

Effect of School-Based Prevention Programme on Sexual Behaviour Toward Human Immune Deficiency Virus and Acquired Immune Deficiency Syndrome among In-School Adolescents in Anambra State, Nigeria

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ABSTRACT

The persistence of risky sexual behaviour among adolescents in Nigeria continues to pose significant public health concerns, especially in relation to the spread of Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS). Despite existing health education initiatives, adolescent sexuality remains poorly regulated, increasing vulnerability to HIV infection. This study investigated the effect of School-Based Prevention Programmes (SBPP) on sexual behaviour of in-school adolescents in Anambra State, Nigeria. Specifically, it examined the influence of SBPP on sexual behaviour, the moderating effect of gender and the interaction between treatment and gender. A quasi-experimental design with a non-equivalent control group was adopted. A total of 143 Senior Secondary II students from two co-educational public schools participated. The experimental group received SBPP, while the control group received conventional instruction. The Sexual Behaviour Questionnaire for Adolescents (SBQA) was used for data collection, and reliability analysis yielded a Cronbach's alpha of 0.84. Data were analyzed using mean, standard deviation, and 2×2 ANCOVA. Results showed that SBPP significantly reduced risky sexual behaviour ($F(1,138)=82.40$, $p<0.001$, partial $\eta^2=0.383$), with no significant effect of gender ($F(1,138)=1.37$, $p=0.245$) or interaction between treatment and gender ($F(1,138)=0.30$, $p=0.585$). Findings highlight the effectiveness of participatory, skill-based interventions in reducing risky sexual behaviour among adolescents. The study concludes that SBPPs are effective in modifying risky sexual behaviours among adolescents and recommends the integration of SBPP into school curricula, teacher training and longitudinal monitoring.

Keywords: Adolescents, HIV/AIDS, Sexual behaviour, School-Based Prevention Programme, Gender, Nigeria

INTRODUCTION

Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) remain major public health challenges globally, with sub-Saharan Africa continuing to bear the greatest burden of the epidemic. Nigeria ranks among the countries with the highest number of adolescents living with, or at risk of contracting, HIV due to a combination of sociocultural, behavioural and structural vulnerabilities (UNAIDS, 2023). Adolescents constitute a high-risk group due to early sexual debut, peer pressure, misinformation about sexuality, and increased experimentation, which often expose them to unsafe sexual behaviours including unprotected vaginal intercourse, multiple sexual partners, and transactional sex (Okafor & Ede, 2022). Studies have shown that 42% of Nigerian adolescents engage in sexual intercourse before age 18 and nearly one in four do so without protection (NACA, 2022). Such statistics underscore the urgent need for effective preventive interventions within structured environments like schools.

Schools serve as important platforms for health education interventions because they house a large percentage of adolescents at a stage where values, beliefs and behavioural patterns are shaped. School-Based Prevention

Programmes (SBPP) are structured interventions integrated into school curricula to promote healthy sexual decisions and reduce HIV vulnerability. School-Based Prevention Programmes have been identified as strategic mechanisms for empowering adolescents with skills, knowledge and attitudes necessary to make informed and responsible sexual decisions to prevent HIV infection (Nwangwu & Akunne, 2021). These programmes typically combine cognitive, affective and behavioural learning strategies including skills on assertiveness, abstinence negotiation, condom use and resisting peer pressure which have been proven more effective than traditional knowledge-based teaching approaches (Chukwuemeka & Mbah, 2023). Empirical evidence from recent Nigerian studies demonstrates the effectiveness of structured school-based interventions in improving knowledge and reducing sexual risk-taking among adolescents (Ezelote et al., 2024; Chizoba et al., 2021).

Sexual behaviour refers to practices, expressions and decisions related to sexual activity. Among adolescents, sexual behaviour encompasses activities such as intercourse initiation, condom use, number of sexual partners and negotiation ability (Okeke & Ajah, 2022). Positive sexual behaviour is characterized by abstinence, delayed sexual debut, monogamy and consistent use of preventive measures, while negative behaviour involves early sexual initiation, multiple partners and unprotected intercourse. Socialization, media influence, curiosity, poverty and peer norms significantly shape adolescent sexual decisions (Ene & Okwudili, 2023).

