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Research Article

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Effect of formal Education Programme and Environment on Adolescent Students Knowledge and Attitude Towards AIDS (A Retrospective Study)

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ABSTRACT

This study sought to evaluate the effect of Formal AIDS Programme (Treatment) and Environment (Urban and Rural localities) on adolescent students' knowledge and attitude towards AIDS.

Ten secondary schools were randomly selected in each locality to participate in the study. The ten schools in each locality were randomly assigned to treatment groups (5 experimental and 5 control groups). In each selected school, 20 students were randomly selected to participate in the study. In all, the sample consisted of 200 students in urban locality (100) students in experimental and control groups respectively) as well as 200 students in rural locality (100) students in experimental and control groups respectively).

The dependent variables were Knowledge of AIDS and Attitude towards AIDS, the independent variables were Treatment, occurring at two levels (Formal AIDS Education, and no Formal AIDS Education); and Environment, occurring at two levels (Urban and Rural). Thus, the study made use of 2x2 randomized control group pre-test-post-test experimental designs. Six (6) hypotheses were tested at 0.05 alpha level.

Two valid and reliable instruments were used: Knowledge Test on AIDS (KTA); and AIDS Attitude Scale (AAS). The adolescents were exposed to the treatment for a period of 6 weeks.

A 2x2 Analysis of covariance (ANCOCA)was used with pretest scores as covariates to test for interactive and main effects. Multiple Classification Analysis(MCA) was used to determine the amount of variation accounted for by each independent variable. Where there was a significant F ratio, a t-test was applied as appropriate.

The result indicates that;

1. *There was a significant interactive effect of Treatment and Environment (location) on adolescent students' knowledge of AIDS.*
2. *There was no significant interactive effect of Treatment and location on adolescent students' attitude towards AIDS.*
3. *Post test mean score in attitude of adolescent students exposed to formal AIDS Education programme was significantly higher than that of those not exposed to formal AIDS education programme.*
4. *Post-test mean score in attitude of adolescent students living in urban areas was significantly higher than that of those living in rural areas.*
5. *Post-test mean score in knowledge of urban students was significantly higher than that of rural students under formal AIDS education treatment but not significantly different under no formal AIDS education treatment.*
6. *Treatment and environment together accounted for a total variance of 23.6% in knowledge of AIDS, and 15.2% in Attitude towards AIDS.*
7. *For knowledge of AIDS, treatment accounted 5.8% and environment accounted for 7.3% of the variation.*

8. *For attitude towards AIDS, treatment accounted for 2.3% and environment accounted for 4.8% of the variation.*

Based on the findings, it was concluded that exposure of adolescent students to formal AIDS education programme is an effective means of improving adolescent students knowledge and attitude towards AIDS. However, such an exposure is more potent for improving the knowledge of urban adolescents than that of the rural ones. It was therefore recommended that formal AIDS education be included in the Health Education Curriculum of Senior Secondary Schools in Nigeria, particularly schools in urban localities.

KEY WORDS: *Formal Education, Programme, Environment, Adolescent Student, Knowledge, AIDS, Attitude towards AIDS.*

INTRODUCTION

Adolescents constitute a potential high-risk group for exposure to Acquired Deficiency Syndrome (AIDS)due to the nature of their sex practices and experimentation with chemical substances. Consequently, information regarding adolescent AIDS knowledge, attitude and beliefs become critical in efforts to prevent the spread of this disease (Dorman, 1988). According to Alanzo (1988) current empidemogical data indicate that adolescents represent only 10% of the diagnosed cases of AIDS in the United States. He however asserted that should incidence of transmission of other sexually transmitted disease among adolescents serve as a pattern for AIDS spread in this group, then the rate of infection among adolescents will increase appreciably in the near future.

AIDS was described by Ransome Kuti (1992) as a new disease that has in the short period of six to ten years affected practically every country in the world. He revealed that:

a. About eleven million (11,000,000) people in Nigeria have been infected and predicts that the country will have four millions orphans by the year 2,000 AD;
b. of the 250,000 blood samples screened in the country, there are 981 persons infected by the AIDS virus, 209 have already developed the Disease (AIDS) itself, while over 200 persons have dead.
c. up to date, no drug has been found that cures AIDS and neither has to vaccine been developed to prevent infection by the Human Immuno-Deficiency Virus (HIV).
d. mankind's only weapon remains on information education.

It is perhaps against this background of the "only weapon" that Ransome Kuti (1992) charged the mass media and all teachers with the task of educating the people to adopt safer and self protecting life-style, thus protecting themselves, their spouses and off-springs from contracting the deadly virus.

In Nigeria, there is a gross inadequate basic AIDS information system for the general public most especially for the adolescent group. The danger of this is that adolescent students lack the necessary knowledge, about high-risk behaviours associated with AIDS virus infection which could help prevent the spread of the disease. It is probably for this reason, among others, that in the last few years, the urban communities in the country have witnessed the increase in the provision of information about AIDS prevention via television houses, newspapers, bill boards and on buses. Some of these are aimed specifically at adolescent students. However, the impact of this increased information on adolescent's awareness of the disease is yet to be investigated. Omishakin (1988).

