Sierra Leone Journal of Biomedical Research

(A publication of the College of Medicine and Allied Health Sciences, University of Sierra Leone)

©Sierra Leone Journal of Biomedical Research **SSN 2076-6270 (Print)**

Vol.8(1), pp. 19-25, August 2016 Edition **ISSN 2219-3170 (Online)**

http://dx.doi.org/10.4314/sljbr.v8i1.4

Original Article

EVALUATING THE EFFECTS OF HEALTH EDUCATION ON ADOLESCENTS' KNOWLEDGE AND PERCEPTION OF RISK TO HIV/AIDS IN SOUTHWESTERN NIGERIA

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ABSTRACT

Introduction: Adolescents constitute a sizeable proportion of new HIV infections. Their reported poor risk perception to HIV/AIDs calls for a more formidable way of reaching them with HIV prevention messages. This study evaluated the effects of peer-led health education on secondary school adolescents' perception and knowledge of risk to HIV/AIDs in urban slum communities of Osun state.

Methods: Descriptive cross-sectional study of the pre and post-test type was carried out among intervention and control groups of 700 secondary students each, selected using multi-staged sampling method. The intervention group had a six months' peer-led health education sessions. Research instruments were semi-structured self-administered pre-tested questionnaires. Data was analysed using the SPSS software version 17.0

Results: Two hundred and ninety-six (84.6%) and 283(80.9%) of respondents were aware of HIV/AIDs in the pretest of intervention and control groups respectively. An increase of 12.0% and 1.7% in awareness was recorded among intervention and control group respectively during post-test. With a high-risk knowledge but poor risk perception scores reported among both groups during pretest, there was an increase of 7.4% in risk perception scores among intervention and 3.2% among control group during post-test. Higher education classes and male gender were predictors of good risk knowledge and good risk perception respectively.

Conclusion: Adolescents under study had high awareness, high-risk knowledge but poor self-risk perception towards HIV/AIDs. Peer-led health education significantly increased risk knowledge and perception among study group than the control group.

KEYWORDS: Risk knowledge and perception, peer-led health education, HIV/AIDs, Osun State

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INTRODUCTION

Young people are at the centre of the global HIV/AIDS epidemic. In Nigeria as in many other countries of the world, the occurrence of new infections is high among the age group 15-24 years (NDHS, 2013). Studies have attributed this pattern to their high-risk sexual behaviours despite good awareness but poor in-depth knowledge about sexual health risks and low self-risk perception towards HIV/AIDs (Oljira, Berhane, and Worku, 2012; Visser, 2007; Eaton, Flisher, and Aaro, 2003). In developing countries, approximately 60% of new HIV infections occur among young people between 15 and 24 years (McCauley and Salter, 2006).

While concerted efforts are being made to stem down the magnitude of the burden of HIV infection among adolescents, the importance of creating sustained awareness about HIV risk reduction has been recognized. Beyond awareness, improving risk perception about HIV is important. In Nigeria in particular, matters relating to sex and sexuality are usually shrouded in secrecy, and should not freely or openly be discussed (Esere, 2006). These have contributed to poor access of adolescents to Reproductive Health (RH) services even in health care facilities.

Several failed attempts had been made to introduce sexuality education in the refined name or form of 'Family Life Health Education' (FLHE). The consequence of this trend is that adolescents are left alone to find answers to their reproductive health problems on their own, often from questionable sources that are likely to mislead them (Esere, 2006). Previous or traditional interventions are limited in impact because they failed to recognize important socio-economic differences and peer influence among young people regarding their knowledge, attitudes, and practices.

Peer-led sexual health education is one means of addressing deficiencies in adolescent sexual health including HIV. Peer health education is not only an upcoming concept in Nigeria but its use has also been grossly underutilized. However, peers could be an important aspect of an adolescent's transition to adulthood, influencing each other's social behaviour through their role as credible role models (Bandura, 2007). Adolescents may not perceive peer educators as an authority telling them what to do, but as another member of their group and are likely to cooperate with them. This study thus assessed and evaluate the effectiveness of a peer-led health education on risk perception to HIV/AIDs among secondary school students in urban slums of Osun State in southwestern Nigeria.

