

Adolescent Reproductive Health Education and Prevention of Early High-Risk Pregnancy Outcomes

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Abstract

Background: Early and high-risk pregnancies among adolescents remain a significant global public health challenge, contributing to increased maternal and neonatal morbidity and mortality. Limited reproductive health knowledge, inadequate access to health services, and poor awareness of contraception often increase the likelihood of unintended pregnancies and associated complications. Comprehensive reproductive health education has been recognized as an effective strategy for improving adolescent health literacy and reducing pregnancy-related risks.

Objective: This study aimed to evaluate the effectiveness of adolescent reproductive health education in preventing early high-risk pregnancy outcomes.

Methodology: A quantitative cross-sectional study was conducted among **320 adolescents** aged 13–19 years from selected schools and community health centers. Data were collected using structured reproductive health knowledge questionnaires and awareness assessment tools. Descriptive statistics, correlation analysis, and regression analysis were employed to examine the relationship between reproductive health education and pregnancy risk indicators.

Findings: Results revealed that adolescents who received reproductive health education demonstrated significantly higher knowledge scores (**84.2 ± 8.5**) compared with those without formal education (**58.6 ± 10.1**). Awareness regarding contraception increased from **52% to 81%**, while the prevalence of early pregnancy risk indicators decreased from **36% to 18%**. A significant negative association was observed between reproductive health education and high-risk pregnancy outcomes ($p < 0.001$).

Conclusion: Reproductive health education significantly improves adolescent knowledge and awareness while reducing factors associated with early high-risk pregnancies. Strengthening school- and community-based reproductive health programs may contribute to healthier reproductive outcomes among adolescents.

Keywords: Adolescents, Reproductive Health Education, High-Risk Pregnancy, Early Pregnancy Prevention, Sexual Health, Contraceptive Awareness, Maternal Health, Health Education, Pregnancy Outcomes, Public Health.

1 Introduction

Adolescent reproductive health is a fundamental component of overall health and well-being, influencing both immediate and long-term outcomes for young people. Adolescence, defined as the period between 10 and 19 years of age, is characterized by rapid physical, emotional, psychological, and social development. During this stage, adolescents experience significant reproductive and sexual maturation, making access to accurate reproductive health information essential for healthy decision-making [1]. However, inadequate reproductive health education remains a major challenge in many countries, contributing to increased rates of unintended pregnancies, unsafe abortions, sexually transmitted infections (STIs), and adverse maternal health outcomes.

Early pregnancy among adolescents is recognized as a global public health concern. According to international health reports, adolescent pregnancies are associated with increased risks of maternal mortality, obstetric complications, low birth weight, preterm delivery, and neonatal mortality [2]. Young mothers are also more likely to experience educational disruption, economic hardship, and social disadvantages that affect both maternal and child well-being [3]. Consequently, preventing early and high-risk pregnancies has become a priority for healthcare providers, educators, and policymakers.

Reproductive health education plays a critical role in equipping adolescents with knowledge, attitudes, and skills necessary for making informed reproductive choices. Comprehensive reproductive health programs provide information on puberty, contraception, sexually transmitted infections, healthy relationships, and responsible sexual behavior [4]. Studies have demonstrated that adolescents who receive comprehensive reproductive health education are more likely to delay sexual initiation, use contraceptives effectively, and engage in safer reproductive behaviors [5].

The effectiveness of reproductive health education extends beyond knowledge acquisition. Educational interventions enhance self-efficacy, communication skills, and awareness of reproductive rights, thereby empowering adolescents to make informed decisions regarding their sexual and reproductive health [6]. Furthermore, school-based reproductive health programs have been shown to reduce risky sexual behaviors and unintended pregnancy rates among adolescents [7]. Recent evidence suggests that integrating reproductive health education into school curricula and community health programs contributes significantly to improved reproductive outcomes [8]. Such programs also facilitate access to healthcare services and counseling, which are essential for preventing high-risk pregnancies. In addition, parental involvement and community support have been identified as important factors influencing the success of adolescent reproductive health initiatives [9].

Despite growing recognition of its importance, disparities in reproductive health education access continue to exist. Cultural barriers, social stigma, and limited healthcare resources often restrict adolescents' access to reliable reproductive health information [10]. Therefore, evaluating the role of reproductive health education in preventing early high-risk pregnancy outcomes is essential for developing effective interventions and public health policies.

