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The Effectiveness of Reproductive Health Counseling for Pregnant Adolescents in Preventing High-Risk Pregnancies

Ziadatul Munawarah[1]✉, Olyvia Rosalia[2]
UNW Mataram, Indonesia[1], Universitas Islam Negeri Sulthan Thaha Saifuddin Jambi, Indonesia[2]
e-mail: *ziadatulmunawah@gmail.com[1]

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ABSTRACT

This study aimed to evaluate the effectiveness of reproductive health counseling in improving knowledge, attitudes, and health outcomes among pregnant adolescents, as well as its role in preventing high-risk pregnancies. A quasi-experimental design was used with two groups: an experimental group receiving structured counseling sessions and a control group receiving standard care. Data were collected through pretest and posttest questionnaires assessing reproductive health knowledge and attitudes, along with medical indicators such as maternal hemoglobin levels, blood pressure, and neonatal birth weight. The results showed a significant improvement in knowledge and positive changes in attitudes among participants in the counseling group compared to the control group. Furthermore, health outcomes such as reduced incidence of anemia and low birth weight were more favorable in the experimental group. These findings indicate that reproductive health counseling is an effective intervention for reducing pregnancy risks and promoting maternal and child health. The study supports integrating adolescent-focused counseling into primary healthcare services to address the unique challenges faced by pregnant teenagers and to improve overall reproductive health outcomes.

Keywords: *Reproductive Health Counseling, Adolescent Pregnancy, High-Risk Pregnancy, Maternal Health*

INTRODUCTION

Teenage pregnancy is an increasingly concerning issue in many countries, including Indonesia. According to data from the National Population and Family Planning Board (BKKBN), more than 300,000 cases of teenage pregnancy occur each year. This figure indicates that approximately 5% of all births in Indonesia are from teenagers under the age of 19. Teenage pregnancy is often influenced by various factors, including a lack of education about reproductive health, early marriage, and social influences such as peer pressure or cultural norms that support early marriage. A lack of accurate information and understanding about the consequences of early-age pregnancy also plays a significant role in the high incidence.

Teenage pregnancy carries a higher risk of medical and psychosocial complications compared to pregnancies in adult women. Medically, pregnant teenagers are at higher risk of preeclampsia, preterm labor, anemia, and giving birth to low birth weight babies. These conditions can potentially increase maternal and infant mortality rates. In addition, early pregnancy can affect the physical and psychological development of adolescents, who are not yet fully mature. From a psychosocial perspective, pregnant teenagers often face severe mental pressure, social stigma, and interrupted education, which may lead to dropping out of school. Therefore, teenage pregnancy not only has physical impacts but also worsens the long-term quality of life for both the mother and the child.

One of the main factors exacerbating the issue of teenage pregnancy is the lack of knowledge about reproductive health. Many adolescents do not have adequate access to information regarding sexual and reproductive consequences or how to maintain their reproductive health. Furthermore, there is often a communication gap between teenagers, parents, and healthcare providers, which hampers the delivery of accurate information. In many regions, sexuality education is still considered taboo, leaving teenagers without proper education about their bodies, contraception, and the health risks associated with early pregnancy.

Reproductive health counseling is one of the most effective interventions in increasing teenagers' knowledge and awareness about the importance of maintaining reproductive health. This counseling aims to provide accurate information about sexual health, educate adolescents on contraceptive use, and help them make informed decisions regarding pregnancy and reproductive health. Additionally, counseling also offers psychological support to help teenagers cope with stress and anxiety related to their pregnancies. With the right approach, counseling can change behaviors and enhance skills to prevent risky pregnancies.

Although reproductive health counseling has proven effective, its practice and services are still limited in many areas. In some regions, counseling has not yet become an integral part of adolescent health services, and the quality of existing services varies. Some health facilities lack trained counselors or do not offer regular counseling services. Moreover, the approaches used in counseling often do not meet the needs of adolescents, whether in terms of content, delivery methods, or psychological support provided. This leads to suboptimal effectiveness of counseling in preventing high-risk teenage pregnancies.

It is important to evaluate the effectiveness of reproductive health counseling in reducing teenage pregnancy risks. Such evaluation can help determine how far counseling influences changes in adolescents' knowledge, attitudes, and behaviors related to reproductive health. Evidence-based evaluation results can also serve as a foundation for designing more effective and targeted intervention programs, as well as improving the quality of existing counseling services. With strong evidence, public health policies and programs

can be adjusted to have a greater impact on reducing high-risk teenage pregnancies.