MATERIALS AND METHODS

Osun state has a population of about 3.8 million with a rural to the urban ratio of 1.4:1(NPC, 2006). The State HIV prevalence rate of 2.7% is lower than the national average put at 4.1 %.(NPC, 2008). There are 326 secondary schools, with the majority being in the adolescence age group. This interventional study employed a descriptive, cross-sectional design of the pre- and post-test type. The target populations for this study were registered higher secondary school students in public secondary schools in Osun state. Students who were out of school, those not enrolled in the schools, students from non-mixed (boys only or girls only) schools and students from private education facilities were excluded from the study. The two groups were essentially similar in their basic socio-demographic characteristics (such as age and class). However, the study group received a strategically and well planned and sustained six months, school-based health promotion messages that were delivered using their school peers.

Sampling size estimation was carried out using the Krejcie and Morgan formula for two comparable proportions (Krejcie and Morgan, 1970). A sample size of 320 was estimated, and this was increased to 350 students per each of study and control group to account for attrition and non-response, bringing the total sample size to 700 for each of the two groups. A multi-stage sampling method was adopted in sample selection. In stage, 1, two out of 3 senatorial districts in the State was randomly selected employing simple balloting. A Local Government Area (LGA) per district was randomly selected through simple balloting in Stages 2. In stage 3, two designated urban slum based compound schools, and two of 4 schools (with a compound schools) were selected by simple random sampling employing simple balloting making a total of 8 schools. In stage 4, the selecting two arms in each of the three senior secondary school levels per school was using simple polling. Half of the students in class were selected using a systemic sampling method

Eligible students were subjected to a self-administered, pre-coded, pre-tested semi-structured questionnaires conducted by trained research assistants. The UNICEF - standard HIV knowledge and attitude questionnaire was adapted in addition to some questions from the WHO HIV peer education training manual. In conducting the peer education training (PET), a total of 96 students' volunteers from the intervention group were trained using the UNICEF PET package for one week as peer educators with the assistance of 4 research associates and 8 class teachers. A weekly timetable of peer educators reaching out to peers was drawn including Wednesday morning assembly ground, during long break sessions, and home discussions. These sessions were supervised and monitored by assigned class teachers and research assistants. The LAUTECH Teaching Hospital Osogbo Health ethics committee gave ethical approval towards the conduct of the study. Further permissions were also taken from the State and Local Ministries of Education, the principal and class teachers of selected schools and classes. Written informed consent was obtained from each student who took part in this study.

The Statistical Package for Social Sciences (SPSS) Version 17.0 software (Chicago II, USA) was used for data entry and analysis after ensuring quality data entry and validity. Pre and post-test data were analyzed and compared in each group. Relevant frequency distributions and summary measures (means) were also done. Risk perception variables were summarily scored by calculating a summary or mean composite scores that were graded as good or poor (for marks above or below the average score respectively). Grading of perception of risky sexual behaviour was scored as follow: Agree = 3, Undecided = 2, Disagree = 1 where Agree is the correct answer and vice versa where Disagree is the right answer, i.e. Disagree = 3, Undecided = 2, Agree=1. Variations in perception were further tested as 'Hypothesis' using Analysis of Variance (ANOVA) test after the data had been scored and scores pooled together. The mean values were then compared. The Chi-square test was used to demonstrate relationships between categorical variables; Binary logistic regression analysis was done for some outcome variables of interest at 95% Confidence level while the degree of significance was set at P-values ≤0.05 for all inferential analysis.

