UKR Journal of Medicine and Medical Research (UKRJMMR)
Homepage: https://ukrpublisher.com/ukrjmmr/
Email: submit.ukrpublisher@gmail.com
Volume 1, Issue 4, Nov-Dec 2025 **ISSN: 3107-5061 (Online)**

Effects Of Health Education on Knowledge of Reproductive Health among public Secondary School Students in Rivers East Senatorial District, Rivers State, Nigeria

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DOI: *https://doi.org/10.5281/zenodo.17770467*

Article History

Original Research Article

Received: 18-11-2025

Accepted: 28-11-2025

Published: 30-11-2025

Citation: ONYEGBULE, L.O.; ELECHI, C.E. (2025). Effects Of Health Education on Knowledge of Reproductive Health among public Secondary School Students in Rivers East Senatorial District, Rivers State, Nigeria. UKR Journal of Medicine and Medical Research (UKRJMMR), Volume 1(4), 1-8.

Abstract

Lack of basic knowledge about reproductive health, pose a serious health threat to adolescents. This study examined the effects of health education on knowledge of reproductive health among public secondary school students in Rivers East Senatorial District, Rivers State, Nigeria. The quasi-experimental research design was adopted with a population which consisted of 94,499 students. The sample size of 540 was selected using the multistage sampling procedure. Data was collected using a test instrument titled ''Asking young people about sexual and reproductive health behaviours: Illustrative Core Instrument'. Data was collected in three phases – pre-intervention, intervention and post-intervention phase. All analysis was done with the aid of Statistical Product for Service Solution (SPSS V-27). Data were analyzed using descriptive statistics such as mean and inferential statistics such as ANCOVA at 0.05 alpha level. The result showed that health promotion had significant effect on the knowledge of contraception effect [F(1, 252) = 4.87, p<0.05], knowledge of antenatal [F(1, 252) = 7.175, p<0.05], and knowledge of postnatal care [F(1, 252) = 1.08, p<0.05]. It was concluded that health education is a very effective intervention that has the potential to influence knowledge of reproductive healthcare among secondary school students. It was recommended among others that the government should complement the efforts of NGOs by mapping out collaborative effort with continuous campaign for contraception among secondary school students to sustain the effect of the health education intervention.

Keywords: *Effect, Health Education, Knowledge, Reproductive Health.*

Introduction

Reproductive health is a basic aspect of overall health in both males and females. Reproductive health is one of the major priorities of global health and is a fundamental and inalienable part of female's health due to child bearing (United Nations Population Fund, 2017). The increase in unsafe sexual behaviours and unintended pregnancy among adolescent is alarming and has become an area of interest for global public health researchers. Nigeria the giant of Africa is the 10th most populous country in the world and the most populous African country with a population of over 200 million people and a growth rate of 2.54% (National Population Commission (NPC), 2023). This population is characterised by 30 million adolescents' population constituting about 22% of the Nigerian population (NPC, 2016). In Nigeria, Adeomi et al. (2014) reported that, as high as 87.8% of women in Nigeria had low level of utilization of reproductive healthcare services.

Reproductive health forms a fundamental aspect of the broader field of public health. According to the World Health Organization (2020), it encompasses the ability of individuals to experience safe and fulfilling sexual relationships, to reproduce if they choose, and to exercise autonomy over the timing and frequency of childbearing. Sexual and reproductive health (SRH) during adolescence plays a crucial role in shaping multiple dimensions of a young person's life. It influences not only physical and emotional well-being but also future employment opportunities, economic stability, social standing, and

overall capacity to achieve personal aspirations and developmental potential (UNFPA, 2014; Viner et al., 2012).

Contraception as a reproductive health services helps adolescents to prevent unwanted pregnancy. Demis et al. (2014) described contraceptives as procedures employed for the internal prevention of conception through the use of various devices, drugs, surgical procedure. Contraceptives as opined by Mattebo et al. (2015) are procedures employed to interfere with the normal sequence of conception to control the number of children or intervals between birth especially by the use of contraceptives which include: condom, rhythm method, withdrawal, intra-uterine device, diaphragm, cervical cap, implants, tubal ligation, spermicides, injectables and birth control pills among others.

Health education seeks to increase individuals' understanding of the harmful effects associated with risky behaviours. Etemad et al. (2019) describe health education as a structured set of learning activities, grounded in established theoretical principles, that equips individuals, groups, and communities with the knowledge and skills necessary to make informed health-related choices. In essence, health education involves the deliberate planning and delivery of health information in ways that inspire learners to apply this knowledge for the improvement, protection, and restoration of health at both family and community levels.

