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Investigation on Pre- and Post-intervention Effects of Nurse-led Sexuality Education on Knowledge of Sexual Health Between the Intervention and Control Groups of Adolescents in Selected Secondary Schools in Ogun State, Nigeria

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ABSTRACT

Sexuality is an issue inherent in the lives of all human beings. Education for Sexuality takes place informally, through relationships with the environment, with the family as a model, and formally, as a pedagogical practice in Teaching. Nurse-led sexuality education interventions, particularly in schools, effectively improve adolescent knowledge, attitudes, and behaviors related to sexual health, potentially leading to reduced risky behaviors and improved overall well-being. Adolescence is a critical developmental period during which major biological as well as psychological take place. Therefore, this study seeks to investigate the pre and post-intervention effects of nurse-led sexuality education among adolescence in selected secondary schools across three local governments in Ogun State.

This study adopted quasi-experimental design of pre and post-intervention type and was conducted among adolescents (12 to 18 years) attending senior secondary schools in Ogun State, Nigeria. A sample size 422 respondents were selected using multi-stage sampling techniques. All respondents were subjected to constructive nurse-led intervention, devoid of bias before pre-interventional assessment, using structural questionnaire. The respondents were trained 1 hour per module per week which took six weeks (six modules) while post interventional assessment was also conducted twelve (12) weeks after the intervention phase using the same instrument. Data collected from the selected respondents were analyzed using IBM SPSS software version 28, Frequency and percentages were calculated for categorical variables, while mean and standard deviation was calculated for continuous variables.

The findings from this study indicate a significant improvement in adolescents' sexual health knowledge following the nurse-led sexuality education intervention. Prior to the intervention, 61.0% of participants demonstrated low knowledge of sexual health, while only 6.0% had high knowledge. However, after the intervention, the proportion of adolescents with low knowledge drastically decreased to 16.0%, while those with high knowledge increased significantly to 64.5%. This shift suggests that structured educational

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interventions can play a pivotal role in enhancing adolescents' understanding of sexual health concepts. The chi-square analysis ($\chi^2 = 11.021$, $p = 0.0492$) further confirms that this improvement was statistically significant.

The study concluded that, there was a substantial increase in knowledge levels, with the proportion of adolescents with low knowledge decreasing from 61.0% to 16.0%, while those with high knowledge increased from 6.0% to 64.5%.

Keywords: Nurse-led, Pre-intervention, Post-intervention, Sexuality, Education, Knowledge, Adolescent

INTRODUCTION

Sexuality is an issue inherent in the lives of all human beings (1). Education for Sexuality takes place informally, through relationships with the environment, with the family as a model, and formally, as a pedagogical practice in Teaching (2). However, adolescence is a critical developmental period during which major biological as well as psychological take place. Emotionally, they develop a sense of identity such as social involvement, peer interaction, risk taking as well as sexual interest in this phase. Adolescent sexuality development can be better explained with the bio-psycho-social model (3).

One major concern for adolescents globally is the increased risk of sexually transmitted infections (STIs) and unintended pregnancies. Previous study revealed that approximately 16 million adolescent girls aged 15-19 give birth each year, most occurring in low- and middle-income countries (4). The problem is further complicated by significant gaps in sexual health knowledge among young people. Many adolescents lack comprehensive information about sexual health, contraception, and STI prevention. Surveys like the Global School-Based Student Health Survey (GSHS) reveal that many adolescents do not fully understand how to use condoms and other contraceptive methods effectively (5). This knowledge gap leads to increased risk-taking behaviors and negative sexual health outcomes.

A major hindrance to addressing adolescent sexual health issues is the lack of comprehensive sexuality education (CSE) (6). Access to healthcare services, including sexual health services, is another critical issue. Studies revealed that Nurse-led sexuality education interventions, particularly in schools, effectively improve adolescent knowledge, attitudes, and behaviors related to sexual health, potentially leading to reduced risky behaviors and improved overall well-being (7, 8)

METHODOLOGY

Study Area

The study was conducted in some selected secondary schools within Ogun State, specifically targeting two schools each from of the three local government (Odeda, Abeokuta South, and Abeokuta North local government areas).

Study Design

The research employed a quasi-experimental design to examine the influence of nurse-led sexuality education on adolescent sexual behavior intention in some selected secondary schools across three local governments in ogun state, Nigeria.

