Research Journal of Biological Sciences 5 (4): 304-309, 2010
ISSN: 1815-8846

Incidence Cases of HIV/AIDS Infection in Owerri West Local Government Area of Imo State, Nigeria

[1]B.C. Ijioma, [2]I.G. Kalu, [1]C.U. Nwachukwu and [3]I.G. Nwachukwu
[1]Department of Biology, Alvan Ikoku Federal College of Education,
[2]Department of Biotechnology, Federal University of Technology,
[3]Department of Accountancy Alvan Ikoku, Federal College of Education, Oweeri, Imo State, Nigeria

Abstract: A study was conducted to determine the incidence cases of HIV/AIDS infection in Owerri West L.G.A. of Imo State, Nigeria, between Apirl 2007 and September, 2009. Data was collected from the HIV/AIDS co-ordination and control unit, Owerri General Hospital Umuguma, Owerri West Local Government Area of Imo State, Nigeria. It was observed that a total number of 17964 patients made up of 1110 (16.3%) females and 6954 (38.7%) males were diagonized on HIV/AIDS infection statistical analysis shows that only 1462 (8.1%) patients were infected with HIV/AIDS. From this number, 1218 (83.3%) patients aged 25 years and above were most infected with HIV/AIDS while 244 (16.7%) patients aged below 24 years were also infected. The incidence rate of HIV/AIDS infection was moderate at 8.1 while annual increase in HIV/AIDS infection was not statistically significant at $p<0.05$.

Key words: Human Immune-deficiency Virus (HIV), Acquired Immune Deficiency Syndrome (AIDS), patient transmission, Owerri west local government area

INTRODUCTION

Human Immune-deficiency Virus (HIV) is a virus which causes Acquired Immune-deficiency Syndrome (AIDS). This virus infects the cells that make up the human body and replicate themselves within those cells. In order to make new copies of itself, it must infect the cells of a living organism (Nielson *et al*., 2005). When gets into the human body system several billions of HIV particle copies are produced every day and circulate in the blood.

The replication of viral copies is associated with a decline in the number of CD4 cells which find and kill virus fairly quickly in the blood, increase the rate of Apoptosis in infected cells and killing of infected CD_4^+ cells by CD8 cytotoxic that recognizes infected cells. This will make the immune system not to function adequately and it is considered suppressed. Patients who have this CD4 count fewer than 200 cells per mm^3 and are referred to as being immune suppressed. A low CD4 cell count signals that the person is at risk for one of the many usual infections that occur in individuals who are immune suppressed.

If untreated eventually, most HIV infected individuals develop AIDS (Buchbinder *et al*., 1994). Acquired Immunodeficiency Syndrome (AIDS) is a set of symptoms and infections resulting from the damage to human immune system. The major consequence of this is such a progressive effective reduction of the immune system and leaves the individual prone to opportunistic infections.

Human Immun-deficiency Virus (HIV) infection is contracted through transfusion of infected blood to an un-infected person and sexual fluids of an infected person such as semen, vaginal fluid, breast milk etc. The major routes of transmission include unprotected sexual intercourse with an infected person, mother to child transmission during pregnancy delivery and breast feeding. Others include the use of contaminated hypodermic needles and syringes. To this end, it is important to note that there is still no cure for HIV/AIDS but treatment for people living with HIV/AIDS has improved enormously.

Major routes for HIV/AIDS transmission: HIV spreads from person to person through body fluids, mainly semen, blood, vaginal secretions and saliva, infection requires direct contact between the body fluids as when semen of infected person contacts a cut of sore (from another sexually transmitted disease) in the vagina, mouth, rectum of another person.

The mode of transmission remains the same virtually in every human society but significantly differs in rate. The various means of transmission include:

Corresponding Author: B.C. Ijioma, Department of Biology, Alvan Ikoku Federal College of Education, Owerri, Imo State, Nigeria

Sexual route: The majority of HIV infections are acquired through unprotected sexual relation. Sexual transmission of HIV has been described from men to men, men to women, women to women, through vaginal and oral sex, etc.

Blood or blood product route: The spread of HIV by exposure to infected blood usually results from sharing of contaminated hypodermic needles and syringes used for illicit drugs. HIV can also be spread by sharing of needles for anabolic steroids to increase muscles, tattooing and body piercing. Many individuals also acquire HIV infection from blood transfusion or blood product such haemophilias within 2-6 weeks of an exposure, the majority of infected persons will have a positive HIV antibody test with virtually all being positive by 6 months.

