

STATISTICAL ANALYSIS ON REPORTED CASES OF HIV/AIDS (A CASE STUDY OF SPECIAL HOSPITAL, SOKOTO)

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ABSTRACT

The paper examined the reported cases of HIV/AIDS infected patients within the periods of 2007 to 2016 at Specialist Hospital Sokoto (SHS), Sokoto State, Nigeria. The Statistical tools used for the project were Pearson's Product Moment Correlation Coefficient (PMCC), Student's t-test for difference of two independent sample means and Chi-square test for independence. From the analysis it was observed that there is no significant relationship between male and female patients infected with HIV/AIDS. Also, there is no significant difference in the average number of male and female patients infected with HIV/AIDS attending SHS and the X^2 -test shows that HIV/AIDS infection diseases depend on sex (i.e. male and female).

Keywords: HIV/AIDS, Correlation Coefficient, Student's t-test and Chi-square test.

INTRODUCTION

Human Immunodeficiency Virus (HIV), a virus affecting the human body and organs, impairs the immune system and the

body's ability to resist infections, leading to Acquired Immunodeficiency Syndrome (AIDS), a collection of symptoms and infections resulting from

damage to the immune system. Medical confusion and prolonged government indifference to the AIDS epidemic was detrimental to early risk reduction and health education efforts. Since the first recognized and reported death on June 5, 1981, AIDS has killed more than 25 million people, making HIV/AIDS one of the most destructive epidemics in history. The number of new HIV infections per year peaked in the late 1990s, with over 3 million new infections, but the infection rate never plummeted. Although the percentage of people infected with HIV leveled off in 2007, the number of people living with HIV continues to increase. The combination of HIV acquisition and longer survival times creates a continuously growing general population. Treatments to decelerate the virus's progression are available,

but there is no known cure for HIV/ AIDS. Today the AIDS epidemic has become a pandemic disease that is threatening the world population. Meyer (2003) claims that HIV/AIDS which is acclaimed the fourth leading cause of death worldwide is estimated to have claimed 25 million lives since the beginning of the epidemic.

However; Cichocki, (2010) insists that, HIV testing is the first step to take when trying to find out a person's status. Never should one rely on symptoms of HIV to decide whether one is infected. HIV testing is the only way to know for sure. The importance of early diagnosis of HIV cannot be overstated. Decade of HIV and AIDS researchers have proven that the earlier HIV is diagnosed, the better the prognosis and the likelihood of a long and healthy life. Meanwhile, certain risk

behaviors have been associated with high HIV infection rate. These behaviours according to Anochie and Eneh (2001) are either life style related or health care provider risk. The life style related risk behaviours include multiple sexual partners, prostitution, sex with prostitute or casual partners, unprotected sex, intravenous, drug abuse and commercial blood donation among others.

Omoniyi and Tayo (2006) submit that people diagnosed with AIDS may get life threatening disease called opportunistic infection which are caused by microbes such as viruses and bacterial that usually does not make healthy people gradually damage the immune system so that an infected person would be vulnerable to all sorts of diseases and illnesses, which may eventually lead to the

total collapse of the immune system. It is at this point a person is said to be suffering from AIDS. According to an estimate from UNAID'S fact sheet latest statistics on the status of the AIDS epidemic Global HIV statistic 36.7 million (30.8 million-42.9 million) people globally were living with HIV in 2016, 76.1 million (65.2-88.0million) people have become infected with HIV since the start of the epidemic 35.0 million (28.9 million -41.5 million) people have died from AIDS related illness since the start of epidemic as of 2016, 19.5 million (17.2million -20.3 million) people living with HIV were accessing antiretroviral therapy up from 17.1 million (15.1million-17.8million) in 2010, In 2016 around 53% (39-65%) of all people living with HIV had no treatment. Hubley (1995)wrote on the epidemic HIV/AIDS

history/origin, mode of infection and the preventive measure of the disease control by being abstaining from sex outside marriage, blood must be tested for HIV/AIDS, before transfusion to another patient and people should be careful when using any object and it should be sterilized before use, also married women should go for test before given birth and so on.