A limited number of studies have examined knowledge, attitude and beliefs of adolescents as they concern AIDS. The study findings (price et al, 1988; Diclemerte et al, 1988) indicate that adolescents have inadequate knowledge of AIDS, as well as show little concern or worry about contracting the disease. Nigerian adolescents have not faired any better. For instance Omishakin (1988) assessed the knowledge. Attitude and beliefs of 750 male and female urban high school students drawn from six schools in Ibadan and found that majority of the students (70%) were completely ignorant of the terminology. AIDS while 90% of the sample did not know that AIDS is transmitted through sexual

intercourse. In his opinion (Omishakin, 1988), government's negligence and inadequacy in providing necessary information on AIDS for students are among the major factors responsible for students ignorance on AIDS and AIDS related issues. It is against this background that he advised the federal government to develop and implement school Health Education Programme on AIDS in Nigerian Secondary Schools.

The forementioned studies, despite their scope and perhaps depth, only assessed the knowledge and attitude of adolescents on AIDS-related issues. The studies did not provide any empirical evidence on factors and techniques that can improve adolescents' knowledge and attitude towards AIDS despite the fact that knowledge and attitude are acquired characteristics that can be improved upon (piper, 1977; Onocha and Okpala, 1984). The attempt by the present study to provide such and empirical evidence and its search interactions between the factors (independent variables) as the influence adolescents' knowledge and attitude (dependent variables) underscore the need for it to be conducted. In carrying out the study, the researcher contends that the exposure of adolescents to a formal AIDS education programme is expected to boost their knowledge and attitude towards AIDS. Again, considering that residents in urban environments in Nigeria have more access to health institutions, health personnel, television, newspapers, bill boards, and buses than their counterparts in rural setting, it is expected that the level of knowledge and attitude exhibited by an adolescent student would depend on whether the student lives in urban or rural community.

STATEMENT OF THE PROBLEMS/HYPOTHESIS

This study sought to evaluate the effect of formal AIDS Education Programme (Treatment) and Environment (Urban/Rural Communities) on adolescent students' knowledge and attitude towards AIDS.

MAIN HYPOTHESIS

There will be no significant difference in knowledge and attitude of adolescent students exposed to formal AIDS Education Programme and those not exposed, as well as between adolescent students attending urban schools those in rural schools.

SUB-HYPOTHESIS

Based on the main hypothesis, the following sub-hypothesis were tested:

a. There is no significant interactive effect of treatment and environment students' knowledge of AIDS.
b. There is no significant effect of formal AIDS education programme (Treatment) on adolescent students' knowledge of AIDS.
c. There is no significant effect of Location on adolescent students' knowledge of AIDS.
d. There is no significant interactive effect of treatment and environment on adolescent students' Attitude towards AIDS.
e. There is no significant effect of formal AIDS EDUCATION PROGAGRAMME (Treatment) on adolescent students' attitude towards AIDS.
f. There is no significant effect of environment on adolescent students' attitude towards AIDS.

SIGNIFICANCE OF THE STUDY

In the last few years, the problem of AIDS has made a strong impact on the attention of the Nigerian public causing national concern. There is a gross inadequate basic AIDS information system for the general public most especially in the area of adolescents. The danger about this is that students lack the necessary knowledge about high-risk behaviours associated with AIDS virus infection which could help prevent the spread of the disease. This, perhaps, could be one of the reasons why many researchers have directed their conscious efforts towards ameliorating the spread of AIDS virus among adolescents. This study is one of such efforts. It is hoped that the study findings could be a basis for officials of Ministries of Health and Education to

1) Accept that contemporary adolescent in Nigeria need to be assisted in protecting themselves against AIDS and other sexually translated diseases.

2) Provide such assistance through the introduction of AIDS Education programme into health curriculum for Nigerian secondary schools.
3) Determine the extent to which formal education could be introduced in the curriculum of rural and urban secondary schools.
4) Design and mount other intervention strategies (e.g. dissemination of information on AIDS through radio, television, churches, newspapers, bill boards, etc) to complement the efforts of health education teachers in secondary schools.

The study findings could also make some significant additions to the pool of literature on AIDS and thus could inspire other health educators in Nigeria to conduct more researches in the area of AIDS education.

METHOD OF KNOWLEDGE

The absence of cure or preventive vaccine brings into its proper perspective the importance of information education and communication in the control and prevention of HIV infection and AIDS.

Typically, AIDS prevention campaigns are part of a general public education effort designed to accomplish the following objective:

- Increase general public awareness and knowledge about AIDS, its transmission and risk reduction strategies.
- Reduce general public fears and correct misinformation about the dangers of casual contagion and ordinary social contact with HIV infected individuals.
- Great support for constructive action by increasing general public understanding of the severity of the crisis, its complexity and costs.
- Reduce the rate of transmission or and infection by changing the behaviours of at risk individuals. For effective behaviour change, the target audience must be defined.

1. The general public- this means everyone-with different levels of beliefs, risk behaviour, and messagunderstanding.
2. Groups defined by behaviour-include men who have sex with other men (gay, homosexuals) intravenous drug users and those who share needles. Alcohol abusers, people with multiple sexual partners/sex workers 9prostitues), consumers of blood products, haemophilacs, sickle cell patients, and sexual partners of all of them.
3. Groups defined by the place they are available to be educated. Youth in school, consumers of health services, employees in the workplace, members of a church/mosque or other community organization and people in institutional settings, military camps, mental institution,jails,refugees etc.