The test used most commonly for diagnosing infection with HIV is referred to as Enzymes Links Immunosorbent Assay (ELISA).

Mother To Child Transmission (MTCT): One of the greatest advances in HIV disease management has been in pregnant women. Prior to antiretroviral therapy, the risk of HIV transmission from an infected mother to her unborn was approximately 25-35%. The first major advances in this area came with studies given ZDV after the first trimester of pregnancy. Then intravenously during the delivery process and then after delivery to the new born for 6 weeks (Coovadia, 2004).

This treatment showed a reduction in the risk of transmission to >10%. Although, less data are available with more potent drug combinations, clinical experiences suggests that the risk of transmission may be reduced <5%, current recommendations are to advice HIV infected pregnant women regarding both the unknown side effects of antiretroviral therapy remains controversial and avoiding certain drugs that may cause greater concern for fetal toxicity such as EFV.

There is little advancement that HIV can be transferred by casual exposure as might occur in house hold setting unless there are open sores or blood in the mouth. Kissing is generally considered not to be a risk factor for transmitting HIV.

This is because saliva in contrast to genital secretions has been shown to certain very little HIV. These items should not be shared with infected person. With sexual exposure or direct contact with blood, there is little if any risk of HIV contagion in the study place or classroom (Coovadia, 2004). A panel of experts convened by WHO and the UNADS secretariat has recognized as an additional, important intervention to reduce the risk of heterosexually acquired HIV infection in men (WHO, 2006).

South African medical experts are concerned that the repeated use of unsterilized blades in the circumcision of adolescent male individuals may be spreading HIV.

Factors contributing to the spread of HIV

Lack of sexual health information and education: Before recent times, there was little or no sex education for young people and this has been a major barrier to reducing rates of HIV and other Sexually Transmitted Disease (STD's). In Nigerian tradition, sex is a private subject and discussion about it with teenagers is often seen inappropriate.

Only 18% of women and 21% of men between the ages of 15-25 correctly identify how to prevent HIV (UNAIDS, 2001). Lack of accurate information about sexual health has left many people in doubt and misconception about sex. This encourages increasing transmission rate as well as stigma and discrimination towards people living with HIV/AIDS.

The most serious problem is the lack of sensitization on how to use condom among some people, though some men often wear double condom during sexual intercourse with a view to having double protection but on the contrary doubles the chance of contracting HIV.

Poor health care system: In the last two decades, Nigerian health care system is deteriorated as a result of political instability, economic mismanagement and poor technology. Some parts of the county even lacked basic health care provision, making it difficult to establish HIV testing and prevention services such as those for prevention of mother to child transmission. Sexual health clinics providing contraception, testing and treatment for other STD's are few. This makes it very difficult to keep the spread of the epidemic under control (Johnson *et al*., 2003).

HIV testing: One of the major problems of HIV eradication in Nigeria remains that majority of people have not been tested. People find it very difficult to go for HIV test even when it is made free of charge.

In 2003 survey, only 6% of women and 14% of men had ever been tested for HIV and received results while in 2005 only 1% of pregnant women were being tested for HIV (UNAIDS, 2001).

Cultural practices: It has been observed that women are particularly affected by the epidemic in Nigeria. In 2006,

UNAIDS estimated that women account for 61.5% of all adults aged 15 and above living with HIV. The study also revealed that the younger married girls lacked knowledge on reproductive health which include HIV/AIDS.

They also tend to lack the power and education needed to insist upon the use of condom during sexual intercourse. Probably, only two out of every ten sexually active female individuals have seen the female condom and this may be on their attendance to HIV seminars.

This situation is coupled with the fact that at times, the husband may be significantly older than the wife and therefore is more likely to have had more sex in the past. Young women are more vulnerable to HIV infection within marriage.

Prevention of HIV/AIDS

Use of condom: Restriction in condom promotion have hampered HIV prevention efforts. The female condom can potentially help in reducing the spread of HIV. Advertising Practitioners Council of Nigeria (APCON) for promoting marriages suggested that it is acceptable to engage in pre-marital sex provided condom is used.

Sex education: Sex education provides information, knowledge and confidence. It has been observed that well informed children on male and female anatomy handle puberty better than the uninformed ones.

