

Effect of peer education intervention on secondary school adolescents' reproductive health knowledge in Saki, Nigeria.

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Abstract

Background: Adolescents' reproductive health needs and problems have become contemporary concerns globally. Of great concern is the high rate of sexually transmitted infections including HIV/AIDS arguably influenced by lack of reproductive health knowledge.

Objective: The study aimed at examining the effect of peer education on school adolescents' reproductive health knowledge in Saki, Southwestern, Nigeria, in a nurse-led concurrently controlled community interventional study.

Materials and method: The study employed pre- and post-intervention (quasi-experimental) design. The experimental group was exposed to the peer education programme for six months. Pre and post differential data in the experimental and control groups were compared and analysed using analysis of covariance.

Results: The intervention had significant effect on adolescents in the experimental group compared with the control group in the area of knowledge of reproductive health issues ($F_{1,519} = 37.117, (p < .05)$).

Conclusion: The intervention significantly improved the adolescents' reproductive health knowledge. It is recommended that community health nurses as well as other community workers should embrace peer education approach as a strategy to empower adolescents with reproductive health knowledge.

Keywords: *Effect, intervention, knowledge, peer education, reproductive health, school adolescents.*

Resume

Globalement, Les besoins et les problèmes en santé reproductrice des adolescents sont devenus des issues contemporaines. Le problème majeur est le taux élevé des infections sexuellement transmissibles inclus VIH/SIDA pouvant être influencé par le manque des connaissances en santé reproductrice. Cette étude

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avait pour but d'examiner l'effet de l'éducation sur la santé reproductrice des adolescents scolarisés à Saki, au Sud ouest du Nigeria, dans une étude interventionnelle communautaire. Cette étude employait l'intervention pré et post quasi expérimentale. Le groupe expérimental était exposé à un programme d'éducation pour six mois. Les données pré et post expérimentales et les groupes de contrôle étaient comparés et analysés par l'analyse de la covariance. L'intervention avait un effet significatif sur les adolescents dans le groupe expérimental comparé avec le groupe de contrôle dans le domaine des difficultés en santé reproductrice ($F_{1,519} = 37.117, (p < .05)$). Ces interventions amélioraient significativement les connaissances de la santé reproductrice des adolescents. Il a été recommandé que les infirmières en santé communautaire aussi bien que les autres infirmières et personnel de santé épousent cette approche éducative comme une stratégie pour améliorer les connaissances en santé reproductrice des adolescents.

Introduction

Adolescence is described as a period ranging from 10-19 years when an individual becomes more aware of his or her sexuality, that is, how he or she feels, thinks and behaves as a male or female and what he or she wants in terms of physical affection [1]. The erotic component of the human persons increases greatly at this time compared with childhood. This age group constitutes one-quarter of the world's population [2]. Adolescence is a period when new options and ideas are explored. It is a time of risks associated with sexual involvement [3, 4].

As noted by Soyinka [5], adolescents below the age of 15 years were reported to be engaging in unprotected sexual intercourse thereby exposing themselves to the risk of getting infected with Sexually Transmitted Infections (STI) including HIV and AIDS. The age groups of 15-19, 20-24 and 25-29 were reported to be the highest groups for HIV and AIDS infection respectively [5] and HIV infection and AIDS accounts for 25% of all disability in women between the ages of 15 and 45 years [6]. Major reproductive health problems identified in Nigeria by

experts in the field of adolescents' reproductive health include high rate of maternal mortality, infertility, cervical cancer, genital fistulae, among others [7, 8, 9].

One of the factors associated with poor adolescent reproductive health status in Nigeria is lack of awareness and knowledge of relevant reproductive health issues among young people. This results from limited access to credible sources of information [10]. As noted by Federal Ministry of Health [10], population and family life education including sexuality education is not taught in most schools despite the fact that relevant curricula have been designed and approved for use in Nigerian secondary schools. Identified barriers to implementing appropriate reproductive health intervention for this group are their heterogeneity, lack of stability and regulations in some settings where many adolescents work as apprentices [11].

Adolescent peer educators play key roles in many community-based STIs and HIV risk-education programmes for youths. Some studies have examined the effect of peer education on adolescents' knowledge of reproductive health, sexual beliefs and behaviour including early sexual activity, abstinence and other self-protective behaviour mainly among adolescents in urban settings [12,13].