METHODOLOGY

RESARCH DESIGN

This study made use of a 2x2 randomize control group pretest-post-test experimental factorial design. The design is such that Treatment (formal AIDS education programme) was crossed with students Environment (urban and rural). The investigator had to chose this design because of the following reasons:

1. It allows for the determination of the influence of each independent variable on the dependent variables. This is the main component of the design.
2. It offers an opportunity to determine the combined influence of the two independent variables on the variables. This is the interaction component of the design-a component of the design-a component that makes the factorial experiment less artificial than a single one to one variable study.
3. It is more economical (in terms of time, energy, and number of subjects) than a corresponding multi-single factor experiment. The study design could thus be illustrated as shown in Table 3.1

Table 3.1: Design of Study

Location	**Treatment**	
Urban	Experimental	Control
Rural		

In terms of symbols, the design could be represented as:

$^{0}11$ $^{T}1$ $^{0}21$

$^{0}12$ $^{T}2$ $^{0}22$

Where,

$^{0}11$, $^{0}12$ represent the pre-knowledge and pre-attitude scores

$^{T}1$, $^{T}2$ represent the treatment

$^{0}21$, $^{0}22$ represent the post knowledge and post-attitude scores.

POPULATION

The population for the study comprised of all the final year senior secondary school adolescents in the urban and in the rural areas of Benin City and Ovia Local Government Area of Edo State.

The Ovia Local Government area is basically a very remote community except for the Okada Wonderland, a town situated at the Northern aspect that has been developed single-handedly by Chief Gabriel Osawaru Igbinedion, the Esama of Benin. There is an approximate population of three thousand, four hundred and seventy (3,470) students in these schools.

SAMPLE AND SAMPLING PROCEDURE

The sample comprise of four hundred (400) adolescent students. Simple random sampling was used to pick Benin City and Ovia Local Government area to represent urban and rural localities respectively in Edo State. In each locality, 10 schools were randomly selected to participate in the study. In each selected school 20 students were randomly picked to participate in the study.

Again, the 10 schools in each locality were randomly assigned to treatment groups (5 experimental and 5 control groups). In all, the sample consists of 200 students in urban locality (100 students in experimental and control groups respectively) as well as 200 students in rural locality (100 students in experimental and control groups respectively). The distribution of the subjects in each cell of the design is shown in Table 3.2.

Table 3.2: Distribution of subjects within cells of the design

	Treatment		
Locality	Experiment	**C**ontrol	Total
Urban	100	100	200
Rural	100	100	200
Total	200	200	400

VARIABLES IN THE STUDY

A. Independent variable

There are two independent variables in the study and they are the AIDS education programme (Treatment) and Environment.

1. **Treatment**

Treatment occurs at two levels: formal AIDS education programme (experimental group). In the experimental group, the subjects were exposed to an AIDS Education package alongside other topics they are expected to cover in their health education subject. The package is designed to expose the adolescents to concepts/topics on AIDS with particular emphasis on history/origin of AIDS, signs and symptoms, mode of transmission, control and prevention, high-risk-factors, availability of tests, test locations and treatment. The regular teacher for the student conducted the lesson in all the concepts/topics using the AIDS using conventional teaching method. The treatment lasted for six weeks.

In the control group, the students were not exposed to the formal AIDS education package. Instead their regular teachers exposed them to only the topics/concepts stipulated in their health education scheme of work using conventional teaching method for six weeks.

2. **Environment**

The two levels of environment as used in this study are urban and rural. All the students from schools located in Benin City were designed to have come from urban locality. On the other hand, all the students located in Ovia Local Government Area were designed to have come from rural locality.

B. Dependent variable

The two dependent variables are knowledge of AIDS and attitude towards AIDS.

METHOD OF DATA COLLECTION/ADMINISTRATION

The investigator visited and sought permission from the ministry of education and principals of the selected schools. The principals and the health education teaches in the schools were made sensitive to the issue of their participating in the study as they were told that the programme will enhance their students performance in health education examinations.

The experimental group teachers who participate in the study were properly briefed on how to expose the students to the AIDS Education Package alongside the other topics they are expected to cover using conventional teaching method. The control group teacher were also briefed on how to expose the students to topics/concepts stipulated in the health education scheme of work using conventional teaching method. The investigator also confirmed from the scheme of work and he two groups of teachers that the contents of the package have not been taught to the students. This was necessary in order to maximize the treatment effect.

Knowledge Test on AIDS (KTA) and the AIDS attitude scale (AAS) were administered to the students before the commencement of the treatment. These served as the pretests. At the end of the treatment which lasted for 6 weeks, the same knowledge Test on AIDS (KTA) and attitude scale (AAS) were administered to the students to generate the post-test scores.

INSTRUMENT DEVELOPMENT AND VALIDATION

Two instruments were used for the study. They are:

AIDS Attitude Scale (AAS).

Knowledge Test on AIDS (KTA).

This is a 70 item alternative response test constructed to cover the following content areas on AIDS Education: causes, signs and symptoms, mode of transmission, control and prevention, treatment, high risk factors, and mode of test. The items also reflected the remembering, understanding and thinking levels of cognitive domain (Yoloye, 1982). The test is designed for a testing period of 1hr. 15min.