In 2009, an estimated 1.8 million new HIV infections occurred in Africa (UNAIDS, 2010), accounting for 69 percent of new infections worldwide; in the same year, 370,000 children began their lives with HIV, which is a decrease from the previous year when 390,000 African children were infected through mother-to-child transmission (UNAIDS, 2010; UNAIDS and WHO, 2009). Between December

2008 and December 2009, 961,000 patients in Africa began receiving antiretroviral therapy (ART), bringing the total receiving treatment to 3,911,000, just 36 percent of those in need of treatment in Africa according to the 2010 guidelines of the World Health Organization (WHO) (WHO et al., 2010). In 2009, 1.3 million Africans lost their lives as a result of AIDS (UNAIDS, 2010)

In Nigeria, the prevalence of HIV/AIDS in our community is increasing and in some part of African countries and world at large. Moreover, according to the latest estimate from the UNAIDS report on the global AIDS epidemic, there were 36.7 million people living with HIV in 2016, up from 33.2 million in 2010, the result of continuing new infections. 1.0 million People died of AIDS in 2016, a

48% decrease since its peak in 2005. Deaths have declined due to antiretroviral treatment (ART) scale-up. HIV remains a leading cause of death worldwide and the leading cause of death among women of reproductive age globally. And currently the prevalence of the epidemic is increasing because of lack of proper action in government and individual, also the disease increase become of antiretroviral therapy access to the patient which make no different from the HIV negative people, were by lead to the spread of the disease without knowing who is infected like before. If not only God intervention, AIDS will remain one of the ten leading causes of death globally. (UNAIDS, 2016).

AIM AND OBJECTIVES OF THE STUDY

The general purpose of this research paper is to explore

reported cases of HIV/AIDS infected patients within the periods of 2007 to 2016 at Specialist Hospital Sokoto, Sokoto State.

OBJECTIVES

1. To investigate if there is significant relationship between male and female patients infected with HIV/AIDS attending SHS.
2. To test if there is significant difference in the average number of male and female patients infected with HIV/AIDS attending SHS.
3. To determine whether gender of patients infected with HIV/AIDS attending SHS depend on the period of study.

RESEARCH HYPOTHESES

1. There is no significant relationship between male and female patients infected with HIV/AIDS.
2. There is no significant difference in the average

number of male and female patients infected with HIV/AIDS.

3. Gender of patients infected with the HIV/AIDS disease does not depend on the period of study.

MATERIAL AND METHODS:

The data used in this study was secondary in nature;

collected from the Medical Record Department, Specialist Hospital Sokoto, and covering 2007 to 2016. The Statistical tools used for the project were Pearson's Product Moment Correlation Coefficient (PMCC), Student's t-test for difference of two independent sample means and Chi-square test for independence.

DATA ANALYSIS

Data used in this study were analyzed using the methods explained above as follows:

Analysis 1: Correlation output

Table 1: Descriptive statistics and correlation analysis for male and female HIV/AIDS patients

<i>Patients</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>N</i>	<i>R</i>	<i>df</i>	<i>P-value</i>	<i>Remarks</i>
MALE	22.2	3.676	10	0.064	8	0.86	NS
FEMALE	19.9	4.795	10				

Source: SHS/SPSS 20 version, 2017

Level of significance, $\alpha=0.05$

NS=Not significant

By inspection, Table 1 above shows the number (N) of male and female and their mean 22.20 and 19.90 along

with standard deviation 3.68 and 4.79 respectively. At 0.05 level of significance, the result

implies that there is no significant relationship between male and female patients infected with HIV/AIDS with $r(8)=0.064$; $p>0.05$, hence, the null hypothesis is rejected.

Therefore, this result indicates that male and female HIV/AIDS patients attending SHS in the periods of 2007 to 2016 were independently infected with the disease.

Analysis 2: Student's t-test

Table 2: Descriptive statistics and Student's t-test for male and female HIV/AIDS patients

Gender	N	Mean	Standard Deviation	df	T	P-value	Remarks
Male	10	22.20	3.676	18	1.204	0.244	NS
Female	10	19.90	4.795				

Source: SHS/SPSS 20 version, 2017

Level of significance, $\alpha=0.05$

NS=Not significant

Table 2 above gives the number (N) of male and female, their mean 22.20 and 19.90 along with standard deviation 3.676 and 4.795 respectively. At 0.05 level of significance, the result shows that there is no significant difference in the average number of male and female patients

infected with HIV/AIDS attending SHS with $t(18)=1.204$; $p>0.05$, hence, the hypothesis is accepted. Now, at average, this suggests that male and female HIV/AIDS infected patients were equal attending SHS within the period of 2007 to 2016.

Analysis 3: Chi-square test

Table 3: Chi-square test for independence of HIV/AIDS patients' gender versus period (years)

Year	Gender				Total		Chi-Square	df	P-value	Remarks
	Male		Female		Count	% of Total				
	Count	% of Total	Count	% of Total						
2007	19	4.5%	14	3.3%	33	7.8%	7.334	9	0.602	NS
2008	19	4.5%	19	4.5%	38	9.0%				
2009	15	3.6%	19	4.5%	34	8.1%				
2010	22	5.2%	18	4.3%	40	9.5%				
2011	24	5.7%	28	6.7%	52	12.4%				
2012	22	5.2%	28	6.7%	50	11.9%				
2013	27	6.4%	18	4.3%	45	10.7%				
2014	25	5.9%	18	4.3%	43	10.2%				
2015	26	6.2%	15	3.6%	41	9.7%				
2016	23	5.5%	22	5.2%	45	10.7%				
Total	222	52.7%	199	47.3%	421	100.0%				