RESULTS

There was no statistically significant difference in the mean age of respondents at pre and post-test in the intervention group (p 0.155) and in the control group (p – 0.198). A similar trend was observed when other socio-demographic **variables in Table 1 were compared in both pre and post-tests (p>0.05).**

Table 1: Socio-demographic characteristics of the study population

Variable(n=350/group)	Intervention group n(%)		Control group n(%)	
	Pretest	Post-test	Pre-test	Post-test
Age in years (mean ages)	15.8(+1.4)	15.8(+1.3)	15.8(+1.5)	15.8(+1.4)
Early adolescence (10-13)	14(4.0)	19(5.4)	13(3.7)	7(2.0)
Mid adolescence (14-16)	158(45.1)	146(41.7)	231(66.0)	237(67.7)
Late adolescence(17-19)	178)(50.9)	185(52.9)	106(30.3)	106(30.3)
Sex				
Male	163(46.6)	152(48.4)	181(51.7)	168(48.0)
Female	187(53.4)	198(56.6)	169(48.3)	182(52.0)
Class				
Grade 10	101(28.9)	139(39.7)	173(49.4)	160(45.7)
Grade 11	249(71.1)	211(60.3)	177(50.6)	190(54.3)
Religion				
Christianity	43(12.3)	42(12.0)	214(61.1)	152(43.4)
Islamic	299(85.4)	299(85.4)	134(38.2)	189(54.0)
Traditional	4(1.1)	9(2.6)	2(0.6)	5(1.4)
Others	4(1.1)	-	-	4(1.1)
Marital status				
Ever married	10(2.9)	9(2.6)	5(1.4)	2(0.6)
Never married	340(97.1)	341(97.4)	345(98.6)	348(99.4)
Family setting				
Polygamous	175(50.0)	191(54.6)	258(73.7)	215(61.4)
Monogamous	175(50.0)	159(45.4)	92(26.2)	135(38.6)
Highest education level of father				
No formal	20(5.7)	14(4.0)	20(5.7)	10(2.9)
Primary	46(13.1)	28(8.0)	27(7.7)	25(7.1)
Secondary	164(46.7)	185(52.9)	108(30.9)	132(37.7)
Tertiary	112(32.0)	122(34.9)	189(54.0)	176(50.3)
Others	9(2.2)	1(0.3)	6(1.7)	7(2.0)
Highest education level of mother				
Nil formal	23(6.6)	20(5.7)	32(9.1)	20(5.7)
Primary	48(13.7)	35(10.0)	38(10.9)	42(12.0)
Secondary	166(47.4)	181(51.7)	122(34.9)	140(40.0)
Tertiary	98(28.0)	114(32.6)	156(44.6)	145(41.4)
Others	15(4.2)	-	2(0.6)	3(0.9)

Figure 1 showed that two hundred and ninety-six (84.6%) were aware of the pretest and 338(96.6%) in the post-test of the intervention group. Among the control group, 283(80.9%) were aware during pre-test while 289(82.6%) were aware during post-test. This amounts to an increase of 12.0%, and 1.7% in awareness of HIVAIDs among intervention and control group respectively when pre and post tests are compared, as part of the evaluation of the peer-led health education intervention measures.

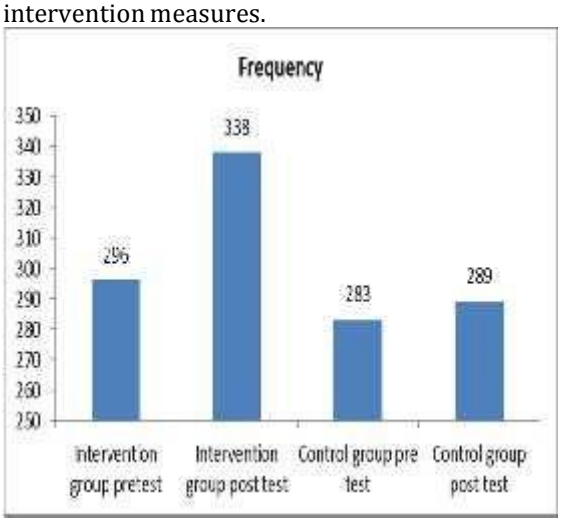

Figure 1: Awareness about HIV/AIDs among respondents

Table 2 showed the composite or average risk knowledge and perception scores of respondents comparing pre and post-test in both intervention and control groups. Each of these scores (using a range of aggregated variables ranging from 9 to 13) showed an appreciable and notable increase among the intervention group when pre and post tests were compared.