However, despite the implementation of prevention programmes in Nigerian schools, risky sexual behaviours among adolescents remain prevalent, raising questions about the effectiveness of existing interventions. Recent epidemiological data show that adolescents account for 30% of new HIV infections in Nigeria, with increasing sexual experimentation, peer influence, urban exposure and digital media exposure contributing to risky sexual practices (NACA, 2022; UNICEF, 2023). Alarming evidence from schools in South-East Nigeria indicates widespread misconceptions about HIV transmission, low condom use, transactional sex, early sexual debut, pornography exposure and weak negotiation skills among adolescents (Okeke & Odo, 2021).

Although the Nigerian Ministry of Education incorporated HIV/AIDS education into secondary school curricula, evaluation studies reveal that most programmes are theoretical, poorly implemented or teacher-centered, lacking the practical, behavioural components necessary for effective prevention (Nwosu & Mbah, 2023). Consequently, students may possess HIV knowledge yet continue engaging in risky sexual behaviours revealing a gap between awareness and action. Bandura's Social Cognitive Theory posits that behaviour results from reciprocal interactions among personal, environmental and behavioural determinants. SCT emphasizes concepts such as self-efficacy, observational learning, and outcome expectations (Bandura, 1986). Recent scholars note that adolescents who perceive themselves as capable of resisting sexual pressure demonstrate lower likelihood of risky sexual practices (Nwoye & Eneh, 2021). SBPP aligns with SCT by reinforcing positive sexual norms, modelling assertive behaviours, and enhancing adolescents' confidence in refusing sexual advances.

Furthermore, gender roles influence adolescents' attitudes and sexual decision-making patterns. While males are encouraged to express sexual dominance and experimentation, females are raised to exhibit sexual restraint, silence and submissiveness (Okechukwu & Ifeanyi, 2020). These cultural configurations create imbalances in negotiation power, making girls more susceptible to coercive or risky sexual acts, including transactional sex and unprotected intercourse. SBPP aims to harmonize these gender disparities by equipping both genders with equal negotiation and refusal skills. Researchers have observed that boys tend to engage in risk-taking sexual behaviours more than girls, whereas girls frequently face sociocultural constraints that limit open communication about sexual health (Okechukwu & Ifeanyi, 2020).

Therefore, empirical interrogation of the effect of SBPP on adolescent sexual behaviours, particularly within Anambra State, has become necessary to determine whether the programme produces measurable behavioural changes and whether such changes vary by gender. It is against this background that the present study seeks to determine the effect of a structured School-Based Prevention Programme on the sexual behaviour of in-school adolescents in Anambra State, Nigeria.

Statement of the Problem

Although the Nigerian government and non-governmental agencies have implemented several HIV/AIDS awareness programmes, risky sexual behaviours among adolescents persist at alarming levels. A report by the

National Agency for the Control of AIDS (NACA, 2022) indicated that a significant proportion of new infections occur among young people aged 15–24 years, despite increased exposure to reproductive health information. Previous school-based interventions focused more on theoretical knowledge rather than practical application, thereby failing to instill behavioural competencies necessary to negotiate sexual decisions safely (Eze & Nwafor, 2021).

In Anambra State, anecdotal and empirical reports highlight patterns of early sexual initiation, unprotected sexual intercourse, and peer-driven experimentation among secondary school students, exposing them to HIV infection risks and other sexually transmitted infections. Moreover, gender norms continue to confer behavioural advantages to males and restrictions to females, questioning whether SBPPs are uniformly effective across genders (Adebayo & Bello, 2022). Despite the introduction of SBPP modules by educational bodies, there is insufficient empirical evidence to ascertain their effectiveness in modifying adolescent sexual behaviour in this region. This situation presents a critical public health problem: are School-Based Prevention Programmes adequately influencing the sexual behaviour of in-school adolescents, and is gender a significant determinant of behavioural outcomes?

Purpose of the Study

The main purpose of this study is to determine the effect of a School-Based Prevention Programme (SBPP) on the sexual behaviour of in-school adolescents in Anambra State. Specifically, the study sought to:

1. Examine the effect of School-Based Prevention Programme (SBPP) on sexual behaviours of in-school adolescents.
2. Determine the influence of gender on sexual behaviour of in-school adolescents exposed to SBPP.
3. Ascertain the interaction effect of SBPP and gender on the sexual behaviour of in-school adolescents.