Sex education affects a child's attitude positively. Each sex (male and female) becomes more tolerant of the others behavioural pattern and opinion. A sexually oriented child learn to believe in the quality and parental responsibilities.

Media campaigns and public awareness: Media campaign to raise awareness of people in different regions. Radio and television campaign like one created by the society for family health are though to have been successful in increasing knowledge and changing behaviour.

Treatments: Current treatments of HIV infection consist of Highly Active Antiretroviral Therapy (HAART) which has been beneficial to many HIV infected individuals. There is no vaccine for the cure of HIV or AIDS the only safe method known prevention is abstinence. There is no evidence that people infected with HIV can be cured by the currently available therapies. Individuals who are treated for up to three years and are repeated tested to have no virus in their blood experience a prompt rebound increase in number of viral particles when therapy is discontinued (UNAIDS, 2001). The decision to start therapy must balance the risk of an individual advancing to the stage of symptomic disease against the dangers associated with the therapy. These risks include depression, feelings of isolation and substance abuse which is a reason that resistance develops as the patient's failure to correctly follow the prescribed treatment by not taking the medication at the current time.

High Active Antiretroviral Therapy (HAART) combination consists of at least three drugs which belong to two classes are nucleoside analogue to reverse transcriptase inhibitor or a Non-Nucleoside Reverse Transcriptase Inhibitor (NNRTI).

For the purpose of this study, the following research questions were formulated to guide this research study.

Research question 1: What is the total number each of male and female patients diagnosed?

Research question 2: Which age bracket of patients is more infected with HIV/AIDS?

Research question 3: What is the incidence rate of HIV/AID infection as at the time of study:

Ho = there is no significant annual increase in HIV/AIDS infection between April 2007 and September 2009 ($p<0.05$).

MATERIALS AND METHODS

A study was carried out at the Owerri General Hospital Umuguma in Owerri west LGA of Imo state, Nigeria. The subject of the study include all the male and female patients within the ages of 0-24 and 25 years and above who went for HIV/AIDS diagnosis between April 2007 and September 2009 while the population of the study include all the human inhabitants of Owerri west LGA with an estimated population of 120,000 in the last national census conducted in 2006. A total subject size of (males and females) of 17,964 were diagnosed between April 2007 and September 2009 while only 1,462 (8.1%) were found to be HIV/AIDS positive data was collected via a prior permission from the HIV/AIDS co-ordination and control unit, Imo state ministry of health Owerri and was extracted from the documented result sheets from the HIV/AIDS co-ordination and control unit Owerri General Hospital Umuguma. In addition, the researchers made direct observations and copied the required data into a proforma. Table 1, 2 and 3 show the prevalence of HIV/AIDS infection in the area as at 2007, 2008 and 2009, respectively. Research question 1 was answered using Table 4. Question 2 and 3 were

Table 1: Prevalence of HIV/AIDS infection in 2007

	0-24 years		25 years and above			
Months	No. of examined	No. of infected (%)	No. of examined	No. of infected (%)	Total no. examined	Total no. infected (%)
April	7	2 (28.60)	4	3 (75.00)	11	5 (45.5)
May	73	2 (2.70)	283	15 (5.30)	356	17 (4.8)
June	71	4 (5.60)	259	9 (3.50)	330	13 (3.9)
July	52	5 (9.60)	264	20 (7.60)	316	25 (7.9)
August	71	4 (5.60)	193	22 (11.40)	264	26 (9.8)
September	81	5 (6.12)	187	18 (9.60)	268	23 (8.6)
October	69	1 (1.50)	164	15 (9.14)	233	16 (6.9)
November	95	11 (11.68)	238	20 (8.40)	333	31 (9.3)
December	149	3 (2.00)	465	32 (6.90)	614	25 (4.1)
Total	668	37 (5.60)	2057	154 (7.50)	2,725	191 (7.0)

Table 2: Prevalence of HIV/AIDS infection in 2008

	0-24 years		25 years and above			
Months	No. examined	No. infected (%)	No. of examined	No. of infected (%)	Total no. examined	Total no. infected (%)
January	59	2 (3.4)	282	10 (3.5)	341	12 (3.5)
February	169	4 (2.4)	502	27 (5.4)	671	31 (4.6)
March	113	3 (2.7)	552	31 (5.6)	665	34 (5.1)
April	103	6 (5.8)	422	31 (7.3)	525	37 (7.0)
May	110	4 (3.6)	479	48 (10.0)	589	52 (8.8)
June	192	8 (4.2)	546	53 (9.7)	738	61 (8.3)
July	164	14 (8.5)	544	60 (11.0)	708	74 (10.5)
August	217	11 (5.1)	762	66 (8.7)	979	77 (7.9)
September	157	6 (3.8)	684	59 (8.6)	841	65 (7.7)
October	245	21 (8.6)	647	54 (8.3)	892	75 (43.4)
December	63	11 (17.5)	711	41 (5.8)	774	52 (6.7)
Total	1791	100 (5.6)	6642	565 (8.5)	8,433	665 (7.9)

