

Impact of Peer Educational Programme and Gender on Biology Students' Knowledge of HIV/AIDS concept in Some Selected Secondary Schools in Ekiti State

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Abstract: This paper examined the impact of peer educational programme and gender on Biology students' knowledge of HIV/AIDS concept in two selected local government area in Ekiti State. The study adopted a pretest-posttest control group quasi experimental design. The sample consisted of 192 SSS II Biology Students from four schools randomly selected in Ekiti States. Three instruments used were -Teachers' Instructional Guides for: HIV/AIDS Peer Education and Conventional Lecture Method; Biology Science Students' Knowledge Scale ($r=0.80$). Three hypotheses were tested at 0.05 level of significance. Data were analyzed using ANCOVA and mean scores. Results showed that Treatment had significant main effect on knowledge ($F_{(2,131)} = 32.62, P < .05$). Gender had no significant main effect on knowledge ($F_{(2,131)} = 1.344, P > .05$). (The two-way interaction effect of treatment and gender was not significant on knowledge ($F_{(2,131)} = 1.344, P > .05$). peer education strategy is therefore, recommended to be adopted by Biology teachers and curriculum planners.

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I. Introduction

HIV is a virus which slowly destroys parts of the white blood cell, the body's disease fighting immune system and AIDS is a set of physical conditions which indicate that an individual has contacted HIV. AIDS therefore marks the final stage of HIV and it is a stage when an individual becomes highly susceptible to infections, which the natural immune system would ordinarily have combated and defeated (Ugwuegbulam, 2001).

The Virtual Institute for Higher Education in Africa (VIHEAF, 2004) reported the Sub-Saharan Africa as the region mostly affected by HIV/AIDS in the world. According to the report, an estimated 26.6 million people were living with HIV/AIDS in Africa out of which 3,459,363 million are Nigerians

HIV/AIDS has been recognized as one of the incurable diseases afflicting the world, and statistics show that the most affected group of people are the adolescents, most of whom are students. This could be attributed to the social and physical developments which they experience (Adeyipo, 2007). Adegoke (2003) noted that the adolescent stage marks the period when sex impulses and curiosity begin to manifest. He stressed that the in-school adolescents engage in sexual activities which may expose them to sexually related diseases such as HIV/AIDS.

The government has done a lot to reduce the increment in the number of people living with HIV/AIDS in the country and part of the preventive measure put in place was creating awareness and sensitizing the citizen about the after mat effect of the disease. The Federal Government have shifted to her mechanisms and strategies to prevent the spread, mitigate its consequences and provide care and support for people living with or affected by HIV. In this regards, education was identified as the crucial means for achieving behavioural change in and out of the classroom.

In combating HIV infection, it is the crucial responsibility of schools to teach young people how to avoid either contracting the infection or transmitting it to others and to serve as a catalyst for the development of HIV-related policies that are based on the most current scientific knowledge about HIV and AIDS. In doing so, schools have the opportunity to make important improvements in the quality of health education provided to young people worldwide as a step towards improving global health.

Knowledge is a prerequisite to any action, including the actions that are necessary for the prevention of HIV/AIDS (WHO 2006). Okafor (1997) stressed that knowledge is a precursor for attitude and behavior though not all knowledge are translated to these. This inability to translate knowledge especially, health knowledge to attitude and behavior has been the major setback in the development of health education and therefore, setback in prevention of diseases such as HIV and AIDS.

Knowledge is very important in acquiring and practicing health knowledge which also is important in the development of optimum health. Fennel (2004) in his study on HIV/AIDS transmission risks and preventive

techniques affirmed that college students possessed low level of knowledge concerning HIV/AIDS. Dalzel-Ward (2002) also found that females had higher knowledge of HIV/AIDS than males.

Peer education is one of the most widely used strategies to address the HIV/AIDS pandemic (Walker, Reid & Camel! 2004). It involves training and supporting members of a group to effect change among members of the same group. Peer education may also bring about change at a society level by modifying norms and stimulating collective action that contribute to changes in policies and programmes. Walker, Reid & Comell. 2004

According to Walker, Reid and Comell (2004); the idea of peer education is that young people are more likely to trust their peers and talk about sexually related issues with them than with parents or elders. In support of this notion, Plant and McFeely (2004) state that young people prefer learning from and with their peers. In a peer education program a group of young people is trained and equipped with knowledge about sexual behaviour, sexually transmitted disease, safer sex practices and contraception: information that they share with their peers (Walker, Reid & Cornell, 2004).

