 (0.0)
Total	150	1 (0.7)

Not Significant P>0.05

3.3. Distribution of Pregnant Women Tested Positive for HIV in PHCC Jajere Based on Their Locations

Table 3 shows the distribution of pregnant women who tested positive for HIV in PHCC Jajere based on their locations. The results showed that only 1 (0.7%) pregnant woman from Ganji tested positive for HIV.

Table 3. *Distribution of Pregnant Women Tested positive for HIV in PHCC Jajere based on their Locations.*

Location	No. of Patients tested	No. (%) positive
Babbare	5	0 (0.0)
Banallewa	6	0 (0.0)
Boggaloshi	3	0 (0.0)
Dawaya	2	0 (0.0)
Dugel	2	0 (0.0)
Fawari	10	0 (0.0)
Ganji	18	1 (0.7)
Garga	2	0 (0.0)
Gayaje	3	0 (0.0)
Ibbel	3	0 (0.0)
koki	12	0 (0.0)
Koryel	1	0 (0.0)
Koyelbula	10	0 (0.0)
Lawanti	11	0 (0.0)
Ngabokki	3	0 (0.0)
Ndolkoi	3	0 (0.0)
Sabongari	18	0 (0.0)
Shabewa	3	0 (0.0)
Shod'orkol	2	0 (0.0)
So'ande	3	0 (0.0)
Tsangayar tudu	8	0 (0.0)
Wailare	22	0 (0.0)
Total	150	1 (0.7)

4. Discussion

In Nigeria, heterosexual relationships account for the majority of cases of HIV infection, with females experiencing epidemics at higher rates [15, 16]. In spite of the fact that women in Nigeria do have rights, patriarchal society mandates that such rights be less pronounced than those of men. For instance, if a woman has a daughter first, she is less likely to utilize birth control and more likely to have many pregnancies, brief interpregnancies, and polygamy. Each of these elements makes a woman more susceptible to contracting HIV [17].

Therefore, the Nigerian HIV prevention plan should address these gender variables that make women more susceptible to HIV, encourage service integration, and support HIV programs that are based on scientific evidence. Such programs and services should be gender sensitive and responsive, with gender-related barriers reduced to a minimum.

In this research, 0.7% of pregnant women tested for HIV-1 and HIV-2 were found to be positive. The 0.7% prevalence rate in this research is lower than the 4% rate in similar research carried out in Ajiko Medical Clinic, Damaturu, Nigeria. [18] This could be attributed to the lack of sex workers in the study area since heterosexual relationships account for the majority of the infection. [16]

The low prevalence of HIV in the study area may be attributed to the region's religious and cultural norms, which restrict sex, encourage faithfulness in marriage, and include the ubiquitous practice of male circumcision.

5. Conclusion

Human immunodeficiency virus infection and acquired immunodeficiency syndrome, collectively known as HIV/AIDS, are an ongoing global public health concern. The results of this research showed a low prevalence of HIV-1/2 among pregnant women attending PHCC Jajere, with only 1 (0.7%) of the 150 pregnant women testing positive for HIV. Finally, encouraging HIV testing among pregnant women for HIV 1/2 despite the low prevalence in the study area to ensure everyone knows their HIV status together with efficient linkage to care for newly diagnosed HIV cases is key to mitigating new infections and providing HIV treatment to all.

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