Secondary school learners fall within the adolescent stage of development—a transitional period between childhood and adulthood marked by notable physical, emotional, cognitive, and social transformation. This stage, typically associated with the onset of puberty and the emergence of secondary sexual characteristics, is also characterised by rapid mental and emotional maturation. According to the World Health Organization (2022), adolescence generally spans ages 10 to 19. It begins with the physiological changes of puberty and concludes once an individual adopts stable adult behaviours and identity. The adolescent phase is therefore a critical developmental window during which significant biological, psychological, and social adjustments occur (Dick & Ferguson, 2015).

Adolescence represents a transitional stage between childhood and adulthood, marked by increasing autonomy, responsibility, and experimentation. It is a developmental period during which certain behaviours may expose adolescents to significant health and social risks, such as sexually transmitted infections (STIs), HIV/AIDS, unintended pregnancies, unsafe abortions, substance use, criminal involvement, gender-based violence, and other reproductive health challenges (UNFPA, 2019; Rasheed et al., 2011; Kar et al., 2015). This stage is also associated with the beginning of sexual activity, bringing potential consequences that have become a major concern for individuals, families, and communities worldwide.

Importantly, adolescents do not form a uniform group. Their needs differ widely according to age, sex, geographical location, socioeconomic status, and cultural background. As a result, their sexual and reproductive health requirements vary significantly across different communities, cultural contexts, and religious settings (Okonta, 2017).

In the Rivers East Senatorial District, reports indicate that many adolescents engage in sexual risk-taking behaviours, resulting in consequences such as unplanned pregnancies and withdrawal from school. This situation highlights the importance of examining how health education interventions influence adolescents' reproductive health knowledge and their sexual practices. Such an investigation will support the design and implementation of effective reproductive health programmes that encourage appropriate contraceptive use among young people. Consequently, the researcher considered it essential to assess the impact of health education on reproductive health knowledge among students in public secondary schools within the Rivers East Senatorial District of Rivers State. Based on this purpose, the following research questions were developed for the study:

1. How does health education influence public secondary school students' knowledge of contraception?
2. In what ways does health education affect students' understanding of prenatal care in public secondary schools?
3. What impact does health education have on public secondary school students' knowledge of postnatal care?

Hypotheses

The following hypotheses were formulated to guide the study;

1. Health education has no significant influence on public secondary school students' knowledge of contraception.
2. Health education does not exert a significant effect on students' understanding of prenatal care in public secondary schools.
3. Health education has no significant impact on public secondary school students' knowledge of postnatal care.

Methodology

This investigation employed a quasi-experimental design, specifically the pre-test–post-test control group format. The

target population consisted of 95,499 senior secondary school students within the Rivers East Senatorial District. From this population, a total of 540 students were selected through a stratified sampling approach. Data collection was carried out using an adapted structured test instrument known as *"Asking Young People About Sexual and Reproductive Health Behaviours: Illustrative Core Instrument"* developed by Cleland et al. (2011). To establish content and face validity, the instrument was reviewed by three specialists from the Department of Human Kinetics, Health and Safety Studies at Ignatius Ajuru University of Education, Rivers State. Reliability testing produced a coefficient of 0.75, indicating satisfactory internal consistency.

Data collection was carried out in three phases: Pre-intervention, Intervention and Post-Intervention. The pre-intervention phase involved an initial pre-test whereby data was collected from respondents who gave their consent to participate. The intervention phase comprised of sessions of health education with the intervention group only, on reproductive health which covered the objectives of the study which were majorly on: contraception, antenatal care, and postnatal care. The education was followed by an interactive session with the students for clarity of doubts. At the post-intervention phase, the researcher and research assistants re-administered the same set of test instrument used during the pre-test phase in both the intervention and control group. The instrument were retrieved on the spot after it was completely filled.

Data analysis was carried out using the Statistical Package for the Social Sciences (SPSS, Version 27). Descriptive statistics—including the mean and standard deviation—were used to summarise the data, while inferential analysis was performed using a one-way Analysis of Covariance (ANCOVA) at a 0.05 level of significance. The scoring procedure allocated 2 points for each correct response and 1 point for an incorrect response; the total score for each construct was computed, and the mean value served as the benchmark for decision-making. The criterion for accepting or rejecting each null hypothesis was based on a significance threshold of 0.05. A null hypothesis with a p-value below 0.05 was considered statistically significant and therefore rejected, whereas a p-value equal to or greater than 0.05 resulted in the retention of the null hypothesis.