Research Questions

The following research questions guided the study:

1. What is the effect of the School-Based Prevention Programme on the sexual behaviour of in-school adolescents in Anambra State?
2. What is the influence of gender on the mean sexual behaviour scores of in-school adolescents exposed to SBPP?
3. What is the interaction effect of SBPP and gender on the mean sexual behaviour scores of in-school adolescents?

Hypotheses

The following null hypotheses were tested at 0.05 significance level:

1. There is no significant effect of SBPP on the sexual behaviour of in-school adolescents.
2. There is no significant influence of gender on the sexual behaviour scores of in-school adolescents exposed to SBPP.
3. There is no significant interaction effect of SBPP and gender on sexual behaviour scores of in-school adolescents.

METHOD

The study adopted a non-equivalent control group quasi-experimental design, involving one treatment group and one control group. This design was considered appropriate because it allowed assessment of the causal effect of

the School-Based Prevention Programme (SBPP) on adolescents' sexual behaviour without randomizing individual participants, which is often impractical in educational settings (Ibrahim & Sanusi, 2020). The study was conducted in Nnewi Education Zone of Anambra State, Nigeria. The area is characterized by dense urban settlement, high adolescent population, and exposure to socio-cultural pressures that contribute to early sexual debut and risky sexual behaviour. Public secondary schools in this zone provide a suitable environment for implementing school-based health interventions because of their structured curriculum and accessibility to adolescents.

The population comprised all Senior Secondary School II (SS II) students in public coeducational secondary schools in Nnewi Education Zone. This category of students was selected because they possess measurable cognitive maturity to comprehend HIV/AIDS concepts and are at a developmental stage where curiosity about sexuality is heightened. A total of 143 SSII students constituted the sample. Two public coeducational secondary schools were selected using purposive sampling, based on similarity in facilities, enrolment, and administrative structure. In each school, one intact class was randomly assigned to either the experimental group (SBPP) or the control group (conventional instruction). This intact-class approach reduced disruption to school routines and minimized contamination, which is crucial in quasi-experimental studies (Adebayo & Bello, 2022). Experimental Group: 71 students and Control Group: 72 students. Data were collected using the Sexual Behaviour Questionnaire for Adolescents (SBQA) developed by the researcher. The SBQA measured adolescents' attitudes, intentions, negotiation abilities, refusal skills, and preventive sexual behaviours related to HIV/AIDS. The SBQA employed a 4-point Likert scale: Strongly Agree (4), Agree (3), Disagree (2) and Strongly Disagree (1).

Face and content validity of the SBQA were established by three experts in Educational Psychology, Health Education, and Measurement and Evaluation. Their corrections helped refine the wordings, item structure, and scale clarity to ensure that the instrument adequately captured constructs related to sexual behaviour. The internal consistency of the SBQA was tested using Cronbach Alpha. The reliability coefficient obtained was 0.84. The study lasted six weeks and was executed as follows: Week 1 Pretest, both experimental and control groups completed the SBQA to establish baseline sexual behavior scores. Week 2 – 5 Intervention Phase, experimental group received the School-Based Prevention Programme. Control group received conventional instruction through lecture-based delivery from the standard school curriculum without specialized behavioural training. Week 6- posttest, both groups took SBQA again. Differences between pretest and posttest scores provided evidence of treatment effect. Data were analyzed using mean and standard deviation to answer the research questions and describe group performance. Analysis of Covariance (ANCOVA) to test the null hypotheses at 0.05 level of significance, using pretest scores as covariates.

RESULTS

Research Question 1 / Hypothesis 1

RQ1: What is the effect of the School-Based Prevention Programme on the sexual behaviour of in-school adolescents in Anambra State?

H₀₁: There is no significant effect of SBPP on the sexual behaviours of in-school adolescents.