Source: SHS/SPSS 20 version, 2017

Level of significance, $\alpha=0.05$

NS=Not significant

Looking at Table 3 above, the actual number (count) of male and female HIV/AIDS infected patients are displayed along with their corresponding percent. At 0.05 level of significant, the result indicates that gender of patients infected with the and prevalence of HIV/AIDS disease between male and female does not

HIV/AIDS disease does not depend on the period of study with Pearson chi-square ($\chi^2(9)) = 7.334$; $p > 0.05$, hence, the hypothesis is accept. Therefore, this implies that incidence

depend on the period of study (2007 to 2016), which means the disease can

affect humanity at any given time irrespective of gender.

CONCLUSION

By inspection, Table 1 above shows the number (N) of male and female and their mean 22.20 and 19.90 along with standard deviation 3.68 and 4.79 respectively. At 0.05 level of significance, the result implies that there is no significant relationship between male and female patients infected with HIV/AIDS with $r(8)=0.064$; $p>0.05$, hence, the null hypothesis is rejected. Therefore, this result indicates that male and female HIV/AIDS patients attending SHS in the periods of 2007 to 2016 were independently infected with the disease.

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and 4.795 respectively. At 0.05 level of significance, the result shows that there is no significant difference in the average number of male and female patients infected with HIV/AIDS attending SHS with $t(18)=1.204$; $p>0.05$, hence, the hypothesis is accepted. Now, at average, this suggests that male and female HIV/AIDS infected patients were equal attending SHS within the period of 2007 to 2016.

Looking at Table 3 above, the actual number (count) of male and female HIV/AIDS infected patients are displayed along with their corresponding percent. At 0.05 level of significant, the result indicates that gender of patients infected with the HIV/AIDS disease does not depend on the period of study with Pearson chi-square ($\chi^2(9))=7.334$; $p>0.05$, hence, the

hypothesis is accept. Therefore, this implies that incidence and prevalence of HIV/AIDS disease between male and female does not depend on the period of study (2007 to 2016), which means the disease can affect humanity at any given time irrespective of gender.

Based on the analysis carrying out with the available data and the years from 2007-2016 under consideration, it was discovered that there exist weak positive relationship between male and female HIV/AIDS infected patients in Specialist Hospital Sokoto, and also the student t-test shows that there is no significant difference between the two mean of male and female HIV/AIDS infected patients. Finally, to that of X^2 -test show that HIV/AIDS infection diseases depend on sex (i.e.

male and female), the external of association was found to be 13.2% therefore, from the contingency table of Appendix IV the highest number is 28 and lowest number is 14 was found to be in 2012 and 2007 respectively in correspondence with female HIV/AIDS patients.

RECOMMENDATION

1. Government and non-governmental organization should put more effort enlightening and educating people in public places, schools (from nursery-tertiary institution).
2. Both government (at local government, state and Federal) and private hospitals in Nigeria, in collaboration with World Health Organization should take proper action in providing necessary equipment and facility for HIV/AIDS test and drugs for HIV/AIDS patients to

reduce or minimize infection and increase life expectancy of those people living with HIV/AIDS.

3. Perhaps condom promotion and supply needs to be increased, and the appropriate sexual health education needs to be provided to young people before they reach an age where they become sexually active.

4. Support and care needs to be provided for those children who are already been orphaned by AIDS, so they that they can grow up safely, without experiencing poverty, exploitation, and themselves falling prey of HIV.

5. Total abstinence from sex unless with your right partner (wife).

6. Avoid use of sterilized sharp object like blades, knives, needles/ syringe, shaving, barbing instruments by more than one person.

7. Intending couples are also advised to do HIV/AIDS test before marriage.

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APPENDIX: 1: Table of HIV/AIDS positive patients from 2007-2016

YEAR	MALE	FEMALE	TOTAL
2007	19	14	33
2008	19	19	38
2009	15	19	34
2010	22	18	40
2011	24	28	52
2012	22	28	50
2013	27	18	45
2014	25	18	43
2015	26	15	41
2016	23	22	45
Total	222	199	421

Source: Medical Record Department, Specialist Hospital Sokoto, Sokoto State, 2017

Reference to this paper should be made as follows: Ibrahim Abubakar Zarumi et al., (2018), Statistical Analysis on Reported Cases of HIV/AIDS (A Case Study of Special Hospital, Sokoto). *J. of Medical and Applied Biosciences*, Vol. 10, No. 1, Pp. 1-13