Results

The results of the study are presented below:

Table 1: Mean and standard deviation on the effects of health education on knowledge of contraception among secondary school students

SN	Item	Interv. (N = 252)		Mean gain	Control (N = 252)		Mean gain
		Pre	Post		Pre	Post	
1	Contraception means any procedure employed to avoid pregnancy	3.73	4.69	0.96	2.01	2.09	0.08
2	Contraception prevent conception, regulate family size and child spacing	2.72	4.92	2.20	2.78	2.83	0.05
3	Condom, vasectomy, tuba ligation, diaphragm, spermicide, are contraceptives	2.11	4.09	1.98	2.39	2.69	0.30
4	Barrier methods are condom, diaphragm and cervical cap	3.05	4.53	1.48	1.71	2.63	-0.08
5	Permanent method are sterilization, tubal ligation and abstinence	3.24	4.33	1.09	1.45	2.29	-0.16
6	Natural method was withdrawal	2.02	4.91	2.89	2.44	2.58	0.14
7	IUD mean Intrauterine Device	1.70	4.83	3.13	1.11	2.08	-0.03
8	Hormonal method were pills, implant, and injectable	2.45	4.61	2.16	2.32	2.41	0.09
	Grand mean	**2.62**	**4.16**	**1.98**	**2.02**	**2.45**	**0.05**

Highest possible score for each item = 5; Interv. = intervention group.

***Table 4.1b: Summary of* Mean and standard deviation on the effects of health education on knowledge of contraception**

Group	Pretest	Post-test	Mean gain
Control	2.02	2.45	0.05
Intervention	2.62	4.16	1.98

Table 1 showed the mean and standard deviation on effects of health education on knowledge of contraception among secondary school students in Rivers East Senatorial District. The result showed that, the control group had a pretest score of 2.02 and post-test score of 2.45 with a grand mean difference of 0.05 while the intervention group had a pretest score of 2.62 and post-test score of 4.16 with a grand mean difference of 1.98. Thus, health education had a positive effect on knowledge of contraception among secondary school students.

Table 2: Mean and standard deviation on the effects of health education on knowledge of prenatal care among secondary school students

SN	Item	Interv. (N = 252)		Mean diff.	Control (N = 252)		Mean diff.
		Pre	Post		Pre	Post	
1	Antenatal care is a care given to pregnant women	2.05	4.08	2.03	*3.37*	*3.51*	0.14
2	*Antenatal care is important in detecting early complications of pregnancy*	2.77	4.03	1.26	*2.10*	*212*	0.02
3	*The components of antenatal care are routine check-up, counseling*	2.96	3.72	0.76	*2.64*	*3.04*	0.40
4	*During antenatal care physical examination, abdominal palpation, laboratory investigation*	2.58	4.53	1.95	*2.20*	*2.99*	0.79
5	*The accepted number of antenatal care visit is 3-6 visits*	1.86	3.89	2.03	*1.33*	*1.50*	0.17
	Grand mean	**2.44**	**4.05**	**1.61**	**2.32**	**2.63**	**0.30**

Highest possible score for each item = 5; Interv. = intervention group.

***Table 2b: Summary of* Mean and standard deviation on the effects of health education on knowledge of prenatal care**

Group	Pretest	Post-test	Mean gain
Control	2.32	2.63	0.30
Intervention	2.44	4.05	1.61

Table 2b showed the mean and standard deviation on effects of health education on knowledge of prenatal care among secondary school students in Rivers East Senatorial District. The result showed that, the control group had a pretest score of 2.32 and post-test score of 2.63 with a grand mean difference of 0.30 while the intervention group had a pretest score of 2.44 and post-test score of 4.05 with a grand mean difference of 1.61. Thus, health education had a positive effect on knowledge of prenatal care among secondary school students.