Peer-led strategies aimed at modifying STIs and HIV risk-related behaviour are both natural and potent interventions for encouraging adolescents to engage in self-protective sexual behaviour.[14] Jemmott and Jemmott[3] reviewed 21 studies, which provide clear evidence that behavioural interventions can curb STIs and HIV risk-associated sexual behaviour among adolescents in community settings.

The aim of this study was to implement and assess the effect of peer-led reproductive health education in-school adolescents' reproductive health knowledge in the rural community. Whitehead's[15] social cognitive model was used as framework because it corresponds closely with the use of peer education programme in the promotion of adolescents' reproductive health. Adoption of social cognitive model in nursing practice is important in planning timely and appropriate intervention to assist individuals and groups to understand the processes they have to go through to modify their life style in order to live and maintain healthy life. This implies that empowering adolescents with appropriate reproductive health knowledge through peer education before they begin to explore different ideas about sexual activities, will motivate them to adopt and maintain positive sexual life style. This will assist to prevent some of the reproductive health problems

among adolescents such as sexually transmitted infections, unwanted pregnancy and unsafe abortion.

Methods

Study setting: The study was carried out in Saki-West and Saki-East Local Government Areas in Oke-Ogun area of Oyo State. The two Local Governments are geographically located in the rural area with poor road network, inadequate health facilities and other essential social services. In-school adolescents in the area are more vulnerable to sexually transmitted infections, unwanted pregnancy and unsafe abortion because they do not have access to reproductive health education and services compared with their counterparts in the urban centers.

Study design

The study adopted quasi-experimental design consisting of experimental and control groups.

Sample size

The sample size was determined by using Krejcie and Morgan's[18] table of random sampling which has been statistically determined with a formula

The formula:

$$S = \frac{X^2 NP(I-P)}{d^2(N-1) + X^2 P(I-P)} \quad \text{in which}$$

S = required sample size

N = the given population size

P = Population proportion that for table construction has been assumed to be .50 as this magnitude yields the maximum possible size required.

d = the degree of accuracy as reflected by the amount of error that can be tolerated in the fluctuation of a sample proportion P about the population. Proportion P – the value for d being .05 in the calculations for entries in the table, a quantity equal to $\pm 1.96 \sigma P$

X^2 = table value of chi square from one degree of freedom relative to the desired level of confidence, which was 3.841 for the .95 confidence level represented by entries in the table.

Application of the formula

S = required sample size

X^2 = 3.841

N = 752

P = 0.5

(I-P) = 0.5

d^2 = 0.052

(N-1) = 752 – 1 = 751

$$\text{For } N = 752, S = \frac{3.841 \times 752 \times 0.5 \times 0.5}{0.05^2 (751) + 3.841 \times 0.5 \times 0.5} = 254$$

$$\text{For } N = 840, S = \frac{3.841 \times 840 \times 0.5 \times 0.5}{0.05^2 (839) + 3.841 \times 0.5 \times 0.5} = 265$$

In Saki-West, the experimental group, 254 students were selected from 752 students in senior classes I and II while in Saki-East, the control group, 265 students were selected from 840 students in senior classes I and II. Students in senior class III were exempted because they would have graduated before the end of the study.

Ethical consideration

Through the Honourable Commissioner for Education, Science and Technology, approval was obtained from Oyo State Ministry of Education. The Honourable Commissioner communicated same approval to the authorities of the selected schools. Written and signed consent was obtained from the students involved in the study and their parents. The students were informed of their freedom not to participate in the study or to opt out after entering into the study. The schools' authority and the students were assured of confidentiality of data collected.

Instrument

The instrument consisted of in-depth interview guide and structured questionnaire for data collection and the training package for the intervention. Open and close-ended structured questions were used for the interview. The information derived from the interview was used to modify the structured questionnaire developed after vast literature review. This was used to collect pre and post intervention data. The items in the questionnaire contained yes, no, and don't know questions. The questionnaires were subdivided into two sections.

Section A: elicited information on demographic data while

Section B: elicited information on basic knowledge of reproductive health issues.

Validity of instrument

Face validity of the instrument was ensured by using simple and clearly stated items in the questionnaire. To ensure the content validity of the instrument, the contents were compared with the research questions and the objectives. The questionnaire items were submitted for review, screening and expansion by the experts in the field of study including a statistician.