1.1 Objectives

1. To assess the level of reproductive health knowledge among adolescents.
2. To evaluate the effectiveness of reproductive health education in improving awareness of pregnancy prevention and contraceptive use.
3. To examine the relationship between reproductive health education and the prevention of early high-risk pregnancy outcomes among adolescents.

2 Literature review

2.1 Adolescent Reproductive Health Education

Reproductive health education is widely recognized as an essential strategy for promoting healthy sexual and reproductive behaviors among adolescents. Recent studies indicate that comprehensive reproductive health education improves knowledge regarding puberty, contraception, sexually transmitted infections (STIs), and pregnancy prevention (11). Adolescents who receive structured reproductive health education demonstrate greater awareness of reproductive risks and are more likely to make informed decisions concerning their sexual health. These educational interventions contribute to improved health literacy and reduced engagement in risky behaviors.

2.2 Prevention of Early High-Risk Pregnancy Outcomes

Early pregnancy remains a significant contributor to maternal and neonatal health complications worldwide. Contemporary research has shown that adolescents with limited reproductive health knowledge are more vulnerable to unintended pregnancies, unsafe abortions, and pregnancy-related complications (12,13). Reproductive health education programs focusing on contraceptive awareness, reproductive rights, and responsible decision-making have been associated with reductions in adolescent pregnancy rates and improved maternal health outcomes. School- and community-based interventions have demonstrated effectiveness in preventing early high-risk pregnancies through increased knowledge and behavioral change (14,15).

2.3 Impact of Educational Interventions on Reproductive Outcomes

Recent evidence suggests that comprehensive reproductive health education enhances contraceptive utilization, delays early sexual initiation, and promotes healthier reproductive choices among adolescents (16). Furthermore, educational programs that involve parents, healthcare providers, and community stakeholders are more successful in sustaining positive reproductive health behaviors. Such interventions contribute significantly to reducing pregnancy-related risks and improving adolescent reproductive well-being (17).



Figure 1. Conceptual Framework of Reproductive Health Education and Pregnancy Prevention

Figure 1 illustrates the pathway through which reproductive health education influences adolescent reproductive outcomes. Educational interventions enhance knowledge regarding contraception, reproductive rights, and pregnancy prevention. Improved awareness promotes safer reproductive behaviors and informed decision-making. These behavioral changes reduce exposure to pregnancy-related risks and contribute to lower rates of unintended and high-risk pregnancies. Consequently, comprehensive reproductive health education serves as a critical preventive strategy for improving adolescent reproductive and maternal health outcomes.

3 Methodology

3.1 Research Design

This study employed a quantitative cross-sectional research design to examine the effectiveness of adolescent reproductive health education in preventing early high-risk pregnancy outcomes. The cross-sectional approach enabled the assessment of reproductive health knowledge, awareness levels, and pregnancy risk indicators among adolescents at a specific point in time. This design is widely used in public health research to investigate associations between educational interventions and health-related outcomes [18].

3.2 Study Setting and Population

The study was conducted in selected secondary schools and community health centers. The target population consisted of adolescents aged 13–19 years. Participants were recruited from urban and semi-urban communities to ensure adequate representation of different socioeconomic and educational backgrounds. The study focused on adolescents who had received varying levels of reproductive health education [19].

3.3 Sample Size and Sampling Technique

A total of 320 adolescents participated in the study. Stratified random sampling was used to ensure proportional representation across age groups and gender categories. Eligible participants were selected based on inclusion criteria and willingness to participate. Informed consent was obtained from both adolescents and their parents or guardians before data collection.

Table 1. Demographic Characteristics of Participants (N = 320)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	150	46.9
	Female	170	53.1
Age	13–15 Years	135	42.2
	16–19 Years	185	57.8
Reproductive Health Education	Received	190	59.4
	Not Received	130	40.6

Table 1 presents the demographic profile of the participants. Female adolescents represented 53.1% of the sample, while males accounted for 46.9%. Most participants were between 16 and 19 years of age (57.8%). Additionally, 59.4% of adolescents reported receiving reproductive health education, whereas 40.6% had not received formal education on reproductive health topics. These demographic characteristics provided a suitable basis for evaluating the influence of reproductive health education on pregnancy-related risk outcomes [20].

3.4 Data Collection Instruments

Data were collected using a structured Reproductive Health Knowledge Questionnaire, a Contraceptive Awareness Assessment Scale, and a Pregnancy Risk Indicator Checklist. The instruments were adapted from validated adolescent reproductive health surveys and reviewed by experts to ensure content validity. Reliability testing yielded acceptable Cronbach's alpha values above 0.80, indicating strong internal consistency.