The 70 items were selected from an initial pool of Ninety items which were initially developed by the investigator. These items were subjected to non-empirical validation using 4 health educators, 3 educational evaluators, and 2 experienced secondary school health education teachers. The validation led to modification of several items and a total rejection of 16 items. The remaining 74 items were pre-tested using 92 secondary school students in 4 randomly selected rural and urban schools in Delta State. The remaining 70 items which formed the final version of the test were trial tested twice (time interval, 3 weeks) using 144 students in 6 randomly selected rural and urban secondary schools in Delta State on each occasion. The pre-test result showed no ambiguities in the instrument and produced reliability values that ranged from 0.08 to 0.96 for the 70 items.

METHOD OF DATA ANALYSIS

Data collection was done by the health education teacher in their respective school.

In scoring the achievements test, the total number of items correctly answered by a student yields scores that serve as an index of the student's knowledge of AIDS. In scoring the attitude scale, an item that is positively disposed towards AIDS attracted the following weighing: strongly Agree = 4, Agree = 3; Disagree = 2; strongly Disagree = 1. The reverse order was used to score a negatively disposed item. A student's total score is an index of his attitude towards AIDS.

The experimental and control groups constituted the unit of observation and thus, the analysis focused on the mean scores in knowledge and attitude. The two groups were compared on the two dependent variables respectively. Data analysis was done using SPSS sub-programme (Nie, et al, 1975) on analysis of covariance (a 2x2 ANCOVA) with pretest scores as covariates. The ANCOVA was expected to correct for any initial differences in the dependent variables and other extraneous factors that could compound treatment effect. In the case of a significant main effect, Multiple Classification Analysis (MCA) was used to determine the magnitude and direction of the effect as well as the account of variation due to each independent variable. In the case of a significant interaction, t-test was used to identify the source of the interaction.

RESULT AND DISCUSSION

In this aspect, the results of the study are presented and discussed in accordance with the research hypothesis. In situations where analysis of covariance (ANCOVA) yielded significant F-ratio for the interaction of the independent variables, the main effect, even if significant was not fully discussed. Instead, emphasis was placed on examining the post-test mean scores more closely by studying simple effects of the variables that interacted significantly. It was therefore necessary to conduct a separate examination of the differences among categories of one independent variable and vise versa. This is in accordance with the rule of thumb (Kerlinger, 1973; Pedhazur, 1983) that whenever interaction is significant it is generally not meaningful to interpret significant main effects. The nature of any interaction was also illustrated graphically.

INTERACTIVE EFFECT OF TREATMENT AND LOCATION ON ADOLESCENT STUDENTS' KNOWLEDGE OF AIDS.

Hypothesis one (Ho_1) TABLE 4.1

ANCOVA Summary Table of Interactive effect of Treatment and Environment on Adolescent Students' Knowledge of AIDS.

Source of Variation	SS	DF	M	F
2 Way interaction Treatment & Location	147/484	1	147/484	6.922*
Residual	8395.281	394	21.308	
Total	8542.765	395		

*P> 0.05

The investigator further examined the nature of the interaction between treatment and location by using a t – test to compare the post-test mean knowledge scores of students in urban and rural locations across the two levels of treatment: formal AIDS education (T1) and no formal AIDS education (T2). The results are presented in Table 4.2 and 4.3 and illustrated graphically in Figure 4.1.

TABLE 4.2: t-value for The Comparison of Pre-test Mean Scores of Urban and Rural Students in Formal Education Treatment Group