The issue of gender is an important one in Science education especially with increasing emphasis on ways of boosting manpower for technological development as well as increasing the population of females in science and technology fields (Ogunkola & Bilesanmi-Awoderu, 2000). In Nigeria, and perhaps the whole of Africa, gender bias is still very prevalent (Arigbabu & Mji, 2004). This is a view to which Onyeizugbo (2003) has also alluded in pointing out that "sex roles are somewhat rigid in Africa particularly in Nigeria...gender differences are emphasized." It is common place to see gender stereotypes manifested in the day-to-day life of an average Nigerian. Gender inequality has been recognized as a major factor perpetuating the HIV epidemic. Schools provide a context in which dynamics of male and female relationships are constantly in effect and can be addressed. Hence, interventions that promote gender equality in schools can significantly contribute to reducing the vulnerability of pupils, and girls in particular, to HIV infection.

II. Statement Of Problem

Biology is a core subject in senior secondary school curriculum. Public examination records have shown that students record low achievement in this subject. This has been attributed to the conventional method of talk and chalk. Scholars have thus recommended the use of other instructional strategies that could bring about effective Biology delivery. One of such strategies is Peer Education Instruction Programme. This study, therefore, determined the Impact of Peer Educational Instruction Programme and Gender on Biology Students' Knowledge of HIV/AIDS concept in Some Selected Secondary Schools in Ekiti State. The moderating effect of gender was also examined

Hypothesis

HO₁. There is no significant main effect of treatment on Biology students' knowledge of HIV/AIDS concept

HO₂. There is no significant main effect of gender on Biology students' Knowledge of HIV/AIDS concept

HO₃. There is no interaction effect of treatment and gender on Biology student knowledge in HIV/AIDS concept

Research Design

This study adopt pre test, post test, control group quasi- experimental design

Variables of the Study

The following variables were involved in the study

(a) Independent variable: instruction at two levels

1. HIV/AIDS Peer Education Instruction Programme

2. Conventional- Based Programme

(b) Moderator variables: Gender at two levels: Male and Females

(c) Dependent variable: knowledge

Sample Selection

Senior Secondary School 2 students' were involved in the study from two Local Government Areas in Ekiti State. The selection was based on random sampling techniques using table of random number in which four schools were randomly selected. One class randomly selected from each of the school. Intact classes were used.

The criteria for selection of schools

A random sampling was adopted in selecting schools used for peer education and the conventional instructions based on the following criteria:

- i. the school is a public school,
- ii. Availability of experienced biology teacher,
- iii. Topics not yet taught at SSS2,
- iv. Willingness of member of staff to participate in the study,
- v. Evidence that the students have already been exposed to the basic concept necessary for the understanding of the topic,

Instrument

The researcher used the following instruments:

- 1 Biology Student Knowledge Test on HIV/AIDS
- 2 Teacher Instructional Guide on HIV/AIDS Peer Education Programme
- 3 Teacher Instructional Guide on HIV/AIDS Conventional Education Programme
- 4 Evaluation Sheet for Assessing Teacher Performance during Training

3.4.1 Biology Student Knowledge Test on HIV/AIDS(BSKTHA)

The instrument is divided into two sections A and B, section A consisted of the personal data of the subject containing the gender, name, school, and parent's level of education, section B consisted of (55) multiple-choice items. The BSKTHA which consist of 55 – item multiple questions with four options was constructed by the researcher to measure the student acquisition level in some HIV/AIDS related topics in Biology.50 items were to be given to experts in biology Educator to be scrutinized after the scrutiny some items were modify and 40 out of 55 items survived. These 55 items were trial tested on SSS 2 Student in another school quite different from the sample and the discriminating level was ascertain, all the difficult questions and too easy questions were shed off.

3.4.1.2 Validity and Reliability of (BSKTHA)

Items that fall within discriminating indices of 0.4 and 0.6 were selected and 40 items survived final scrutiny. The 40 items were subjected to KR 21 reliability measurement and a reliability index of 0.85 was obtained.

HIV/AIDS Peer Education Instruction Programme (HPEIP)

The researcher developed the HPEIP it is a mode of instruction in HIV/AIDS educational programme. It is a self learning package or could also be used with the assistance of the teacher where and when necessary using the linear model. It is also backed up with test yourself exercises. For the purpose of validation, experts' comments were solicited to ascertain the appropriateness of the concepts, the usability and methods to the target population. The observation and comment of the experts were taken into consideration while preparing it.

Teacher Instructional Guides on HIV/AIDS Peer Education Instruction Programme

The Teacher Instructional Guides on HIV/AIDS Peer Education Instruction Programme is an operational guide that was used by the researcher in the experimental and control groups to ensure uniformity and to score the trained teachers and students on the role played in the lesson. TIGHPEP consists of two experts, teacher Active/ Passive role and student's Active or passive responses. TIGHPEP is in two phases.