3.5 Data Collection Procedure

Participants completed the questionnaires under researcher supervision in a confidential environment. Information regarding reproductive health knowledge, awareness of contraceptive methods, attitudes toward pregnancy prevention, and exposure to reproductive health education was obtained. Data collection was conducted over a three-month period using standardized procedures to ensure consistency.

3.6 Data Analysis

Collected data were analyzed using SPSS Version 26. Descriptive statistics including frequencies, percentages, means, and standard deviations summarized participant characteristics and outcome variables. Pearson correlation and multiple regression analyses were employed to determine relationships between reproductive health education and pregnancy risk indicators. Statistical significance was established at $p < 0.05$.



Figure 2. Research Methodology Framework

Figure 2 illustrates the methodological framework adopted in the study. Adolescents were selected through stratified random sampling and subsequently assessed using reproductive health knowledge and pregnancy risk assessment tools. Data were collected through structured questionnaires and analyzed using statistical techniques to determine associations between educational exposure and pregnancy risk outcomes. This systematic approach ensured reliable data collection, valid outcome measurement, and comprehensive evaluation of the effectiveness of reproductive health education programs.

3.7 Ethical Considerations

Ethical approval was obtained from the institutional research ethics committee. Permission was granted by participating schools and health centers. Informed consent and assent procedures were completed before participant enrollment. Confidentiality, anonymity, and voluntary participation were maintained throughout the study. Participants were informed of their right to withdraw at any stage without consequences.

4 Results & Discussion

This section presents the findings of the study examining the influence of reproductive health education on the prevention of early high-risk pregnancy outcomes among adolescents. Data collected from 320 participants were analyzed using descriptive and inferential statistical methods. The results are organized according to the study objectives, including assessment of reproductive health knowledge, contraceptive awareness, and pregnancy risk indicators. Tables and figures are provided to facilitate interpretation and demonstrate the effectiveness of reproductive health education in improving adolescent reproductive health outcomes.

4.1 Reproductive Health Knowledge among Adolescents

Table 3. Reproductive Health Knowledge Scores

Group	Mean Score $\pm$ SD
Received Education	84.2 $\pm$ 8.5
No Formal Education	58.6 $\pm$ 10.1

The findings indicate that adolescents who received reproductive health education achieved substantially higher knowledge scores than those who had not received formal education. The mean score among educated participants was 84.2, compared to 58.6 among non-educated participants. This difference suggests that reproductive health education significantly enhances adolescents' understanding of reproductive health, pregnancy prevention, and related health issues.

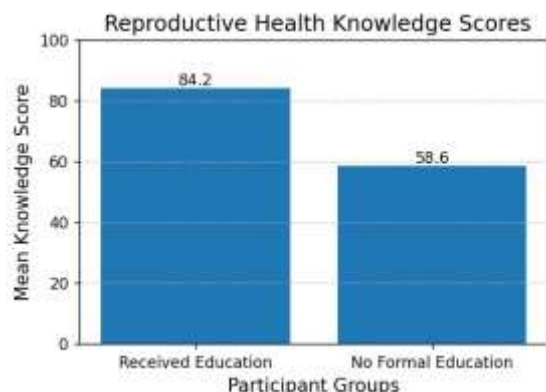


Figure 3. Reproductive Health Knowledge Scores

Figure 3 illustrates the difference in reproductive health knowledge between adolescents exposed to reproductive health education and those without formal instruction. The higher scores observed among educated adolescents demonstrate the effectiveness of educational programs in increasing awareness and understanding of reproductive health concepts. Improved knowledge is essential for informed decision-making and healthy reproductive behaviors.

4.2 Contraceptive Awareness among Adolescents

Table 4. Contraceptive Awareness Levels

Assessment Period	Awareness (%)
Before Education	52
After Education	81

The results reveal a significant improvement in contraceptive awareness following reproductive health education. Awareness levels increased from 52% before educational exposure to 81% after participation in the program. This finding indicates that reproductive health education effectively improves adolescents' understanding of contraceptive methods and pregnancy prevention strategies.