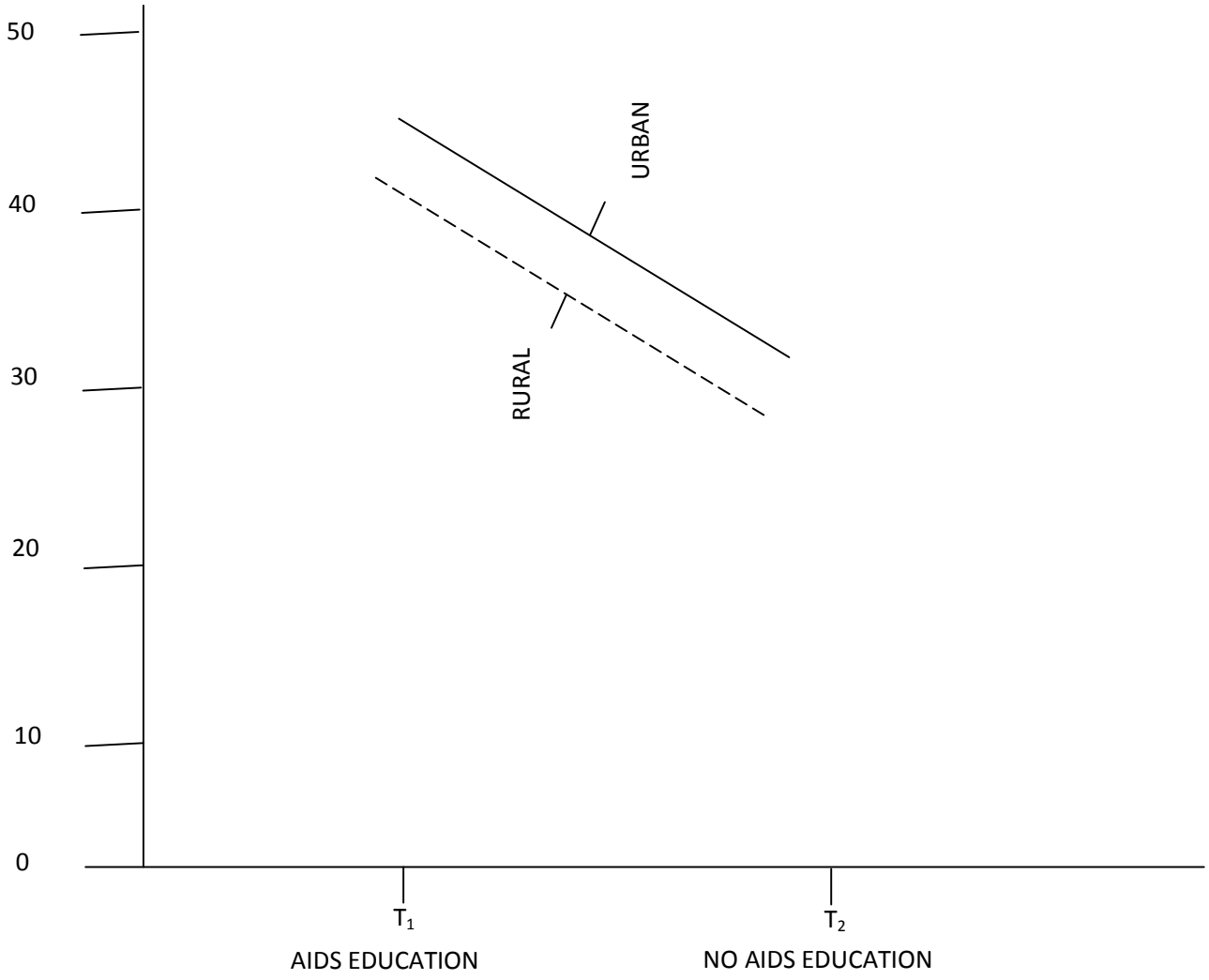
Formal Education (T_1)	N	M	SD	t-value
Urban	100	46.24	6.32	4.09*
Rural	100	39.57	11.098	

*P > 0.05

TABLE 4.3: t-value For The Comparison of Post-test Mean Scores of Urban and Rural Students in No Formal Education Treatment Group

No formal Education (T_2)	N	M	SD	t-value
Urban	100	42.64	9.47	1.33(NS)
Rural	100	41.73	13.66	

NS = Non-significant P > 0.05



Interaction of Treatment and Location on Adolescent Students' knowledge of AIDS.

Table 4.2 and 4.3 show that the post-test mean knowledge score of adolescent students living in urban location was significantly higher than that of their counterparts living in rural location under formal AIDS education treatment (T_1) but not significantly different under no formal AIDS education treatment (T_2). The nature of the interaction was therefore such that the urban adolescent students exhibited more knowledge of AIDS under formal AIDS education treatment than no formal AIDS education treatment.

A more visual impact of the nature of the interaction was created by the graphic presentation of the interaction (Figure 4.1). As shown in the figure, the line segments connecting the means were not parallel and yet, they did not cross over which showed significant interaction under formal AIDS education condition (T_1) but non-significant interaction under no formal AIDS education condition (T_2). That is, the rank order of the treatment effects remained constant across urban and rural locations. The effect of formal AIDS education programme (T_1) was found to be consistently superior to that of non formal AIDS education (T_2) although the difference between the two was not constant. The difference was much more under T_1 than under T_2. Infact, the difference under T1 was significant unlike the difference under T_2. The graph thus shows that it is best to combine urban location with formal AIDS education treatment (T_1). These are illustrated in Figure 4.1.

In the past few years , the urban locations in Nigeria (unlike their rural counterparts) have witnessed the provision of information about AIDS and AIDS prevention via television, newspapers, bill boards, radios,

etc. Some of these informations are aimed specifically at educating adolescents. The provision of information on AIDS to adolescents residing in urban localities through the fore-listed channels could act as orienting stimulus that would probably make the students see the relevance and importance of the contents of the formal AIDS education programme, the treatment (T_1) package. Such students are likely to benefit more from the treatment (T_1) than students living in rural locations. The urban location thus appears to be more stimulating and conductive for a learner to internalize his learning experience in AIDS education that the rural location. It could be that this peculiar nature of the urban location might have interacted with the treatment condition (formal AIDS education programme) provided by the study to boost the adolescent student's knowledge of AIDS.

MAIN EFFECT OF TREATMENT OF ADOLESCENT STUDENTS KNOWLEDGE OF AIDS

Hypothesis Two ($H0_2$):

There is no significant main effect of treatment on adolescent student's knowledge of AIDS.