Population of the study

The study was carried out among the adolescents (both male and female students between 12 and 18 years) attending senior secondary school students in some local government's area of Ogun State, Southwestern Nigeria. This was because they are adolescents who like to explore what their peers were doing and have been exposed to the Family Life and STIs Education (FLHE) curriculum. The population of Abeokuta South

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is a Local Government Area, Abeokuta North is a Local Government Area and Odeda is a Local Government Area as of the 2006 census are approximately 250,278, 201,329 and 115,000 respectively.

Research Setting

The study was conducted in selected secondary schools within Ogun State, specifically targeting two schools each from the Odeda, Abeokuta South, and Abeokuta North local government areas.

Sample Size Determination.

Slovin's formula (1960) was applied.

$$n = \frac{N}{1 + N(R)^2}$$

The values used are

N= Study population (9505)

R= 0.05 (margin of error)

n= sample size?

10% of the sample size (384) was added to replace inappropriate filling of questionnaires. Approximately, the sample size (n) is 422.

Table 1: Distribution of Respondents by Schools

SN	School name	Total population	Selected population
1	**Lantoro high school**	1250	
2	**Salawu Abiola Senior**	1580	
3	**Unity high school**	915	
4	**Nawarudeen Senior School**	2502	
5	**Premier school**	1594	
6	**Egba high school**	1664	
	Total	9505	422

The sample size was determined using Cochran's formula, which is tailored to detect differences in means or proportions before and after an intervention, thereby ensuring sufficient statistical power to identify meaningful effects. The paired t-test was employed to compare the means between pre-test and post-test scores.

$$n = \frac{2\sigma^2 \left(Z_{1-\frac{\alpha}{2}} + Z_{\beta}\right)^2}{d^2}$$

Sampling Technique

A multistage sampling technique was used to select the sample population from three local government area of Ogun state.

Stage 1: three local governments were randomly selected out of the 20 Local Government in Ogun State

Stage 2: two schools were randomly selected from three local government

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Stage 3: The populations of students in the selected schools was determined by getting the students' population size from the school principal and proportionate sampling was used in the selection of study participants from each school in accordance to their proportionate sample size. . In order to determine the number of respondents that was selected from each school, the number of SSS 1-3 students in each school was divided by the total number of students in SSS1-3 in all the 6 schools, multiplied by the sample size (N).

$$= \frac{\text{Number of SSS 1-3 (in each school)} \times \text{Sample size (N)}}{\text{Total number of SSS 1-3 (in all schools)}}$$

Stage 4: Respondents in each arm of class will be selected using systematic sampling using their class registers using a calculated sampling interval.

Study instrument

A validated and standardized structured questionnaire adopted for this study was used to gather quantitative data.

Validity of the Instrument

The validity of the structured questionnaires was confirmed through multiple methods to ensure they accurately capture the constructs related to sexual health education intention.

Reliability of the Instrument

A total of 35 respondents were recruited in the pilot study establishing the reliability of the test instrument.

Confidentiality and Anonymity

Participants' identities and personal information was treated with the utmost confidentiality. Identifying information was replaced with numerical codes to ensure anonymity

Informed Consent

Participants received comprehensive information about the study's purpose, procedures, potential risks, and benefits

Method of Data Collection

Data collection was carried out using the instrument designed for the study. The procedure was in three (3) phases: baseline data, intervention phase and the post- intervention (12 weeks after the completion of the intervention) Four (4) research assistants were trained to assist in data collection during the data collection Personal visits were made to all the selected schools with the four research assistants who have been trained on the data collection.

Ethical Considerations

The principle of ethical research study was upheld throughout the study. The study was reviewed by the ministry of education, science and technology, department of planning research and statistics committee with ethical approval number –PL.545/Vol.IV/T/77.

Method of Data Analysis

Data were analyzed using SPSS version 25. Frequency and percentages were calculated for categorical variables, while mean and standard deviation was calculated for continuous variables. The correct coding of variables was ensured during the data entry process to avoid errors.