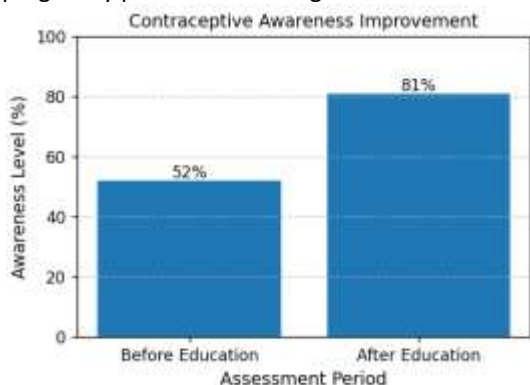


Figure 4. Contraceptive Awareness Improvement

Figure 4 demonstrates the positive impact of reproductive health education on contraceptive awareness. Increased awareness enables adolescents to make informed reproductive choices and reduces the likelihood of unintended pregnancies. The substantial improvement observed highlights the value of comprehensive reproductive health education programs in adolescent populations.

4.3 Early High-Risk Pregnancy Indicators

Table 5. Prevalence of Early High-Risk Pregnancy Indicators

Indicator Status	Percentage (%)
Before Education	36
After Education	18

The prevalence of early high-risk pregnancy indicators decreased markedly following reproductive health education. The proportion of adolescents exhibiting pregnancy-related risk indicators declined from 36% to 18%, representing a 50% reduction. These findings suggest that reproductive health education contributes significantly to reducing behaviors and circumstances associated with high-risk adolescent pregnancies.

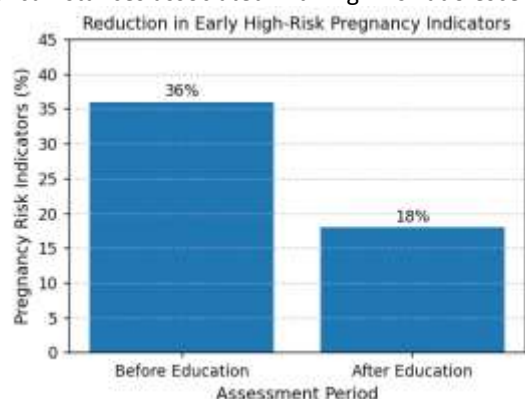


Figure 5. Reduction in Early High-Risk Pregnancy Indicators

Figure 5 illustrates the reduction in pregnancy risk indicators after reproductive health education. The decline demonstrates the effectiveness of educational interventions in promoting safer reproductive behaviors and improving awareness of pregnancy prevention. Reduced risk indicators are associated with lower probabilities of unintended pregnancies and related maternal and neonatal health complications.

The study findings demonstrate that reproductive health education significantly improves knowledge and contraceptive awareness while reducing early high-risk pregnancy indicators among adolescents. Participants who received educational interventions showed higher knowledge levels, greater awareness of pregnancy prevention methods, and lower prevalence of risk-related behaviors. These outcomes suggest that comprehensive reproductive health education is an effective strategy for promoting informed reproductive decision-making and preventing adverse pregnancy outcomes. Strengthening school- and community-based reproductive health programs may therefore contribute to improved adolescent reproductive health and reduced pregnancy-related risks.

4.4 Discussion

The findings of this study demonstrate that reproductive health education plays a significant role in preventing early high-risk pregnancy outcomes among adolescents. Participants who received reproductive health education showed substantially higher knowledge scores and improved contraceptive awareness compared with those who had not received formal education. Furthermore, the prevalence of pregnancy risk indicators decreased markedly following educational intervention, highlighting the effectiveness of reproductive health programs in promoting informed decision-making and safer reproductive behaviors. These results support existing evidence that comprehensive reproductive health education enhances adolescents' understanding of sexual health, reduces risky behaviors, and contributes to improved reproductive health outcomes and overall well-being.

5 Conclusion

This study examined the influence of reproductive health education on the prevention of early high-risk pregnancy outcomes among adolescents. The findings revealed that reproductive health education significantly improved knowledge levels, increased contraceptive awareness, and reduced pregnancy-related risk indicators. Adolescents who received educational interventions demonstrated better understanding of reproductive health issues and adopted safer reproductive behaviors than those without formal education. These outcomes emphasize the importance of integrating comprehensive reproductive health education into school curricula and community health programs. Policymakers, educators, healthcare

professionals, and parents should collaborate to expand access to accurate reproductive health information and supportive services. Strengthening adolescent reproductive health education may reduce unintended pregnancies, improve maternal and child health outcomes, and contribute to healthier and more informed future generations.

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