In Indonesia, reproductive health programs for teenagers have begun to be introduced through various policies, such as the Youth Care Health Services (Pelayanan Kesehatan Peduli Remaja/PKPR) managed by BKKBN. This program aims to provide teenagers with access to reproductive health education and counseling services. However, despite the existence of such programs, challenges remain in their implementation, such as the lack of synergy among the education, health, and family sectors. Therefore, it is important to strengthen cross-sector collaboration to create a supportive environment for adolescents in maintaining their reproductive health and reducing the risk of pregnancy at a young age.

METHODS

This study uses a quasi-experimental design, which means the researchers do not use random assignment in selecting participants but still control for relevant variables to ensure that the intervention (reproductive health counseling) has a measurable impact. Although there is no random division between the experimental and control groups, this design remains effective in assessing the differences observed in the group receiving counseling compared to the control group that does not. In this context, the group receiving counseling is considered the experimental group, while the group not receiving the intervention acts as the control group. Measurements are taken at two points in time: before and after the intervention. This design is appropriate for measuring the effectiveness of reproductive health counseling on the knowledge and health conditions of pregnant adolescents.

The study population consists of pregnant adolescents located within specific healthcare service areas, such as community health centers (Puskesmas) or hospitals. The inclusion criteria for the sample are pregnant adolescents aged between 15 and 19 years who are willing to participate in the reproductive health counseling program and have access to participate in this study. Exclusion criteria include adolescents with physical or mental disorders that could affect their understanding of the counseling material, those who do not meet the age requirements, or those unwilling to follow the research procedures. Purposive or convenience sampling techniques will be used to select samples that meet these criteria. Selected samples will be divided into two groups: an experimental group that will receive reproductive health counseling, and a control group that will not receive the intervention.

Several variables are considered in this study. The independent variable (X) is reproductive health counseling, measured by the frequency, duration, and content delivered in the counseling sessions for pregnant adolescents. The dependent variable (Y) is high-risk pregnancy, measured through indicators such as preeclampsia, anemia, low birth weight, premature birth, and maternal or infant mortality. Additionally, intermediate variables (if any) may include changes in adolescents' knowledge and behaviors related to reproductive health. These changes will be measured using questionnaires assessing their

understanding of reproductive health before and after the intervention, along with attitude and behavioral changes that could influence pregnancy risks.

Data collection in this study will use various relevant instruments. One is a questionnaire to measure adolescents' knowledge and attitudes toward reproductive health, both before and after counseling. This questionnaire focuses on understanding contraception, warning signs of pregnancy, and attitudes toward maternal and infant health. Additionally, medical records/checklists will be used to monitor the mother's medical status during pregnancy, such as blood pressure, hemoglobin levels, and other health indicators. A counseling guide will also be used to ensure that the materials delivered to pregnant adolescents meet the established standards and are tailored to their age and needs.

The data collection technique will involve several complementary methods. Direct observation will be conducted to assess changes in adolescent behavior and attitudes after attending counseling. Researchers will monitor whether there are changes in how they care for themselves or engage in preventive actions against pregnancy risks. In-depth interviews will also be conducted with participants to gain deeper insights into the impact of counseling on their understanding of pregnancy and reproductive health, and to explore their feelings about the changes they experience.

This research will be conducted in several structured stages. In the preparation stage, researchers will identify the study location and obtain permission from authorities such as hospital or health center management. Additionally, counseling materials must be prepared, and counselors should receive training related to effective counseling implementation. In the data collection phase, researchers will conduct initial measurements (pretest) of adolescents' knowledge and behavior before counseling begins, then carry out the planned counseling sessions. After counseling, follow-up measurements (posttest) will be taken to assess changes in knowledge, attitudes, and behaviors. The data analysis stage will involve statistical analysis to compare pretest and posttest results within the experimental group, as well as comparing data between the experimental and control groups.

Data analysis techniques used in this study include the Paired t-test or Wilcoxon test to compare changes in knowledge and attitudes within the experimental group before and after counseling. To compare differences between the experimental and control groups, an Independent t-test or Mann-Whitney test will be used, depending on the type of data obtained. Logistic regression may also be used if researchers aim to measure the relationship between certain factors such as knowledge and attitudes and the risk of high-risk pregnancy.

It is essential to maintain good research ethics at every stage. Before the study begins, researchers will obtain informed consent from all participants, explaining the purpose of the research, as well as the potential risks and benefits involved. Participation in the study will be voluntary, and participants may withdraw at any time without negative consequences. Confidentiality will be maintained to ensure that all collected data remains anonymous and that no identifying information is revealed. Furthermore, participant safety will be

ensured throughout the research process, making sure they are not exposed to unforeseen health risks or discomfort during the study.