Phase 1: introductory phase: this deals with giving student information relevant to the problem before problems are presented to the students. The presentation is in form of a typical lesson plan. These are:

- (a) Introduction: introduction of the topic to be learnt with a review of previous lesson.
- (b) Presentation of knowledge or theoretical base. Teacher leads and direct teaching on the topic to be learnt with the student actively involved in the teaching.

Phase 2: implementation of HIV/AIDS peer education instruction programme.

- (a) Teacher put the student into groups of five
2. Question and problem generation
 - i Problem was presented to the students
 - ii Student wrote down the question they wanted to ask.
 - iii They discuss this question in their groups.
 - iv Student wrote down exactly what they thought the problem was.
- 3 Implementation
 - i Student carried out activities using materials provided by the teacher
- 4 Evaluations:
 - i The teacher ask the group leaders to summarized their answers
 - ii Group measure their success.

Teacher Instructional Guide on HIV/AIDS Conventional Programme

- i. Teacher presents the lesson
- ii Students sit listening passively to teacher's teaching as he or she gives them facts
- iii The students ask question on the area they have difficulties.
- iv The teacher writes the note on the chalkboard for the student to copy.
- V Validation of Teachers' Instructional Guides

The teachers' instructional guides were validated by my supervisor, Biology teachers, Biology Educators for evaluation and assessment. .

Research Procedure

Work Schedule

2 weeks for training of teachers

1 week for Pre –Test

8 weeks for Treatment

1 week for Post Test

Training of teachers

The researcher personally visited the teachers in their schools and trains them on how to strictly adhere to the instructional and experimental procedures. Briefing session was organized for the pupils participating in the study in their various schools. Two (2) teachers were trained as research assistants for the experimental group while the teachers for the control were asked to adhere strictly to the instructional guide on the modified conventional lecture strategy based on the curriculum. The training of a teacher as a research assistant lasted for 2 weeks.

Pre-test

The second week was used by the researcher and trained teachers as research assistants to administer the pretest on the participating students using the instrument

- 1 Biology Student Knowledge Test on HIV/AIDS

Treatment

The third to eight weeks was used for the implementation of the treatment for both the experimental and control group.

Experimental Group: HIV/AIDS Peer Education Programme

The students in this group will be taught using the following steps:

Steps in biology peer education strategy.

Step 1: Teacher put the student into groups of five

Step 2: Problem was presented to the students

Step 3: Students wrote down the question they wanted to ask.

Step 4: The students discuss this question in their groups.

Step 5: Students wrote down exactly what they thought the problem was.

Step 6: Students carried out activities using materials provided by the teacher

Step 7: The teacher asked the group leaders to summarize their answers

Step 8: Group measure their success.

HIV/AIDS Peer Education Programme

The HPEP was used by the experimental group employed an adapted interactive active learning strategy. Students in the experimental group were grouped and were allowed to pick their choice of groups. Each group was made up of 5 members. Each group worked independently without interference from other group. Discussion was allowed for 5 minutes after each lesson among the group members. The discussion was allowed student to meaningfully talk, listen, write and reflect on the content and ideas learnt. The peer educator asked question from the students and they answered the question using flash cards.

Control group: HIV/AIDS Conventional Programme

Step1: Teacher welcomes the student, introduce the new topic and review the previous lesson.

Step 2: Teacher taught the new topics.

Step 3: Students copied the note.

Step 4: Teacher asked few question from the student to test whether they understand the topic.

Step 5: Teacher summarized the day work.

Step 6: Teacher gave home work.

Post test

The instrument below was administered to the student at the end of the 1 Biology Student Knowledge Test on HIV/AIDS

III. Method of Data Analysis

Data collected were analyzed using analysis of covariance ANCOVA and Multiple Classification Analysis to test the hypotheses. This method was used in order to determine the Group 1 differences using pretest scores to reflect any pre instructional differences existing among the group due to non randomization of the subjects.

IV. Results and Discussions

The presentation is made based on the three hypotheses formulated for the study.

Ho 1(a): There is no significant main effect of treatment on student's knowledge of HIV/AIDS in biology

Table 1: Summary of ANCOVA of Post-test Knowledge of pre-student knowledge in designed HIV/AIDS educational programmes in biology between Treatment Groups, Gender and Parent educational status.