TABLE 4.4: ANCOVA Summary Table of Effect of Treatment on Adolescent Students'/knowledge of AIDS

Source of Variation	SS	DF	MS	F
Treatment	586. 900	1	586. 9	
Residual	839,281	394	21.308	27. 544*
Total	982. 181	395		

*P 0.05

Table 4.4. shows that the main effect of treatment on adolescent students' knowledge of AIDS is significant [F_1, 394 = 27. 54; P 0.05. consequently upon this finding, hypothesis two was thus rejected. As a result, the data was subjected to Multiple Classification Analysis (MCA) (Table 4.5) in order to determine which of the two groups of students (experimental group or control group) achieved significantly higher than the other.

TABLE 4.5: Multiple Classification Analysis (MCA) of Treatment on Adolescent/students' Knowledge of AIDS

Variable + Category	N	Unadjusted Deviations	Eta	Adjusted Independent + Covariate Deviations	Adjusted Post-test Means	Beta
Formal Education	200	1.10	0.19	1.24	46.12	(0.24)
No formal Education	200	-1.10		-1.24	43.64	

Multiple R^2 5.8%

As shown in Table 4.5, adolescent students who were exposed to formal AIDS education programme achieved significantly better (in the knowledge of AIDS test) than those students who were not exposed. The adjusted post test mean score for the experimental group was 46.12 as against 43.64 for the control group. These values were computed by summing the grand mean and the adjusted mean respectively. The table also shows that treatment alone accounted for 5.8% $(0.24)^2$of the adolescent students' variation in knowledge of AIDS.

A close observation of the treatment package indicate that its content has direct relevance to any meaningful efforts towards improving student's awareness/knowledge of AIDS and AIDS-related issues. It is thus not surprising that adolescent students in the experimental group exhibited a higher knowledge of AIDS than their counterparts in the control group. Moreso, when knowledge is an acquired characteristic that can be improved upon through organized learning activities. It could thus be concluded that exposing adolescent students to formal AIDS Education programme could cause and indeed does cause significant improvement in their knowledge of AIDS.

MAIN EFFECT OF LOCATION ON ADOLESCENT STUDENT'S KNOWLEDGE OF AIDS

Hypothesis three (Ho_3):There is no significant main effect of location on adolescent student's knowledge of AIDS.

TABLE 4.6: ANCOVA Summary Table of Effect of Environment on Adolescent

Source of Variation	S	X	SD	F-value
Location	799.949	1	799.949	
Residual	8395.281	394	21.308	37.54*
Total	9195.23	395		

* P > 0.05

Inspite of the significant interactive effect of treatment and location on adolescent students' knowledge of AIDS as shown in Table 4.6 it was also shown that the main effect of location on adolescent student's knowledge of AIDS was significant [F_1, 394=37.54; P> 0.01], thus rejecting the hypothesis and upholding the corollary.

Consequently upon this rejection the data was further subjected to the Multiple Classification Analysis (MCA) Table 4.7. The table provides the basis of determining which of the two groups of students (Urban residents or Rural residents) exhibited a higher knowledge of AIDS than the other.

TABLE 4.7: Multiple Classification Analysis (MCA) of environment on Adolescent Students Knowledge of AIDS

Variable + Category	N	Unadjusted Deviations	Eta	Adjusted Independent + Covariate Deviations	Adjusted Post-test Means	Beta
Urban	200	1.64	0.31	1.43	46.31	.27
Rural	200	-1.64		1-1.43	43.45	

Multiple R^2 = 7.3%

As shown in Table 4.7 students residing in urban location exhibited a higher knowledge of AIDS than those adolescent students residing in rural locations. The adjusted post-test mean score for students in urban location was 46.31 as against 43.45 for adolescent students in rural locations. The table also shows that location alone accounted for 7.3% of the adolescent student's variation knowledge of AIDS.

This result is not unexpected since it corroborates in earlier literature on AIDS education (Atolegbe, 1989) which indicates that the danger of lack of AIDS knowledge is worst for the typical rural students. The result, however, is explicable considering that adolescent students in Nigerian urban locations (unlike their rural counterparts) have been exposed to much information on AIDS and AIDS prevention via televisions, radios, newspapers, billboards, buses, etc. As earlier indicated, some of this information are directed specifically towards educating adolescents. It is thus possible that the adolescent students residing in urban locations must have acquired enough extra information on AIDS through their immediate environment to enable them perform better than their rural counterparts in the knowledge of AIDS test.

INTERACTIVE EFFECT OF TREATMENT AND LOCATION ON ADOLESCENT STUDENTS' ATTITUDE TOWARDS AIDS

Hypothesis four (Ho_4): There is no significant interactive effect of treatment and location on adolescent students' attitude towards AIDS.

TABLE 4.8: ANCOVA Summary Table of Effect of Treatment and Location on Adolescent Student's Attitude Towards AIDS

Source of Variation	SS	DF	MS	F
2-way interaction				
Treatment x location	5.649	1	5.649	0.909(NS)
Residual	2448.179	394		
Total	2453.828	395		

* P > 0.05

Table 4.8 presents a 2x2 analysis of covariance for the dependent variable: attitude towards AIDS. An examination of the results shown in the Table reveals that treatment and location on interaction was not significant for attitude towards AIDS [F_1, 394 = 0.909; P > 0.05]. For this reason, hypothesis four was accepted. It was thus concluded that there is no significant interactive effect of treatment and location on adolescent students' attitude towards AIDS.