Table 2: Mean Risk knowledge and perception scores to HIV among respondents

Variable composite scores	Intervention Group n(%)		Control Group n(%)	
	Pretest	Post-test	Pre-test	Post-test
HIV Risk Knowledge scores				
Poor	253(72.3)	114(32.6)	295(84.3)	195(55.7)
Good	97(27.7)	236(67.4)	55(15.7)	155(44.3)
Self Risk perception scores				
Poor	328(93.7)	282(80.6)	331(94.6)	320(91.4)
Good	22(6.3)	68(19.4)	19(5.4)	30(8.6)

Figure 2 showed the percentage increase in composite scores when pre-test and post-test of intervention and study groups were compared. There was an appreciable percentage increase in risk perception scores in the intervention group (7.4%) compared to 3.2% in the control group when post tests and pre-test scores were compared.

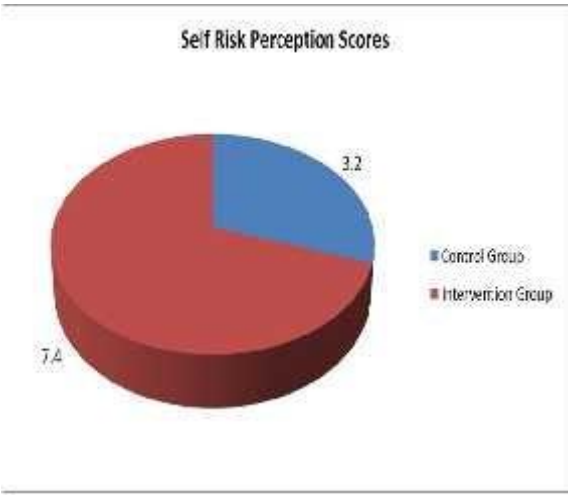

Figure 2: Percentage Increase in (good) risk perception scores, Pre Vs Post test

Using ANOVA in Table 3, a test of hypothesis favoured the alternative hypothesis, since there was a significant difference between pre and post-test risk perception scores, thus proving the null hypothesis wrong in risk perception and knowledge scores.

Table 3: One-way ANOVA showing Risk knowledge and perception to HIV/AIDs

Variable	Group	Sum of squares	Df	Mean square	F	*P*
Risk knowledge of HIV (pre and post test compared)	Intervention group	0.118	1	0.051	2.051	0.13
	Control group	0.609	1	0.609	1.231	0.113
Risk perception to HIV (pre and post test compared)	Intervention group	0.013	1	0.215	2.305	0.807
	Control group	0.369	1	0.181	1.139	0.154

Gender was a determinant of good risk knowledge score among intervention group in post-test, while

class is the determinant of good risk perception in post-test of the intervention group. Respondents in higher classes or having higher education level were twice more likely to have a good or positive risk perception compared to those at the lower classes (OR 1.727, 95% CI 0.656-4.546 and p-0.269). Male respondents were also twice more likely to have a good knowledge score compared to the females (OR 1.065, 95% CI- 0.640-1.773 and p-0.289

Table 4: Binary logistic regression of Risk knowledge and prevention scores Vs Gender and Class (pre-test and post-test) among intervention and control group

	Post-test				Pre-test			
	Odds ratio	95% CI		P value	Odds ratio(Exp B)	95% CI		P value
		Lower	Upper	P value		Lower	Upper	
Gender								
Control group								
HIV -RKS (constant=poor)	1.065	0.64	1.773	0.289	0.289	0.034	2.434	0.253
HIV-RPS (constant=poor)	0.665	0.268	1.649	-	-	-	-	-
Intervention group								
HIV -RKS (constant=poor)	2.12	1.272	3.535	2.12	0.884	0.532	1.47	0.636
HIV-RPS (constant=poor)	0.291	0.122	0.69	0.291	0.426	0.188	0.968	0.042
Education Class/Level								
Control group								
HIV -RKS (constant=poor)	0.517	0.062	4.31	0.542	1.437	0.865	2.386	0.162
HIV-RPS (constant=poor)	-	-	-	-	0.589	0.235	1.48	0.26
Intervention group								
HIV -RKS (constant=poor)	0.864	0.504	1.482	0.596	1.316	0.796	2.175	0.284
HIV-RPS (constant=poor)	1.727	0.656	4.546	0.269	1.773	0.739	4.254	0.2