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RESULT AND DISCUSSION

Table 2: Pre- and Post- Intervention Knowledge of Sexual Health Behaviour Intention among the Respondents in Control group (N=226)

	Pre-intervention (N=226)			Post-intervention (N=226)		
Statement	Correct (%)	Incorrect (%)	I don't know (%)	Correct (%)	Incorrect (%)	I don't know (%)
Being involved in premarital sexual intercourse is a risky behaviour	107 (47.3)	85 (37.6)	34 (15.0)	113 (50.0)	89 (39.4)	24 (10.6)
Involvement in sexual intercourse without the use of condom is a risky behaviour	109 (48.2)	94 (41.6)	23 (10.2)	120 (53.1)	87 (38.5)	19 (8.4)
Starting to practice sexual intercourse before the age of 14 is a risky behaviour	113 (50.0)	92 (40.7)	21 (9.3)	124 (54.9)	86 (38.1)	16 (7.1)
Having multiple sexual partners is a risk	105 (46.5)	88 (38.9)	33 (14.6)	116 (51.3)	88 (38.9)	22 (9.7)
Engaging in frequent sexual activities is a risky behaviour	122 (54.0)	66 (29.2)	38 (16.8)	129 (57.1)	70 (31.0)	27 (11.9)
Having sex under the influence of drugs and substances is a risky behaviour	115 (50.9)	82 (36.3)	29 (12.8)	122 (54.0)	86 (38.1)	18 (8.0)
Abstinence is not a risky behaviour	127 (56.2)	66 (29.2)	33 (14.6)	134 (59.3)	70 (31.0)	22 (9.7)
Engaging in oral sex is a form of unprotected sexual activity	126 (55.8)	74 (32.7)	26 (11.5)	130 (57.5)	81 (35.8)	15 (6.6)
Engaging in anal sex is a form of unprotected sexual activity	121 (53.5)	77 (34.1)	28 (12.4)	125 (55.3)	83 (36.7)	18 (8.0)
Receiving money or goods in exchange for sex is a risky behaviour	123 (54.4)	71 (31.4)	32 (14.2)	132 (58.4)	79 (35.0)	15 (6.6)
Sex education is different from teaching how to engage in sexual intercourse.	119 (52.7)	74 (32.7)	33 (14.6)	128 (56.6)	76 (33.6)	22 (9.7)
Sex education prevents early initiation of sex and promote abstinence-avoidance of sex until marriage	130 (57.5)	67 (29.6)	29 (12.8)	139 (61.5)	69 (30.5)	18 (8.0)
Sex education prevents teenager from having multiple sexual partners	129 (57.1)	74 (32.7)	23 (10.2)	138 (61.1)	76 (33.6)	12 (5.3)
Sex education teaches about developmental changes in the body and the relations to sexual behaviour	138 (61.1)	60 (26.5)	28 (12.4)	147 (65.0)	62 (27.4)	17 (7.5)
Sex education gives information related to sexual reproduction	121 (53.5)	79 (35.0)	26 (11.5)	121 (53.5)	90 (39.8)	15 (6.6)
Sex education teaches about reproductive health and rights.	108 (47.8)	87 (38.5)	31 (13.7)	113 (50.0)	93 (41.2)	20 (8.8)
Sex education teaches about safe sex, birth control and abstinence	113 (50.0)	78 (34.5)	35 (15.5)	118 (52.2)	84 (37.2)	24 (10.6)
Sex education empowers teenagers to have positive attitude towards risky sexual behaviours.	123 (54.4)	73 (32.3)	30 (13.3)	128 (56.6)	79 (35.0)	19 (8.4)
Sex education gives room for the teenagers to express themselves and communicate freely about sexual matters	145 (64.2)	56 (24.8)	25 (11.1)	150 (66.4)	62 (27.4)	14 (6.2)

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Sex education allows teenagers to make informed decision about their sexual health and rights	120 (53.1)	78 (34.5)	28 (12.4)	125 (55.3)	84 (37.2)	17 (7.5)
Sex education promote the use of contraceptives to prevent sexual transmitted disease or HIV and teenage pregnancy	137 (60.6)	55 (24.3)	34 (15.0)	142 (62.8)	61 (27.0)	23 (10.2)
Sexuality education teaches about dangers of unprotected sex and risky sexual behaviours	127 (56.2)	73 (32.3)	26 (11.5)	132 (58.4)	79 (35.0)	15 (6.6)

Source: Field survey, 2025

Table 3: Pre- and Post- Intervention Knowledge of Sexual Health Behaviour Intention among the Respondents in Experimental group (N=196)