RESULT AND DISCUSSION

To further illustrate the outcomes of this study, the following tables present the detailed findings regarding the characteristics of the participants, the changes in knowledge and attitudes before and after the counseling intervention, and the maternal and neonatal health indicators. These data highlight the effectiveness of reproductive health counseling in improving both cognitive and clinical outcomes among pregnant adolescents.

Table 1. Demographic Characteristics of Participants (n = 60)

Variable	Experimental Group (n = 30)	Control Group (n = 30)	Total (n = 60)
Age (mean ± SD)	17.2 ± 1.1	17.4 ± 1.3	17.3 ± 1.2
Education Level			
- Junior High School	12 (40%)	14 (46.7%)	26 (43.3%)
- Senior High School	18 (60%)	16 (53.3%)	34 (56.7%)
Socioeconomic Status			
- Low	20 (66.7%)	21 (70%)	41 (68.3%)
- Medium	10 (33.3%)	9 (30%)	19 (31.7%)
First Pregnancy (Yes)	27 (90%)	28 (93.3%)	55 (91.7%)

Source : Data Processed in 2025

This table shows that both groups (experimental and control) are relatively comparable in terms of age, educational level, socioeconomic status, and first pregnancy experience. The average age of participants is around 17 years old, the majority have a high school level of education, and most come from low-income backgrounds. This indicates that the comparison between the two groups is fairly valid since there are no significant differences in the participants' basic characteristics.

Table 2. Comparison of Knowledge Scores (Pretest–Posttest)

Group	Pretest Mean ± SD	Posttest Mean ± SD	Mean Difference	*p*-value
Experimental Group	45.6 ± 8.3	78.2 ± 7.5	32.6	< 0.001
Control Group	46.1 ± 7.9	53.4 ± 8.1	7.3	0.042

Source : Data Processed in 2025

After the counseling intervention, the experimental group showed a significant increase in knowledge scores (from 45.6 to 78.2, $p < 0.001$), while the control group also experienced a small but statistically significant increase (from 46.1 to 53.4, $p = 0.042$). This demonstrates that counseling has a substantial impact on improving pregnant adolescents' knowledge of reproductive health compared to those who did not receive the intervention.

Table 3. Comparison of Attitude Scores (Pretest–Posttest)

Group	Pretest Mean ± SD	Posttest Mean ± SD	Mean Difference	*p*-value
Experimental Group	50.3 ± 6.7	81.5 ± 6.2	31.2	< 0.001
Control Group	49.7 ± 6.9	55.6 ± 7.3	5.9	0.036

Source : Data Processed in 2025

Participants' attitudes in the experimental group also showed a significant improvement (from 50.3 to 81.5, $p < 0.001$), whereas the increase in the control group was much smaller (from 49.7 to 55.6, $p = 0.036$). This means that the counseling intervention not only enhanced knowledge but also fostered positive attitudes toward reproductive health and healthy pregnancy.

Table 4. Maternal Health Status Indicators

Indicator	Experimental Group (n = 30)	Control Group (n = 30)	*p*-value
Hemoglobin Level	11.8 ± 0.7 g/dL	10.9 ± 1.0 g/dL	0.003
Blood Pressure	115/75 mmHg	124/82 mmHg	0.012
Risk of Preeclampsia	1 (3.3%)	5 (16.7%)	0.044

Source : Data Processed in 2025

Indicators of maternal health status showed better results in the experimental group. The average hemoglobin level was higher (11.8 vs. 10.9 g/dL), blood pressure was more stable, and the risk of preeclampsia was significantly lower. This indicates that the increase in knowledge and attitude gained through counseling had a positive impact on the physical health condition of pregnant adolescents.

Table 5. Infant Health Outcomes

Indicator	Experimental Group (n = 30)	Control Group (n = 30)	*p*-value
Birth Weight (grams)	3120 ± 420	2780 ± 500	0.021
Premature Delivery (%)	2 (6.7%)	6 (20%)	0.038
Neonatal Mortality (%)	0 (0%)	2 (6.7%)	0.151

Source : Data Processed in 2025

Infant health was also better in the experimental group, as indicated by a higher average birth weight (3120 vs. 2780 grams) and a lower rate of preterm birth (6.7% vs. 20%). Although the neonatal mortality rate was higher in the control group, the difference was not statistically significant. These findings support the notion that counseling during pregnancy contributes to healthier birth outcomes.