Reliability of instrument

The corrected version of the questionnaire was subjected to test retest using a group of 40 students

from ATISBO Local Government Area. The two tests were correlated and the "r" value was 0.85.

Procedure for data collection

This was done in stages. First, the local government area for experimental and control groups were determined with the toss of a coin. The head of the coin was exposed which indicated Saki-West as experimental group while Saki-East local government became the control group. In the second stage, copies of the questionnaire were distributed to the selected number of students in both the experimental and control groups. Four research assistants who had been trained to assist in the study helped in the distribution of the questionnaire and collection of the data. The pre intervention responses served as the baseline data.

The third stage is the intervention. Initially, 48 volunteers from four schools (12 selected students from each school) in the experimental group were trained as peer educators and all the 48 volunteers were used as peer educators in their various schools. The selection of the peer educators was based on the following criteria; their interest, communication skill, ability to relate confidently and communicate persuasively with their peers and possession of leadership qualities acceptable to their peers. Some of them belonged to various educational societies in their schools such as the literary and debating society, Anti - AIDS club and Nigerian Red Cross Society. Some belonged to religious societies such as the christian students' fellowship and the young muslim society. The selected peer educators had been taking part in intra and inter-schools debate and speech contents. Some of them were prefects in their schools having leadership qualities. Selection was done through the assistance of class teachers and counselors in the various schools.

Before the training, pre-test was conducted for the selected peer educators on the knowledge of reproductive health issues. This served as the baseline result. Post-test was later conducted after the training and the result was compared with the baseline result to show the knowledge gained during the training before sending them to the field. The result indicated significant increase in knowledge from the mean score of 21.9 at pre-test to 25.8 post-test. The content of the packaged training manual adapted from UNICEF [16] and Family Health and Population Action Committee - FAHPAC [17] included anatomy and functions of male and female reproductive organs, physical changes in adolescents, negotiation skills, prevention of sexual exploitation, importance of self-esteem, health implications of risky sexual life. The training lasted for six days.

After the six-day training, the peer educators were provided with copies of the manual and educational materials like flip charts containing information on reproductive health issues. They were sent back to their various schools to disseminate reproductive health information to their colleagues under the supervision of co-opted trainers and their class teachers who accompanied them to the training session. The researchers made rotational visits to the schools for assessment. The peer educators started conducting weekly educational sessions in their various schools in August 2004. They made use of their weekly school societies' meetings such as literary and debating society meetings for their teaching activities. This was done for two terms (six months), (Aug. 2004 - Feb. 2005). Weekly activity record sheets were designed and filled by the peer educators, signed by the supervising teachers at the end of each session to ensure proper documentation of people in attendance, issues discussed and problems identified. An average of 50 students attended each teaching session in various schools.

To assess the effect of the peer education intervention on the knowledge of reproductive health issues among the participants who attended the teaching sessions, pre and post tests were conducted among the students who attended the teaching sessions in the senior classes I and II. They were assumed to be relatively mature and could serve as role models for their peers in the lower classes.

Analysis

Pre and post intervention data were analysed using ANCOVA to assess between group differences. Pre-experimental data were collected between 18th and 22nd July 2004 while the post-experimental data were collected between 21st and 25th March, 2005. Questions on basic knowledge of reproductive health issues were pooled together and scored as follows: Yes = 3, Don't know = 2, No = 1 where yes is the correct answer.

The scores were interchanged vice versa when "no" was the correct answers i.e., No = 3, Don't know = 2, Yes = 1. To obtain a summary of the result in table 3, three marks were assigned to each correct response and maximum score was 30 marks. Variations in responses were assessed with the ANCOVA test after the data had been scored and the scores pooled together. The mean values were compared using ANCOVA test. The ANCOVA test examined the variability of scores between and within group. The between - group variation examined how each of the groups (intervention and control) varied from the computed grand mean. The within-group variation examined how the scores vary

from each other in their own group. Total variation is the sum of within-group variation and between-group variation.