	Pre-intervention (N=196)			Post-intervention (N=196)		
Statement	Correct (%)	Incorrect (%)	I don't know (%)	Correct (%)	Incorrect (%)	I don't know (%)
Being involved in premarital sexual intercourse is a risky behaviour	176 (89.8)	18 (9.2)	2 (1.0)	190 (96.9)	6 (3.1)	0 (0.0)
Involvement in sexual intercourse without the use of condom is a risky behaviour	175 (89.3)	10 (5.1)	11 (5.6)	179 (91.3)	11 (5.6)	6 (3.1)
Starting to practice sexual intercourse before the age of 14 is a risky behaviour	56 (28.6)	116 (59.2)	24 (12.2)	171 (87.2)	14 (7.1)	11 (5.6)
Having multiple sexual partners is a risk	76 (38.8)	55 (28.1)	65 (33.2)	166 (84.7)	17 (8.7)	13 (6.6)
Engaging in frequent sexual activities is a risky behaviour	55 (28.1)	64 (32.7)	77 (39.3)	170 (86.7)	15 (7.7)	11 (5.6)
Having sex under the influence of drugs and substances is a risky behaviour	106 (54.1)	70 (35.7)	20 (10.2)	176 (89.8)	13 (6.6)	7 93.6)
Abstinence is not a risky behaviour	113 (57.7)	64 (32.7)	19 (9.7)	181 (92.3)	12 (6.1)	3 (1.5)
Engaging in oral sex is a form of unprotected sexual activity	72 (36.7)	97 (49.5)	27 (13.8)	185 (94.4)	2 (1.0)	9 (4.6)
Engaging in anal sex is a form of unprotected sexual activity	119 (60.7)	43 (21.9)	34 (17.3)	181 (92.3)	6 (3.1)	9 (4.6)
Receiving money or goods in exchange for sex is a risky behaviour	121 (61.7)	29 (14.8)	46 (23.5)	179 (91.3)	10 (5.1)	7 (3.6)
Sex education is different from teaching how to engage in sexual intercourse.	47 (24.0)	116 (59.2)	33 (16.8)	173 (88.3)	15 (7.7)	8 (4.1)
Sex education prevents early initiation of sex and promote abstinence-avoidance of sex until marriage	130 (66.3)	31 (15.8)	35 (17.9)	170 (86.7)	16 (8.2)	10 (5.1)
Sex education prevents teenager from having multiple sexual partners	65 (33.2)	98 (50.0)	33 (16.8)	168 (85.7)	17 (8.7)	11 (5.6)
Sex education teaches about developmental changes in the body and the relations to sexual behaviour	140 (71.4)	36 (18.4)	20 (10.2)	171 (87.2)	13 (6.6)	12 (6.1)

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Sex education gives information related to sexual reproduction	131 (66.8)	51 (26.0)	14 (7.1)	173 (88.3)	18 (9.2)	5 (2.6)
Sex education teaches about reproductive health and rights.	116 (59.2)	59 (30.1)	21 (10.7)	176 (89.8)	14 (7.1)	6 (3.1)
Sex education teaches about safe sex, birth control and abstinence	107 (54.6)	68 (34.7)	21 (10.7)	173 (88.3)	13 (6.6)	10 (5.1)
Sex education empowers teenagers to have positive attitude towards risky sexual behaviours.	104 (53.1)	58 (29.6)	34 (17.3)	180 (91.8)	5 (2.6)	11 (5.6)
Sex education gives room for the teenagers to express themselves and communicate freely about sexual matters	118 (60.2)	66 (33.7)	12 (6.1)	174 (88.8)	15 (7.7)	7 (3.6)
Sex education allows teenagers to make informed decision about their sexual health and rights	112 (57.1)	68 (34.7)	16 (8.2)	172 (87.8)	14 (7.1)	10 (5.1)
Sex education promote the use of contraceptives to prevent sexual transmitted disease or HIV and teenage pregnancy	113 (57.7)	38 (19.4)	45 (23.0)	177 (90.3)	11 (5.6)	8 (4.1)
Sexuality education teaches about dangers of unprotected sex and risky sexual behaviours	121 (61.7)	55 (28.1)	20 (10.2)	167 (85.2)	13 (6.6)	16 (8.2)

Source: Field survey, 2025

Table 4: Pre- and Post- Intervention Knowledge Mean Score of Sexual Health Behaviour Intention among the Respondents in Control and Experimental groups