Table 3: Prevalence of HIV/AIDS infection in 2009

	0-24 years		25 years and above			
Months	No. of examined	No. of infected (%)	No. of examined	No. of infected (%)	Total no. examined	Total no. infected (%)
January	183	11 (6.0)	527	56 (10.6)	710	67 (9.4)
February	169	11 (6.5)	730	63 (8.6)	899	74 (8.2)
March	152	10 (6.6)	738	76 (10.3)	890	86 (9.7)
April	175	8 (4.6)	705	55 (7.8)	880	63 (7.2)
May	40	11 (27.5)	142	14 (9.9)	182	25 (13.7)
June	182	18 (9.9)	660	69 (10.5)	842	87 (10.3)
July	161	10 (6.2)	494	51 (10.3)	655	61 (9.3)
August	180	14 (7.80	691	63 (9.1)	871	77 (8.8)
September	207	14 (6.8)	670	52 (7.8)	877	66 (7.5)
Total	1,449	107 (7.40)	5,357	499 (9.3)	9,806	606 (8.9)

Table 4: Sex related rate of diagnosis

Years	Male	Female	Total
2007	814 (29.9)	1911 (70.1)	2725
2008	3265 (38.7)	5168 (61.3)	8433
2009	2875 (42.2)	3931 (57.8)	6806
Total	6954 (38.7)	11,010 (61.3)	17,964

Table 5: Shows an overall prevalence rate of HIV/AIDS infection in Owerri west LGA from April 2007 to Sept, 2009

Years	Grand total exam	Grand total infected	Proportion infected	p^1-p^2	0-24 years g t^{-1} infected	25-Ab G/T infected
2007	2725	191 (7.00)	0.0262	0.07000	37 (19.4)	154 (80.6)
2008	8433	665 (7.90)	0.0258	0.00788	100 (15.0)	56 (85.0)
2009	6806	6060 (8.9)	0.0214	0.09300	107 (17.7)	499 (82.3)
Total	17,964	1462 (8.1)	0.0734	0.24180	244 (16.7)	1218 (83.3)

Key; G /T = Grand total

answered using Table 5, question 3 was answered by calculating the sum of all percentage proportions, divided by mean value (n = 3). The null hypothesis was tested using Chi-square test of independence at ($p<0.05$) level of significance.

RESULTS

Table 1, 2 and 3 show the prevalence of HIV/AIDS infection in Owerri west L.G.A in 2007, 2008 and 2009 in Owerri general hospital Umuguma.

Answering research question 1: What is the total number of each male and female patients diagnosed within the period of study? From the Table 1 out of 17,964 subjects who went for HIV/AIDS diagnosis between April 2007 and September 2009, 11,010 subjects were female while only 6954 were males. Therefore, a greater number of males subjects went for HIV/AIDS diagnosis within the period of study.

Answering research question 2: Which age bracket of patients are more infected with HIV/AIDS diagnosis within the period of study? Table 5 shows that out of a total of 17964 subjects who were examined on HIV/AIDS infections between April 2007 and September 2009, 1218 (8.7%) patients aged 25 years and above were infected with HIV/AIDS while only a total subject number of 244 whose ages were <24 years were infected. Therefore high rate of infection were observed among patients between 25 years and above.

Answering research question 3: What is the incidence rate of HIV/AIDS infection as at the time of study? From Table 5:

- Incidence rate = 7.00+7. 88+9.30 = 0.2418:
  :. 0.2418x100 = 24.18
  i.e., mean of percentages; n = 3
  :. 7.00+7.88+9.30/N = 24.18/ 3 = 8.06%

Testing null hypothesis: There is no significant annual increase in HIV/AIDS infection between April 2007 and September 2009 ($p<0.05$) (Table 5).