To measure the variability, sum of squares was first computed as specified in the process of ANOVA test. Sum of squares is equal to the sum of the squared deviations of each score in the groups from the grand mean. Grand mean is a mean for the two groups combined. F is the ratio of between to within variance. $F \text{ value} = \text{between mean square} / \text{within mean square}$. F value was obtained by dividing between mean squares by within mean squares.

To determine whether the between-group difference was great enough to reject the null hypothesis, the between-group difference was compared to the within-group variance. The F value was compared to the values obtained using the statistical table of F distribution to locate the critical values for comparison by using the df for the between and within mean squares. The critical value of F as contained in the statistical table of F distribution = 3.86. This was the value required to reject the null hypothesis at a probability level of 0.05.

The hypothesis

There is no significant difference in the knowledge of reproductive health issues between the adolescents in the experimental and control groups.

Results

Data from the 519 students selected for the study were analysed, 254 from the experimental group and 265 from the control group.

Table 1: Demographic characteristics of the respondents at pre-intervention period

	Intervention school n= 254	Control school n = 265
<i>Age</i>		
Mean \pm std	17.6 \pm 2.1	17.5 \pm 2.2
Range	12 – 21 yrs	12 – 21 yrs
<i>Sex</i>		
Male	157 (61.8%)	157 (59.2%)
Female	97 (38.2%)	108 (40.8%)
<i>Religion</i>		
Islam	148 (58.3%)	160 (60.5%)
Christianity	106 (41.7%)	104 (39.2%)
Not specified	-	1 (0.3%)
<i>Ethnicity</i>		
Yoruba	242 (95.3%)	247 (93.2%)
Igbo	12 (4.7%)	18 (6.8%)
Not specified	-	-
<i>Class</i>		
SS1	139 (54.7%)	158 (59.6%)
SS2	115 (45.3%)	107 (40.4%)

Table 2: Proportion of students with correct knowledge of reproductive health issues

S/N	Statement		Experimental group		Control group	
			Baseline	Follow-up	Baseline	Follow-up
n=254	n=254	n=265	n=265			
1.	Puberty is the beginning sign of sexual maturity	*Yes	218 (85.8)	232 (91.4)	229 (86.4)	227 (85.7)
2.	Puberty starts earlier in girls than boys	*Yes	207 (81.2)	237 (93.3)	212 (80.0)	210 (79.2)
3.	Testes equivalent to ovaries and penis similar to clitoris in males and females respectively	*Yes	55 (21.6)	73 (28.7)	57 (21.5)	60 (22.6)
4.	Attraction towards opposite sex is normal at puberty	*Yes	141 (55.5)	160 (63.0)	150 (56.6)	146 (55.1)
5.	Production of sperm in male genital organ and menstruation in females are indications to start having sex	*No	185 (72.8)	240 (94.4)	192 (72.4)	198 (74.7)
6.	Sexually healthy adolescents take responsibility for their behaviours	*Yes	170 (66.9)	204 (80.3)	178 (67.2)	173 (65.3)
7.	Boys and girls have equal right on when to have sex before or after marriage	*Yes	166 (54.4)	190 (74.8)	170 (64.2)	175 (66.0)
8.	Adolescents who refuse sex are sexually healthy	*Yes	122 (48.0)	143 (56.3)	129 (48.7)	127 (47.9)
9.	Females should have genital cutting (circumcision) like males	*No	75 (29.5)	112 (44.1)	80 (30.2)	78 (29.4)
10.	Having sex is a game of pure enjoyment	*No	29 (11.4)	102 (40.2)	33 (12.4)	32 (12.1)

Table 3: Summary of ANCOVA of pre and post intervention knowledge of reproductive health issues

Source of variance	Sum of Squares	Hierarchical Method		F	Sig. (P)
		df	Mean Square		
Covariates	.262	1	.262	.056	.813
Main effects Treatment	174.461	1	174.461	37.119	.000*
Model	174.723	2	87.362	18.587	.000
Residual	2425.346	516	4.700		
Total	2600.069	518	5.019		

* significant at $p < .05$

Grand mean = 7.07

*Asterisk indicates correct answer. Percentages are in bracket.

As shown in Table 1, the demographic characteristics in the experimental and control groups indicated equal representation. The ages of the students ranged from 12 to 21 years with the mean age of 17.6 ± 2.1 in the experimental group and 17.5 ± 2.2 in the control group.