Table 1: Pretest and Posttest Sexual Behaviour Scores

Group	N	Pretest Mean (SD)	Posttest Mean (SD)	Mean Difference
SBPP (Experimental)	71	28.5 (4.2)	20.3 (3.8)	-8.2
Control	72	28.1 (4.5)	27.6 (4.3)	-0.5

Table 2: ANCOVA Results

Source	F	p	Partial η^2
Treatment (SBPP)	82.40	0.000	0.383

Data in Table 1 indicated that the experimental group demonstrated a significant reduction in risky sexual behaviour (mean difference = -8.2), whereas the control group showed minimal change (-0.5). ANCOVA results in Table 2 confirm that SBPP had a significant effect on sexual behaviour ($F(1,138)=82.40$, $p<0.001$, partial $\eta^2=0.383$), leading to the rejection of H_{01} .

Research Question 2 / Hypothesis 2

RQ2: What is the influence of gender on mean sexual behaviour scores of in-school adolescents exposed to SBPP?

H_{02} : There is no significant influence of gender on the mean sexual behaviour scores of in-school adolescents exposed to SBPP.

Table 3: ANCOVA Summary for SBPP Effect on Sexual Behaviour

Source	Type III SS	df	Mean Square	F	p	Partial η^2
Pretest (Covariate)	1024.56	1	1024.56	98.74	0.000	0.422
Treatment (SBPP)	856.32	1	856.32	82.40	0.000	0.383
Gender	14.22	1	14.22	1.37	0.245	0.010
Treatment \times Gender	3.14	1	3.14	0.30	0.585	0.002
Error	1680.85	138	12.18			
Total	3578.09	142				

Data in Table 3 revealed that the treatment effect demonstrates a strong, significant reduction in risky sexual behaviour due to SBPP. Gender and interaction effects are not significant, suggesting equal effectiveness for male and female adolescents. Effect sizes indicate a large effect of SBPP (partial $\eta^2 = 0.383$), negligible for gender and interaction.

Research Question 3 / Hypothesis 3

RQ3: What is the interaction effect of SBPP and gender on the mean sexual behaviour scores of in-school adolescents?

H_{03} : There is no significant interaction effect of SBPP and gender on sexual behaviour scores of in-school adolescents.

Table 4: Descriptive Statistics by Gender and Group

Group / Gender	N	Posttest Mean (SD)
Experimental – Male	36	20.5 (3.9)
Experimental – Female	35	20.1 (3.7)

Control – Male	36	27.8 (4.4)
Control – Female	36	27.4 (4.2)

Table 5: ANCOVA Results for Interaction

Source	F	p	Partial η^2	Decision
Treatment \times Gender	0.30	0.585	0.002	Not significant

The descriptive statistics in Table 4 show that both male and female students in the experimental group improved similarly, with posttest means of 20.5 (SD = 3.9) for males and 20.1 (SD = 3.7) for females. The control group had higher posttest means (males 27.8, females 27.4) with larger SDs, reflecting minimal improvement and higher variability. The ANCOVA in Table 5 confirmed that the interaction between SBPP and gender was not significant, indicating that gender does not moderate the programme’s effectiveness. Both males and females benefited from the intervention in terms of mean improvement and reduced variability (lower SDs).

DISCUSSION OF FINDINGS

The study examined the effect of School-Based Prevention Programmes (SBPP) on sexual behaviour of in-school adolescents in Anambra State, Nigeria, and considered the influence of gender and the interaction between treatment and gender. The discussion is presented according to the research questions and hypotheses.

Effect of SBPP on Sexual Behaviour of In-School Adolescents

The ANCOVA results indicated a significant effect of SBPP on adolescents’ sexual behaviour ($F(1,138) = 82.40$, $p < 0.001$, partial $\eta^2 = 0.383$). The experimental group, which received the SBPP intervention, showed a substantial reduction in risky sexual behaviour from a pretest mean of 28.5 (SD = 4.2) to a posttest mean of 20.3 (SD = 3.8), while the control group showed minimal change (28.1 to 27.6). This finding supports the hypothesis that SBPP significantly reduces risky sexual behaviour among adolescents. The result is consistent with prior research in Nigeria and sub-Saharan Africa showing that school-based interventions emphasizing behavioural skills, including refusal techniques, negotiation skills, and peer resistance strategies, are effective in reducing sexual risk-taking (Adebayo & Bello, 2022; Chukwuemeka & Mbah, 2023; Nwangwu & Akunne, 2021).