Table 3: Mean and standard deviation on the effects of health education on knowledge of postnatal care among secondary school students

SN	Item	Interv. (N = 252)		Mean diff.	Control (N = 252)		Mean diff.
		Pre	Post		Pre	Post	
1	Postnatal care is a care given to newly delivered women	2.86	4.90	2.04	*3.37*	*3.51*	0.14
2	*Postnatal care is important in forestalling complications after delivery*	2.58	4.60	2.02	*2.10*	*212*	0.02
3	*The components of postnatal care are health education, counseling*	2.53	4.46	1.93	*2.64*	*3.04*	0.40
4	*During postnatal care blood pressure check, physical examination is done*	3.28	3.56	0.28	*2.20*	*2.99*	0.79
5	*The accepted number of postnatal care visit is three postnatal contact*	1.72	3.05	1.33	*1.33*	*1.50*	0.17
	Grand mean	**2.59**	**4.11**	**1.52**	**2.32**	**2.63**	**0.31**

Highest possible score for each item = 5; Interv. = intervention group.

***Table 3b: Summary of* Mean and standard deviation on the effects of health education on knowledge of postnatal care**

Group	Pretest	Post-test	Mean gain
Control	2.32	2.63	0.31
Intervention	2.59	4.11	1.52

Table 3 showed the mean and standard deviation on effects of health education on knowledge of postnatal care among secondary school students in Rivers East Senatorial District. The result showed that, the control group had a pretest score of 2.32 and post-test score of 2.63 with a grand mean difference of 0.30 while the intervention group had a pretest score of 2.59 and post-test score of 4.11 with a grand mean difference of 1.52. Thus, health education had a positive effect on knowledge of postnatal care among secondary school students.

Table 4: Analysis of Covariate (ANCOVA) on effect of health education on knowledge of contraception among secondary school students

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial eta square
Corrected Model	7.60	1	7.607	4.875	.028	.019
Intercept	78.81	1	78.816	50.509	.000*	.168
pretestCONTR	7.60	1	7.607	4.875	.028*	.019
Error	390.10	250	1.560			
Total	3040.00	252				
Corrected Total	397.71	251				

*Significant; p<0.05

Table 4 showed the Analysis of Covariate (ANCOVA)which was conducted to ascertain the effect of health education on knowledge of contraception. The result of the ANCOVA showed that the intervention had a significant effect [F(1, 252) = 4.87, p<0.05] on knowledge of contraception. However, only 1.9% ($\omega^2 = 0.019$) of the variance in the post-test knowledge scores could be explained by the health education intervention. Therefore, the null hypothesis which stated that, there is no significant effect of effect of health education on knowledge of contraception among public secondary school students was rejected.

Table 5: Analysis of Covariate (ANCOVA) on effect of health education on knowledge of antenatal among secondary school students

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial eta square
Corrected Model	.164[a]	1	.164	.175	.676	.001
Intercept	37.126	1	37.126	39.526	.676*	.001
pretestAntenatal	.164	1	.164	7.175	.000	.137
Error	234.820	250	.939			
Total	1800.000	252				
Corrected Total	234.984	251				

*Significant; p<0.05

Table 6 showed the Analysis of Covariate (ANCOVA)which was conducted to ascertain the effect of health education on knowledge of antenatal. The result of the ANCOVA showed that the intervention had a significant effect [F(1, 252) = 7.175, p<0.05] on knowledge of antenatal care. However, only 13.7% ($\omega^2 = 0.137$) of the variance in the post-test knowledge score could be explained by the health education intervention. Therefore, the null hypothesis which stated that, there is no significant effect of health education on knowledge of antenatal among public secondary school students was rejected.

Table 6: Analysis of Covariate (ANCOVA) on effect of health education on knowledge of postnatal among secondary school students

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial eta square
Corrected Model	1.103[a]	1	1.103	1.080	.300	.004
Intercept	46.471	1	46.471	45.521	.300*	.004
pretestpostnatal	1.103	1	1.103	1.080	.000	.154
Error	255.215	250	1.021			
Total	1964.000	252				
Corrected Total	256.317	251				

*Significant; p<0.05

Table 6 showed the Analysis of Covariate (ANCOVA)which was conducted to ascertain the effect of health education on knowledge of postnatal. The result of the ANCOVA showed that the intervention had a significant effect [F(1, 252) = 1.08, p<0.05] on knowledge of postnatal care. However, only 15.4% ($\omega^2 = 0.154$) of the variance in the post-test knowledge score could be explained by the health education intervention. Therefore, the null hypothesis which stated that, there is no significant effect of health education on knowledge of postnatal among public secondary school students was rejected.