The non significant interactive effect of treatment and location on attitude towards AIDS is an indication that there was no differential effect of treatment for adolescent students residing in urban location and those residing in rural location with respect to attitude towards AIDS. It thus appears that exposure of adolescent students to formal education programme on AIDS (treatment) is an effective means of improving students' attitude towards AIDS, irrespective of the students' location (urban or rural). Moreso, when the study findings indicated a significant main effect of treatment on adolescent students' attitude towards AIDS. The implication of this is that even though is has been said that urban students have more exposure to information on AIDS and AIDS prevention than their rural counterparts, this initial advantage is nullifies by treatment such that the end effect of the treatment on attitude towards AIDS appear to be the same irrespective of the students location.

MAIN EFECT OF TREATMENT ON ADOLESCENT STUDENTS' ATTITUDE TOWARDS AIDS

Hypothesis five (Ho_5):There is no significant main effect of treatment on adolescent students' attitude towards AIDS.

TABLE 4.9: ANCOVA Summary Table of Effect of Treatment on Adolescent Students' Attitude Towards AIDS

Source of Variation	SS	DF	MS	F
Treatment	139.853	1	139.853	22.506*
Residual	2448.179	394	6.214	
Total	2588.032	395		

* P > 0.05

The result as presented in Table 4.9, shows that the main effect to the treatment on adolescent students' attitude towards AIDS was significant (F_1, 394 = 22.506; P 0.05). For this reason, hypothesis five was rejected. It was the concluded that treatment has a significant main effect on adolescent students' attitude towards AIDS.

In order to determine which of the two groups of student (those who received formal AIDS education or those who did not) exhibited a more positive attitude that the other reference was made to the Multiple Classification Analysis (MCA) (Table 4.10). As shown in the Table, students who had formal AIDS education (experimental group) exhibited a more positive attitude that those who did not receive the formal AIDS education (control group). The adjusted post-test mean attitude score for the students in experimental group was 17.39 as against 16.55 for the students in the control group. The Table also shows that treatment accounted for 2.25% of the variation in students' attitude towards AIDS.

TABLE 4.10: Multiple Classification Analysis (MCA) on Treatment and Attitude towards AIDS

Variable + Category	N	Unadjusted Deviations	Eta	Adjusted Independent + Covariate Deviations	Adjusted Post-test Means	Beta
Exp	200	0.26	0.10	0.42	17.39	0.15
Control	200	-0.26		-0.42	16.55	

Multiple $R^2 = 2.25\% (Beta)^2$

The result obtained is explicable considering that the content of the formal AIDs education programme has direct relevance towards any efforts (in terms of exposing students to a programme) to improve on the attitude of students towards AIDS. Moreso, when attitude is an acquired characteristic that can be improved upon (Piper, 1977; Onocha and Okpala, 1984). It thus seems that the students in the experimental group acquired more information on AIDS that made them exhibit more positive attitude towards AIDS than their counterparts in the control group. Moreso, when part of the results of the present study indicated that the students who were exposed to formal AIDS education (experimental group) exhibited more knowledge about AIDS/AIDS prevention than those in the control group. It thus seems that a formal AIDS education programme, if well organized and implemented, could lead to improvement in adolescent students' attitude towards AIDS.

MAIN EFFECT OF LOCATION ON ADOLESCENT STUDENTS' ATTITUDE TOWARDS AIDS

Hypothesis Six (HO6): There is no significant main effect of location on adolescent students' attitude towards AIDS.

TABLE 4.11: ANCOVA Summary Table of Effect of Environment on Adolescent students' Attitude Towards AIDS

Source of Variation	SS	DF	MS	F
Treatment	65.664	1	65.664	10.57*
Residual	2448.179	394	6.214	
Total	2513.843	395		

*P>0.05

The results of the study, as presented in Table 4.11 shows that the main effect of location on adolescent students' attitude towards AIDS was significant ($F_{1,394} = 10.568$). For this reason, hypothesis six was rejected. The conclusion therefore is that location has a significant effect on adolescent students' attitude towards AIDS.

In order to determine which of the two types of location (urban or rural) has more effect on the attitude of the adolescent students, reference was made to the Multiple Classification Analysis (MCA) Table 4.12. The table shows that students who reside in urban location exhibited more positive attitude towards AIDS than those who reside in rural location. As shown in the Table, the adjusted post test mean attitude score for the student residing in urban location was 17.57 as against 16.55 for the students residing in rural location. The table also shows that location accounted for 4.84% of the variation in adolescent students attitude towards AIDS. (Table 4.12).

TABLE 4.12: Multiple Classification Analysis (MCA) of Environment on Adolescent Students' Attitude Towards AIDS

Variable + Category	N	Unadjusted Deviations	Eta	Adjusted Independent + Covariate Deviations	Adjusted Post-test Means	Beta
Urban	200	0.26	0.10	0.24	17.39	0.15
Rural	200	-0.26		-0.42	16.55	

Multiple $R^2 = 2.25\% (Beta)^2$

It has been indicated that students residing in urban locations are much more exposed to information on AIDS (through television, radio, bill-board, newspaper, etc) than those residing in rural locations. The results of the present study also shows that students living in the urban locations exhibited more knowledge of AIDS than those living in rural locations. Since the knowledge of a concept and attitude towards the concept are linked (Okpala, 1985; Onocha, 1986) and environment that is conducive for improving students' knowledge of a concept would also be conducive for improving the students' attitude towards the concept, moreso, when attitude (like knowledge) is an acquired characteristic that can be improved upon through meaningful interaction with relevant materials/environment. It is thus explicable that the students who interacted with urban locality exhibited more positive attitude towards AIDS than their counterparts who interacted with the rural locality.