Source	Sum of Squares	DF	Mean Square	F	Sig.
Main Effect:	4843.596	2	403.633	4.057	.000*
Pre test knowledge	3.041	1	3.041	.031	.862
Treatment group	3245.441	1	3245.441	32.620	.000*
Gender	133.687	1	133.657	1.344	.249
2-way Interactions:					
Treatment group x Gender	130.474	1	130.474	1.311	.254
Explained	4843.596	2	403.633		
Residual	12038.613	121			
Total	16882.209	133	99.493		

Significant at P < .05

The result in table showed that there is significant main effect of treatment on student's post knowledge of HIV/AIDS in Biology in the experimental and control group. ($F_{(2,131)}=32.620, P < .05$). This implies that the student in the experimental class became more knowledgeable than the student in the control groups. Therefore the null hypothesis 1(a) is rejected. In order to find the magnitude of the group score, Table2 is presented.

Table 2: Multiple Classification Analysis (MCA) showing the direction of the result in the pre-post scores of Students' knowledge of HIV/AIDS in Biology between Treatment groups, Gender and Parent Educational status.

Grand Mean= 52.66

Variable + Category	N	Unadjusted variation	Eta	Adjusted for independent + covariates deviation	Beta
Treatment group:					
1. Experimental	96	2.73	.39	2.91	.41
2. Control	38	-6.89		-7.35	
Gender:			.06		.03
1. Male	60	.74		.43	
2. Female	74	-.60	-.35		
Multiple R-squared					.185
Multiple R					.430

From the above table, it is shown that the students in the experimental group performed better with a mean score of ($X = 55.39$); Control had a mean score of ($X= 45.77$). Therefore the result shows that the student exposed to peer education instructional programme are knowledgeable in respect to the danger inherent in becoming infected with the HIV/AIDS.

Ho 2: There is no significant main effect of gender on student's knowledge in designed HIV/AIDS peer education instructional programmes

From table 1 it is shown that there is no significant main effect of gender on the knowledge in designed HIV/AIDS peer education instructional programmes. ($F_{(2,131)} = 1.344, P > .05$). This means that the

knowledge score of the students do not differ significantly. Table 2 shows that male perform better with the mean score of 53.04 than their female student with the mean score of 52.06. Hypothesis is not rejected.

Ho 3 There is no significant interaction effect of treatment and gender on student's knowledge in designed HIV/AIDS education programmes

From table 1, it is shown that there is no significant interaction effect of treatment and gender on the knowledge in designed HIV/AIDS education programmes. ($F_{(4,129)} = 1.311, P > .05$). The null hypothesis is not rejected.

V. Discussion

This result indicated that the treatment has a significant effect on the students' Knowledge. This showed that peer educational programme instruction programme enhanced the knowledge of the students better than those taught using conventional method. This is because the treatment is student centre, it involves active participation of the student and it also involves active role playing of the student all these makes the student to develop a positive attitude to the topic than the way they have been seen it. This result is in line with Walker, Reids & Camel (2004), Plant & McFeely (2004)

Gender has no significant effect on student knowledge. This is possibly due to the nature of the treatment used i.e. peer education instruction programme which could be less gender biased than the content of instruction. This shows that both male and female student benefited from the programmed instruction than the conventional strategy. It means this mode of instruction can be use for both sexes. The insignificant effect of gender with respect to HIV/AIDS educational programme is in line with those of Arigbabu and Mji (2004), Bilesanmi- Awoderu (2006), David & Stanley (2002), who said there are no longer distinguishing differences in cognitive, affective, psychomotor skill achievement of student in respect of gender. This mode of instruction helps to build self confidence which reduces or eliminate inferiority complex which some female students may have.

VI. Recommendations

Government should provide in-training service opportunity for the teachers as this will enhance their teaching methodology which will in turn affect the student learning outcome.

Teacher training institutions such as colleges of education and faculty of education in the Universities should review the curriculum of the pre-service teachers to ensure that adequate training is given to them in the area of HIV/AIDS education strategy to enhance competence and confidence of biology teacher in the classroom. This will enable the pre-service teacher prepare well enough in the use of the strategies to improve students' knowledge, attitude and skill in HIV/AIDS education concepts in biology.

Workshops and seminars should be organized by the Federal and State Ministry of Education during holidays to improve the teachers' strategies of teaching HIV/AIDS peer education which have been found is more effective than the modified conventional lecture method.

Gender disparity in terms of choice of career and job placement should be discouraged to give the male and female students equal opportunity to operate. They should be given the same task in the class to enable them to compete effectively. However girls should be encouraged to go more into sciences by using peer education. Also motivational strategy, gender fair language, gender fair textbooks, role model albums and assigning leadership tasks or roles to females as tutorial leaders, or class leaders will help to erase gender disparity among the students.

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