Discussion

The findings of the study indicated that health education produced a positive and statistically significant improvement in students' knowledge of contraception, reflected by a mean difference of 1.98 ($p < 0.05$). This outcome was anticipated, although a stronger effect might have been expected since the participants received instruction delivered outside their usual classroom setting. The result suggests that students who acquire higher levels of contraceptive knowledge are more likely to use contraception when sexually active, thereby lowering the chances of unintended pregnancies and unsafe abortion practices. Even though the intervention did not yield a perfect effect size, it underscores the need to consistently incorporate sexuality education into both curricular and extracurricular programmes for adolescents. Such efforts would enhance their awareness and eventual use of contraceptives.

This result is consistent with Malleshappa et al. (2011), whose study on adolescent girls in Kuppam, Pradesh, demonstrated that educational intervention significantly improved contraceptive knowledge. A similar conclusion was reported by Nelas et al. (2011), who also found a positive effect of educational intervention on contraceptive awareness. Additionally, the present study aligns with the findings of Rangi and Mwageni (2012), who observed that sexual and reproductive health education significantly influenced contraceptive knowledge among secondary school students in Morogoro Municipality, Tanzania. The result is further supported by Peter-Kio et al. (2013), whose investigation among secondary school students in Port Harcourt Local Government Area showed that respondents possessed substantial knowledge of contraception. The consistency between these studies and the current one may be attributable to the similarity of the study populations, as each focused on secondary school adolescents.

The study showed that health education produced a beneficial and statistically meaningful improvement in students' understanding of prenatal care in the Rivers East Senatorial District, reflected in a mean difference of 1.61. This outcome was expected, as the participants received structured health education sessions that enhanced their knowledge. Such learning experiences increase the likelihood that students will acquire accurate information about antenatal care—knowledge that may become valuable when they eventually marry and become pregnant, thereby helping to reduce complications associated with pregnancy.

This result aligns with the findings of Cleland et al. (2011), whose study in a tertiary hospital in India demonstrated that maternal education significantly improved knowledge of antenatal care. Similar outcomes were reported by Mba et al. (2019) in Edu, Kwara State, where a health education programme yielded a significant improvement in women's understanding of antenatal care ($p < 0.05$). Akintayo et al. (2015) in Sokoto State also documented significant gains in antenatal care knowledge following a health education intervention ($p < 0.05$). Furthermore, Shankar et al. (2020) in Pune City observed that health education meaningfully enhanced awareness of antenatal care. Likewise, Ayele et al. (2020) in the Rivers East Senatorial District reported that health education interventions significantly improved reproductive-age women's knowledge of antenatal care services.

The consistency between these earlier studies and the present findings may be due to similarities in study

conditions, particularly the use of health education as an intervention for improving knowledge.

The finding of the study showed that health education had a positive effect on knowledge of postnatal care among secondary school students in Rivers East Senatorial District with a mean difference of 1.52. The finding of this study is not surprising, because the students were exposed to a learning process such as health education which equipped them with such knowledge. The result was anticipated as health education has an increased likelihood of making the students become more knowledgeable about postnatal care which some may use later in life when they become married and pregnant thus, reducing the delivery related complications. The result gives credence to that of Chopra et al. (2018) in a tertiary care hospital in India which showed that maternal education had significant effect on the knowledge of postnatal care. The result is in keeping with that of Jibril et al. (2018) in Edu, Kwara State which showed that health education intervention had a significant effect on the knowledge of postnatal care among women ($p<0.05$). The result is also in consonance with that of Ango et al. (2018) in Sokoto State, Nigeria which showed that health education intervention had a significant effect on the knowledge of postnatal care among women ($p<0.05$). The finding of this study corroborates that of Shankar et al. (2020) in Pune City which showed that health education had a significant effect on awareness about postnatal care. The finding of the study corroborates that of Azuonwu et al. (2021) which showed that health education intervention had a significant effect on the knowledge of postnatal care services among women of reproductive age. The similarity between the previous studies and the present one could be attributed to the homogeneity fact that they both students administered health education as an intervention in their studies.

Conclusion

Based on the finding of the study, it was concluded that health education is a very effective intervention programme that have the potential to influence knowledge of reproductive healthcare among secondary school students.

Recommendations

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

1. Government should complement the efforts of NGOs by mapping out collaborative effort for continuous campaign for contraception among secondary school students to sustain the effect of the health education intervention.
2. Maternity healthcare providers should continuously employ health education strategies during antenatal health talk, this will help maintain the positive influence the intervention had on antenatal care services.
3. The management of the postnatal care clinics should make the services more interesting by strengthening the health education component through the use of educative materials to sustain the effect of the intervention.

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