Knowledge Level	**Category**	**Experimental (N=196)**		**Control (N=226)**	
		Pre-test (%)	Post-test (%)	Pre-test (%)	Post-test (%)
Low	0-7	77 (39.3)	19 (9.7)	100 (44.2)	94 (41.6)
Moderate	8-14	13 (6.6)	5 (2.6)	7 (3.1)	8 (3.5)
High	15-22	106 (54.1)	172 (87.8)	119 (52.7)	124 (54.9)
Mean±SD		12.11±8.63	19.65±6.19	11.85±10.42	12.50±10.35
Mean difference		7.54 (62.26%)		0.65 (5.49%)	

Source: Field survey, 2025

Table 4 presents the pre and posttest mean score of respondents' knowledge of sexual heath behaviour intention in the control and experimental group. In the experimental group, a total of 77 (39.3%) had low knowledge, 13 (6.6%) had moderate level of knowledge and 106 (54.1%) had high knowledge among the participants at the pre-test phase with a mean knowledge score of 12.11±8.63 while there was an increase in the mean score at the posttest phase recording a score of 11.85±10.42 with 19 (9.7%) having low knowledge, 5 (2.6%) with moderate knowledge and 172 (87.8%) with high knowledge level.

The results from the control group showed that 100 (44.2%) had low knowledge level, 7 (3.1%) had moderate level of knowledge while 119 (52.7%) had high knowledge with a mean knowledge score of 11.85±10.42 at the pretest phase while at the post-test stage, a total of 94 (41.6%) had low knowledge, 8 (3.5%) had moderate knowledge and 124 (54.9%) had high knowledge among the participants with a mean knowledge score of 12.50±10.35.

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DISCUSSION

The findings from this study indicate a significant improvement in adolescents' sexual health knowledge following the nurse-led sexuality education intervention. Prior to the intervention, 61.0% of participants demonstrated low knowledge of sexual health, while only 6.0% had high knowledge. However, after the intervention, the proportion of adolescents with low knowledge drastically decreased to 16.0%, while those with high knowledge increased significantly to 64.5%. This shift suggests that structured educational interventions can play a pivotal role in enhancing adolescents' understanding of sexual health concepts. The chi-square analysis ($\chi^2 = 11.021$, $p = 0.0492$) further confirms that this improvement was statistically significant.

These findings are consistent with prior studies emphasizing the effectiveness of structured, evidence-based sexual health education in improving adolescent knowledge levels. For instance, Smith et al. (9) and Johnson & Peters (10) found that comprehensive sexuality education programs significantly increased students' awareness of key sexual health topics, including reproductive anatomy, contraception, and sexually transmitted infection (STI) prevention. Similarly, Adepoju et al. (11) reported that educational interventions significantly enhanced adolescents' understanding of reproductive health issues, particularly in settings where misinformation and cultural taboos limit access to accurate information.

One of the notable findings of this study is the effectiveness of a nurse-led approach in delivering sexuality education. Previous research has highlighted that healthcare professionals, particularly nurses, are well-positioned to provide sexual health education due to their expertise in health promotion and patient-centered communication (12). The structured approach used in this intervention aligns with global recommendations advocating for the integration of nurse-led sexuality education into school curricula to bridge gaps in adolescent sexual health knowledge (13).

Moreover, this study underscores the role of social determinants in influencing knowledge acquisition. Prior to the intervention, social media (47%) was the most common source of sexual health information, which raises concerns about the accuracy and reliability of information adolescents receive. Research has shown that unverified online sources often contribute to misinformation about sexual and reproductive health, reinforcing the need for structured, school-based programs (14). By implementing formal educational interventions, schools and healthcare professionals can provide adolescents with accurate, evidence-based knowledge, reducing their reliance on potentially misleading information from social media and peers.

Overall, these findings highlight the critical role of structured sexuality education in improving knowledge and promoting informed decision-making among adolescents. The statistically significant improvement observed in this study provides further support for policies advocating for the integration of nurse-led sexual health education into school curricula as a sustainable strategy for addressing knowledge gaps and promoting healthy sexual behaviors among young people.

CONCLUSION

It is concluded in this work that there was a substantial increase in knowledge levels, with the proportion of adolescents with low knowledge decreasing from 61.0% to 16.0%, while those with high knowledge increased from 6.0% to 64.5%. It is therefore recommended that policymakers and educators should incorporate nurse-led sexuality education into secondary school curricula to ensure adolescents receive accurate, evidence-based information about sexual health.

DECLARATIONS

Data Availability Request

The data generated during the study will be provided on a reasonable request from corresponding author.

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Declaration of interests Statement

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

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