DISCUSSIONS

The none statistically significant difference between the mean age of respondents in the pre-test and post-test when the two groups (intervention and control) were compared, with similar findings among other socio-demographic characteristics supports other related studies among in-school adolescents (Adeomi et al., 2014a; Adeomi et al., 2014b). The use of a comparable group is necessary to create a fair platform for comparison of the two groups towards evaluating the effectiveness of the health education intervention.

Awareness about HIV was high among respondents in both groups either during pretest or post-test. This supports several other studies within and outside Nigeria (Adeomi et al.,2014a; Adeomi et al., 2014b; Bamidele et al., 2009). A sharp rise in HIV awareness was observed in the post-test when compared to the pre-test in the intervention group. Such significant difference was not observed in the control group.This observation supports the effectiveness of peer health education in spreading awareness about HIV among adolescents compared to some other methods of achieving the same aims and objectives (Adeomi et al., 2014a, Gao et al., 2012).

Contrary to high-risk knowledge scores recorded among respondents in both groups during pre and post-test, only a few respondents of intervention group said they were in danger of contracting HIV. Though a better perception of risk was observed in the post-test (19.4%) of intervention when compared to pre-test, HIV risk perception is still low among intervention group respondents. In controls, the improvement was only marginal bust still at very low-risk perception scores.

Though a better perception of risk was observed in the post-test of intervention when compared to pre-test, HIV risk perception is still low among respondents in both groups after post-test. This pattern of low-risk perception supports several other studies (Adedimeji, Omololu and Odutolu, 2007; Sychareun et al., 2013). This trend suggested that knowledge does not translate into perception and attitude, an indication to the fact that adolescents may still expose themselves to contracting HIV, thinking that they are not at risk. Similar pattern of poor risk perception was also observed in the National Demographic and

Health Survey 2008, despite several years of efforts at combating the HIV scourge in Nigeria. Such pseudo confidence may also put adolescents at risk of risky sexual and other behaviours that can predispose them to acquire HIV.

Across the board, the odds ratio(s) were significantly increased in intervention groups than the control. However higher classes had more significant odd ratios than the lower classes, while adolescents in grade 11 had odd significant ratio compared to those in grade 10. As the age of respondents increased, it was naturally expected that they would have acquired more knowledge, had access to sources of reproductive health information, as well as gaining knowledge about prevention practices against HIV/AIDs.

Limitations of this study were that the media or other sources of information might have served as an undue advantage to the control group. Only in-school adolescents were investigated in this research project underscored the need for a similar study among out of school adolescents to ensure better generalizability. There is a possibility of dis –inhibition that could make the respondents withhold information because sexual issues are often held in high esteem and confidence and also because of the stigma associated with HIV. Reassurances of the students overcame this during data collection. The test results of ANOVA showed that peer-led health education could lead to an increase in these risk parameters when pre and post-test scores were compared for both groups. The null hypothesis could then be proved wrong since there is a statistically significant difference between perception scores when the two groups are compared.

Conclusion: Adolescents under study had high awareness but poor self-risk perception towards HIV/AIDs. Mean risk knowledge and perception scores increased significantly among the intervention group compared to the control group when pre and post-test were compared. This testified to the positive effect of health education in improving risk knowledge and perception to HIV/AIDs among adolescents studied.

Conflict of interest: none to declare

Acknowledgement: Authors would like to thank the Heads of schools who gave approval to conducting this study, and the students who participated in the study.

Funding: Authors received no external funding towards the conduct of this research work.

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