Proportion positive = p+ = N+/ G/T = 0.2418

Where:

N+ = Number infected

GT+ = Grand total infected

$$:. Q = 1-P$$

where, q = p complement (p^1):

$$P+ = P_1 + P_2 + P_3 = 0.2418$$

$$Q = 1- P+ = 1- 0.2418 = 0.7582$$

$$Pq = 0.1833$$

$$X^2 \text{ cal.} = 1/Pq \sum (P^1 P+)^2$$

$$X^2 \text{ tab.} = X^2 (5.4,0.05) = 4.2142$$

$$X^2 \text{ cal.} < X^2 \text{ tab}$$

Therefore, the null hypothesis is accepted thus: There is no significant annual increase in HIV/AIDS infection among the inhabitants of Owerri West LGA with time.

DISCUSSION

Data obtained from Owerri General Hospital Umuguma in Owerri West LGA. Cover only a period of 36 months that is between April 2007 and September 2009.

Out of a total number of 17,964 subjects examined on HIV/AIDS infection within this period, only 1,462 (8.1%) subjects were found to be infected with HIV/AIDS (Table 5). Females were more diagnosed than males with a total of 11010 and 6,954 subjects, respectively and are likely to be more infected with HIV/AIDS two. On the contrary, in 2003 survey only, 6% of females and 14% of males had ever been tested and received result and 1% of pregnant women were being tested in 2005. Higher percentage diagnosis among females could attribute to the fact that certain deviation from normal body physiology such as unset and breech in menstruation as well as attainment to menopause may attract fear that may lead to quick diagnosis response.

Irrespective of the fact that one of the major problems militating against HIV/AIDS eradication is that many have not been tested, yet women accounts for 61.5% of all adult aged 15 and above living with HIV/AIDS (UNAIDS, 2001). High rate of infections among females may be due to the fact that body is prone to infections during pregnancy and eostrous cycle.

Subjects aged 25 years and above were more infected with HIV/AIDS than subjects aged <24 years. This could be due to some surrounded higher institutions such as FUTO, FEDPONEK, IMOPOLY as well as Army barracks which have left the environment in semi urban status resulting to high influx of people into the area.

The settling of herdsmen who might not be living with the spouse may in no small measure contribute to having multiple sex partner which undoubtedly results to high rate of HIV/AIDS infection among the inhabitants.

Incidence rate is moderate at 8.06% compared to that of the state level at 8.0% increase in HIV/AIDS infection between April 2007 and September 2009 was not statistically significant at $X^2 = 4.2$, $p = 5.4$ ($p<0.05$).

This could be as a result of increased in sensitized and awareness campaign including sex education on the control and management of HIV/AIDS infection. The recent inclusion of HIV/AIDS education into the NCE curriculum may also have contributed to an extent.

CONCLUSION

From the analysis, it was evident that the prevalence of HIV/AIDS infection is still on the vast side. People are yet to know their HIV status despite the fact that awareness of HIV/AIDS epidemic had been made and diagnosis in Owerri General Hospital is free. The researchers therefore recommend that a follow up where people can learn more on HIV/AIDS and its impacts on their community get tested, receive medical care and know the importance of HIV counseling be established.

REFERENCES

Buchbinder, S.P. M.H. Kitz, N.A. Hessol, P.M. O'Malley and S.D. Holmberg, 1994. L ong term HIV-I infection without immunologic progression. AIDS., 8: 1123-1128.

Coovadia, H., 2004. Antiretroviral agents-how best to protect infats from HIV and save mothers from AIDS. N. Engl. J. Med., 351: 287-292.

Johnson, B.T. M.P. Carey, K.L. Marsh, K.D. Levin and L.A. Scott-Sheldon, 2003. Intervention to reduce sexual risk for human immunodeficiency virus in adolescent, 1985–2000. Arch. Pediatr. Adolesc. Med., 157: 381-388.

Nielson, M.H., F.S. Pedersen and J. Kjems, 2005. Molecular strategies to inhibit HIV-I replication. Retrovirol., 2: 10-10.

UNAIDS, 2001. Special Session of the General Assembly on HIV/AIDS Round table 3 Socio-economic impact of the epidemic and the strengthening of national capacities to combat HIV/AIDS. http://data.unaids.org/Publications/External-Documents/gas26-rt3_en.pdf.

WHO, 2006. WHO case definitions of HIV for surveillance and revised clinical staging and immunological classification. http://www.who.int/hiv/pub/guidelines/hivstaging/en/index.html.