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Variability Analysis of HIV/AIDS Infection among Nigerian Students

R, O. Abdul-kareem[1] T. O. Adeyemi[2]
1.Department of English, AL-Hikmah University, Ilorin, Nigeria
2.Department of Statistics, Auchi Polytechnic, Auchi, Nigeria

Abstract
HIV/AIDS virus infection and its prevention are of increasing concern to individuals, humanitarian institutions and governments. United Nations report on population fund (see Pop line, January-February 2004) revealed that nearly half of the infected adults were women and three fifth of all people affected were from Sub Saharan Africa. In some areas of Sub Saharan Africa, it was reported that 25% of work force were HIV/AIDS infection positive. HIV/AIDS infection positive definiteness of 15% was then valued to be equivalence of 1% drop in Gross Domestic Product of the affected nation states. Vast majority of those affected by the virus often had no access then to proven life saving antiretroviral therapy. With aim of alleviating suffering, WHO and UNAIDS 1999 decided to make treatment available to three million people in 2005 and to step down costs of drugs. Noting that HIV/AIDS virus is most sexually transmitted, this paper is of opinion that availability of up to date reproductive and sexual health information and services is required to provide basis for prevention of virus infection It is aimed to carry out a survey on the current state of infection among Nigerian students and to provide demographic analysis of relevant models. Analysis carried out on 822 effective responses yielded such models as infection trend forecast tool.
Keywords: pre test data analysis, variability analysis, trends estimation, infection indicator and ratios.

Introduction

Incidence of acquired immune deficiency syndrome (AIDS) has given rise to unfortunate social crises limiting human interrelation conduct (see Asuzu 1994, Adeyemi 2003). Health researchers and professionals have concentrated efforts on precaution steps to protect against HIV/AIDS virus infection. Behavioral precautionary measures had appeared to be weak and inefficient for preventing new infections. It had been established that un protected sex relation is a major fuel for infection spread. There had been low percentage of those who were aware of other modes of virus transmission. Consistent use of Condom was reported to be 22(19.8%) out of 120(26.7%) of sexually active students (see Araoye et al 1996, Ankrah 1996, Ankomah 1998). Another observation of 380 students from five Faculties in a Nigerian University were revealed to be partially knowledgeable of identification of symptoms virus infection and modes of virus transmission (see Oladepo and Brieger 1994, Akande and Ross 1994, Anarfi 1997). It was reported 76.8% of adolescent girls, in six selected Nigerian Secondary Schools, were aware of use of Condom as preventive, while 25.3% of the girls were already in consistent use of Condom (Adeyemi 2003). It is required to carry out new survey on issue at stake to obtain up to date information.

Summary of Opinion Sampling

A demographic survey was carried out at three different institutions in Ilorin City, Nigeria in September to October, 2012 with structurally designed questionnaire for data collection on seven factors. The objective was to gather information and pretest data from agency for control of AIDS (UNAIDS 1999) for further studies. 822, consisting of 401 males and 421 female, out of 900 undergraduate students contacted at University of Ilorin, College of Education, Ilorin and Kwara State Polytechnic, Ilorin, Nigeria, completed questionnaire. Responses from the questionnaire were later collated and analyzed factor by factor (see table 1).

Table 1: Students responses by seven selected factors

Selected Factor	Number of Students out of 822 n
-Age (year)	
<16	002(00.2)
16-18	027(03.3)
19-21	135(16.4)
22-24	322(39.2)
25-27	206(25.1)
28-	130(15.8)
-Education attained	
IJMB O' Level	020(02.4)
IJMB A' Level	029(03.6)
NCE	156(19.0)
ND	094(11.4)
HND	079(09.6)
Degree	420(51.1)
Others	022(02.7)
Non-response	002(00.2)
-Having access to Information	
Yes	174(21.2)
No	532(64.7)
Not sure	100(12.2)
Non-response	016(01.9)
-Familiar media of transmission	
Sex	082(10.0)
Unprotected sex	276(33.6)
Blood transfusion	186(22.6)
Sharing infected razor	018(02.2)
Infected pregnant woman	006(00.7)
All of above	254(30.9)
-Familiar method of prevention	
Abstinence from sex	101(12.3)
Use of protection	204(24.8)
Sticking to only one partner	087(10.6)
Avoid contact with infected Blood	222(27.0)
All of above	171(20.8)
Others	037(04.5)
-Familiar source of information	
Chemists	155(18.9)
Hospitals	256(31.1)
Public places	304(37.0)
Newspapers/magazines	063(07.6)
Others	003(00.4)
Non-response	041(05.0)
-Use of Condom for prevention	
Yes	516(62.8)
No	111(13.5)
Not sure	191(23.2)
Non-response	004(00.5)

The age range of majority (64.3%) of students involved was 22-27 years. Slightly more than half (51.1%) were on degree course, while the non-response residual was (02.7%) of the women. Those of the women having good knowledge of virus infection and protection against it constituted 33% of women, while 25.7% of them were of opinion that the virus is transmitted through unprotected sex, blood transfusion, sharing infected razor blade and having contact with infected pregnant women. 37.0% of the women were informed of the virus at public places and 31.0% were informed at hospital clinics. 62.8% of the women preferred to use Condom as preventive, while 13.3% preferred other means. While 59.0% of the women believed that infection was curable, slightly over 25.4% of them

were of other opinion.

Analysis of Variable Models
There are three basic questions asked on HIV/AIDS virus infection, relating to means of sub frequencies

Y1: How does one gets infected by HIV/AIDS virus?
Y2: How can HIV/AIDS virus infection be prevented?
Y3: Where is information on HIV/AIDS virus infection?

Yk, k= 1, 2, 3 corresponds to factors 4, 5, 6 in table 1. Let Yki, i= 1 … 6 be sub frequency of responses on ith sub factor. Then mean of all sub frequencies

$Yk= (\sum Yki)/6$, k= 1 … 3, i= 1 … 6 …1

Corresponding variance is

$SSk^2= (\sum(Yk-Yki)^2/6$ …2

Denote proneness to infection by

Vp= SS1+k(SS3-SS1), …3

Then likely in prone ratio

$Pp= Vp/(Y1^2+Y3^2)$ …4

Corresponding likely infection free ratio

Pf= 1-Pp …5

Given sample size Ns= 822, expected number of women free of infection

Nf= Ns*Pf …6

Correspondingly, expected number of women prone to infection

Np= Ns*Pp …7

It is meaningful that expected trend error

Er= Ns*(Pp+Pf-1) …8

Application of Results
Summary of calculated figures for infection free and prone students is given in table 2.

Table 2: Calculated values for infection

Time t	Factor k	No free of infection Nf		No free of infection Np		Trend error Er	
		Male	Female	Male	Female	Male	Female
2012	1	240.6	252.6	240.6	252.6	080.2	084.2
	2	320.8	336.8	240.6	252.6	160.4	168.4
	3	401.0	421.0	240.6	252.6	2406	252.6

Constancy of value of Np is an indication that infection was being checked. The prospect of being free is increasingly promising. Nf and Er are similarly increasing.

Conclusion
Outcome of studies supports the opinion that the on going health care programmes are been effective. The male to female infection free/prone ratio is almost 1: 1. It has been established that some Nigerians are HIV/AIDS infection positive, though suffering is being increasingly alleviated. Up to date demographic data is required for error free calculations. It is recommended that governments and stake holders should intensify effort on sponsorship of health care enlightenment programmes and support materials.

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