RECOMMENDATIONS:

The findings of this study have implications for three aspects of education:

(a) Curriculum Planning;
(b) Teacher Training and in-service;
(c) School/Classroom practice.

Curriculum Planning:

The findings that exposure of adolescent students to formal AIDS education programme is effective in improving the students' knowledge of AIDS and attitude towards AIDS could constitute, to curriculum planners, an added sources of basic information necessary for a more effective planning of any health education curriculum for adolescent students. The findings could also serve as empirical basis for reviewing and re-planning of the current health education curriculum for Senior Secondary Schools.

It is therefore necessary that any process of planning a new health education curriculum for adolescents or reviewing/re-planning of the current Senior Secondary School health education curriculum should take cognizance of the need for the curriculum content to cover AIDS education concepts/topics. Such a reviewing/re-planning process should also create ample opportunities for health education teachers to effectively interpret/implement the curriculum and thus foster in the adolescent students desirable knowledge of AIDS and attitude towards AIDS.

There is also a need for developers of curriculum materials in health education to incorporate concepts/topics on AIDS education in the contents of textbooks and other curriculum materials for Senior Secondary Schools and Teacher Training Colleges. The curriculum materials should contain variety of exercises, assignments, follow-up activities and further readings to make students and teachers-trainees actively engaged in the learning process even after school hours.

Teacher Training and In-service:

The findings that exposure of adolescent students to formal aids education programme is effective in improving students' knowledge of AIDS could serve as empirical basis for reviewing the health education curriculum of teacher training colleges and organizing in-service programmes, workshops, and seminars on health education for practicing teachers. Perhaps, it may be suggested that the exit-performance criteria for health education teacher trainees in teacher training colleges and practicing health education teachers

on in-service programme should include mastery of topics/concepts on AIDS education as well as the acquisition of positive attitude towards AIDS.

School/Classroom Practice:

The findings that adolescent students living in urban locations exhibited more knowledge of AIDS and more positive attitude towards AIDS than their rural counterparts are indications that the living environment of a student (whether urban or rural) is an important determinant of the extent to which the student exhibits knowledge of AIDS and positive attitude towards AIDS. It is there fore necessary that school authorities endeavour to bridge the gap between urban and rural locations 9in terms of avenues of rural disseminating information on AIDS) in order to increase the level of awareness of rural students on issues related to AIDS and AIDS prevention. This could be done by introducing posters and bill boards on AIDS and AIDS prevention in rural locations, newspapers and radio sets in rural secondary schools as well as by organizing seminars/symposia on AIDS in rural secondary schools. Adolescent students living in rural locations should also be encouraged to read newspapers and monitor health education programmes on radio sets.

The fact that post test mean score in knowledge of adolescent students living in urban locations was significantly higher than that of rural students under formal AIDS education treatment (but not significantly different under no formal AIDS education treatment) is an indication that adolescent students in rural locations need more attention during teaching-learning sessions on AIDS education than their urban counterparts.

Health education teachers with enhanced teaching aids particularly when teaching concepts/topics on AIDS and any other diseases that are not given as much publicity in rural locations as in urban areas. Such teaching aids could include posters, films/projectors, newspaper cuttings, models, etc.

SUGGESTION FOR FURTHER STUDIES:

The findings of this study have shown clearly that there is urgent need for further studies to be carried out in the area of AIDS Education with special focus on the rural and the urban areas of the country. These studies should be geared towards the following objectives:

1. To come up with a Model Curriculum to be seen as a guide on which Health Educators can develop a potential and current knowledge of AIDS.
2. To produce audio and visual learning materials for community based information programmes.
3. To examine the influence of Cultural Beliefs on AIDS Education Programmes.

CONCLUSION

The study findings provided the basis for the following conclusions:

1. There was a significant interactive effect of treatment and location on adolescent student's knowledge of AIDS.
2. Post test mean score in knowledge of urban adolescent students was significantly higher than that of rural students under formal AIDS education treatment, but not significantly different under no formal AIDS education treatment.
3. Treatment and location together accounted for 23.6% of the variance in adolescent students' knowledge of AIDS.
4. Treatment alone accounted for 5.8% of the variance in adolescent student's knowledge of AIDS.
5. Location alone accounted for 7.3% of the variance in adolescent students' knowledge of AIDS.
6. There is no significant interactive effect of treatment and location on adolescent students'attitude towards AIDS.
7. Post test mean score in attitude of adolescent students exposed to formal AIDS education programme was significantly higher than that of students not exposed to formal AIDS education programme.
8. Post test mean score in attitude of adolescent students living in urban locations was significantly higher than that of adolescent students living in rural locations.

9. Treatment and location together accounted for 15.2% of the variance in adolescent student's attitude towards AIDS.
10. Treatment alone accounted for 2.3% of the variance in adolescent student's attitude towards AIDS.
11. Location alone accounted for 4.8% of the variance in adolescent student's attitude towards AIDS.

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