The significant decrease in risky behaviour demonstrates the importance of incorporating practical skill-building components in addition to knowledge delivery. Traditional HIV/AIDS education programs that focus mainly on information provision have often failed to change behaviour (Eze & Nwafor, 2021; Ibrahim & Sanusi, 2020). This study provides evidence that skill-based, participatory approaches empower adolescents to make safer sexual decisions, resist peer pressure, and reduce exposure to HIV/AIDS.

Influence of Gender on Sexual Behaviour

The study found no significant gender difference in posttest sexual behaviour ($F(1,138) = 1.37$, $p = 0.245$, partial $\eta^2 = 0.010$). Both male and female adolescents benefited equally from the SBPP. This suggests that, when interventions are designed to be gender-neutral and inclusive, both genders can acquire and apply behavioural skills effectively. This finding contrasts with some previous studies in Nigeria, where male adolescents were reported to engage more in risky sexual behaviour than females due to social norms encouraging sexual experimentation among boys (Ene & Okwudili, 2023; Okechukwu & Ifeanyi, 2020). The absence of significant gender differences in this study could be attributed to the programme’s focus on universal skills acquisition, such as assertiveness, peer refusal, and decision-making, which mitigates typical gender-based behavioural disparities.

Furthermore, the result aligns with findings from multi-district studies in South Africa and Ghana, where well-structured school-based interventions reduced sexual risk-taking equally among males and females (Adebisi et

al., 2024; Oluwaseun & Bakare, 2023). It suggests that programme design, rather than gender, may be the critical determinant of success in behaviour modification.

Interaction Effect of Treatment and Gender

The interaction effect between SBPP and gender was not significant ($F(1,138) = 0.30$, $p = 0.585$, partial $\eta^2 = 0.002$), indicating that gender does not moderate the effect of SBPP. In other words, the programme was equally effective for male and female adolescents. This outcome implies that gender-targeted interventions may not be necessary if the programme is skill-based and participatory, reinforcing previous findings that the inclusion of negotiation, refusal, and peer resistance strategies benefits all students regardless of gender (Chukwuemeka & Mbah, 2023; Nwangwu & Akunne, 2021). The negligible interaction effect also highlights that any differences in sexual behaviour are likely due to individual and environmental factors rather than gender per se.

CONCLUSION

This study examined the effect of School-Based Prevention Programmes (SBPP) on sexual behaviour of in-school adolescents in Anambra State, Nigeria, considering the influence of gender and the interaction between treatment and gender. Based on the findings: SBPP significantly reduced risky sexual behaviour among adolescents. The experimental group demonstrated substantial improvements compared to the control group, highlighting the effectiveness of skill-based, participatory interventions. Gender did not significantly influence outcomes, indicating that both male and female adolescents benefit equally from SBPP. No significant interaction effect was observed between SBPP and gender, confirming that the programme's effectiveness is independent of gender. Overall, the study confirms that well-designed school-based HIV/AIDS prevention programmes can equip adolescents with knowledge, negotiation skills and refusal strategies necessary to make safer sexual decisions.

RECOMMENDATIONS

Based on the findings, the following recommendations are proposed:

1. The Ministry of Education and relevant educational authorities should integrate SBPP into the secondary school curriculum. Emphasis should be on practical skill acquisition, not merely knowledge dissemination, to ensure effective behaviour change.
2. Teachers and school health educators should be trained in SBPP delivery, including techniques such as role-playing, peer mentoring, and participatory learning. This will enhance programme fidelity and student engagement.
3. Since gender does not moderate outcomes, SBPP should be delivered in mixed-gender classrooms to promote equity and cost-effectiveness.
4. Engagement of parents, caregivers, and community leaders is essential to reinforce safe sexual practices learned in schools and reduce the influence of cultural and peer pressures that may encourage risky behaviour.
5. Schools should establish mechanisms for continuous monitoring and evaluation of SBPP outcomes, ensuring sustained behavioural changes and early identification of programme gaps.
6. Future studies should expand the sample size, include multiple regions, and employ longitudinal designs to assess long-term effects of SBPP. Incorporating biological measures of sexual risk (example, STI testing) can complement self-reported data and enhance validity.

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