Table two gives the summary of level of knowledge at pre and post intervention periods between the experimental and control groups. Baseline comparison showed that many of the respondents in the

experimental and control groups had knowledge of some aspects of basic reproductive health issues.

Post intervention (follow-up) comparison showed significant increase in knowledge in the following aspects in the experimental group compared with control group; physical and emotional changes in puberty; (93.3). Question on whether production of sperm in male genital organ and menstruation in females are indications to having sex, the expected answer is "No", (94.4%). On whether attraction towards opposite sex is normal at puberty; Yes

(63.0%). On whether puberty is the beginning sign of sexual maturity, Yes (91.4%).

Results show that there was a significant improvement in the knowledge of reproductive health issues in the experimental group after the peer education exercise. The degree of freedom (df) for the between two groups (experimental and control = 2-1 = 1). The df for the total variance = total number of subjects minus one (519-1) = df 518.

The obtained value of 18.587 was greater than the critical value of F (3.86), indicating significant difference in the knowledge of reproductive health issues in the experimental group, $p = 0.000$.

Discussion

Findings on the knowledge of reproductive health issues show that some of the respondents in the experimental and control groups had basic knowledge in some aspects of reproductive health at pre-intervention. They scored above average in questions relating to physical and emotional changes during puberty.

At post-intervention period, an increase in knowledge at varying degrees in all the items on reproductive health was noted in the experimental group compared with the result in the control group. Many adolescents in the experimental group were able to understand that production of sperm in males is not an indication to start having sexual intercourse. They could recognize that once menstruation starts in females, they could be pregnant if they engage in sexual intercourse. They demonstrated higher knowledge of anatomy and functions of male and female reproductive organs compared with their counterparts in the control group. The result showed a significant difference between the adolescents in the experimental and control groups. The increase in knowledge of reproductive health at post intervention period was attributed to the effect of the intervention.

These findings were found to be consistent with similar intervention studies among adolescents, in urban communities[3,19,20].

It is assumed that the knowledge gained will assist the adolescents to relate knowledge of reproductive health to reproductive health problems and take adequate preventive measures against sexually transmitted infections, unwanted pregnancy and unsafe abortion. With the knowledge of reproductive health, it is believed that the adolescents will be more assertive, develop better negotiation skills to resist peer pressure. Several studies have indicated that behavioural

interventions can reduce STI – risk associated sexual behaviour among adolescents ARFH [1], Jemmott and Jemmott[3], O'Hara *et al* [12], Oladepo *et al* [13], Odelola [22].

In a study that evaluated the effect of peer education programme on deaf secondary school students' knowledge, attitude and perceived susceptibility to AIDS, Osowole and Oladepo[19] found that at baseline, more respondents in the experimental (55.6%) and control (71.9%) schools were aware of HIV and AIDS. Knowledge on causation, transmission and prevention of HIV and AIDS was low at baseline in the two groups. Post-intervention findings revealed an increase in awareness level of respondents in the experimental group from 55.6% at baseline to 89.0% at post intervention period. Ladipo [21] reported that significant changes have been recorded on knowledge, self-efficacy and taking precautions against risky sexual behaviour through peer education. Peer education programmes have been found effective mainly in urban cities in Benin, Botswana, Ghana, Jamaica, Kenya and Zambia [22].

Odelola [23] reported that reproductive health education helps to solve problems of unwanted pregnancies, illegal abortion and infant and maternal mortality among adolescents. As observed by Andrea-Irvin [24], when sexuality education is provided before and during adolescence, it assists adolescents to understand and manage their sexual health needs and problems.

Conclusion and recommendations

Results of the study had established the fact that trained peer educators can be used as agents of change among their peers. They seem to be influential and could mobilize their colleagues to educate each other about reproductive health issues and the benefits of protecting themselves from STIs including HIV/AIDS. This is consistent with the adage, which says iron sharpens iron. That is, adolescents understand each other and they can effectively teach and influence one another.

Based on the findings of the study, the following recommendations were made

- Age appropriate reproductive health education through peer-led strategy should begin as early as possible, if possible at primary school level so that information could be reinforced.
- Peer education programme should be an on-going exercise for in-school adolescents.

- Nurses in the community should embrace the use of adolescent peer educators in their clinical practice in the design and implementation of STI and HIV prevention programmes.

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