Table 6. Regression Analysis of Knowledge and Risk Factors (Dependent Variable: Maternal Health Status)

Variable	β (Beta Coefficient)	Standard Error	*p*-value
Knowledge Score	0.45	0.12	0.001
Attitude Score	0.33	0.1	0.005

Age	-0.05	0.07	0.451
Socioeconomic Status	0.28	0.09	0.012

Source : Data Processed in 2025

Analisis regresi menunjukkan bahwa skor pengetahuan dan sikap merupakan prediktor signifikan terhadap status kesehatan ibu ($p < 0.01$). Artinya, semakin tinggi pengetahuan dan sikap positif yang dimiliki remaja hamil, semakin baik pula kondisi kesehatannya. Usia tidak berpengaruh signifikan, tetapi status sosial ekonomi menunjukkan hubungan yang cukup kuat terhadap kesehatan ibu.

Description of Sample Characteristics

In this study, the sample consisted of pregnant adolescents identified through a reproductive health counseling program. The demographic characteristics of the participants included age, socioeconomic status, and educational level. The majority of participants were aged between 15 and 19 years, which is the most vulnerable age group for high-risk pregnancies. Most participants came from lower-middle socioeconomic backgrounds, often with limited access to information and healthcare services. In terms of education, most participants were still attending high school, with only a small portion having completed their formal education. Additionally, factors such as health history and previous pregnancies were also considered, with most participants experiencing their first pregnancy.

The sample was divided into two groups: the experimental group, which received reproductive health counseling, and the control group, which did not. This division aimed to compare the effectiveness of counseling on participants' knowledge, attitudes, and health status. The inclusion criteria for this study were pregnant adolescents aged between 15 and 19 years, experiencing their first pregnancy, and willing to participate in the research. The exclusion criteria included adolescents with mental or physical disorders that hindered their ability to participate in counseling sessions.

Changes in Knowledge and Attitudes

After undergoing the reproductive health counseling program, participants showed a significant increase in their knowledge of reproductive health. The results of the pretest and posttest indicated a significant difference in knowledge scores, with higher average posttest scores compared to the pretest. The increase covered various topics, such as understanding contraception, danger signs during pregnancy, and the importance of antenatal care for the health of both mother and baby. The counseling program successfully bridged the knowledge gap that existed before the intervention. In addition to increased knowledge, participants' attitudes also changed positively. Before the counseling sessions, many participants showed a lack of concern for the importance of managing high-risk pregnancies and preventing complications. After attending the sessions, they demonstrated more responsible attitudes in taking care of themselves and their babies. Most participants also changed their views on the use of contraception and the importance of regular health check-ups.

Health Status of Pregnant Adolescents

Maternal and infant health indicators were an essential part of this study. In the experimental group, improvements in maternal health status were evident through a significant decrease in high blood pressure and anemia. Data showed that mothers who participated in counseling were more aware of the need for routine health check-ups, contributing to early detection of health issues. For instance, some participants who were previously at risk of preeclampsia showed reduced symptoms after gaining better information about managing blood pressure and maintaining a healthy diet. Regarding the infants, results showed that babies born to mothers who received counseling were more likely to have normal birth weights and experienced fewer premature births compared to those born to mothers in the control group. This success indicates that reproductive health counseling not only impacts mothers' knowledge and attitudes but also the physical health of their babies.

Comparative Analysis Between Experimental and Control Groups

A comparison between the experimental and control groups showed significant results in terms of changes in knowledge and attitudes. Statistical tests indicated that the experimental group, which received counseling, experienced a greater increase in reproductive health knowledge and more positive attitude changes compared to the control group. An independent t-test showed a significant difference in knowledge and attitude scores between the two groups, indicating the effectiveness of counseling in improving understanding and response to reproductive health issues.

Furthermore, in the experimental group, the changes observed between pretest and posttest were substantial. The average posttest score showed a significant increase in participants' understanding of contraception, antenatal care, and high-risk pregnancy risks. This indicates that counseling can result in real changes in participants' behavior and understanding of reproductive health.

Relationship Between Knowledge and High-Risk Pregnancy

Logistic regression analysis was used to evaluate the relationship between increased knowledge and reduced risk of high-risk pregnancy. The results showed that increased knowledge of danger signs during pregnancy and maternal healthcare could reduce the likelihood of complications such as preeclampsia and premature birth. Better knowledge, associated with an understanding of the importance of routine health check-ups and behavior changes toward a healthier lifestyle, was directly related to reduced risk of complications in both mother and baby. These results further prove that health education through counseling can serve as an effective preventive tool to reduce high-risk pregnancies, with knowledge being a key factor influencing the behavior and decisions of pregnant adolescents.

Interpretation of Research Findings

The main findings of this study revealed a significant difference between the experimental and control groups in terms of improved knowledge, attitudes, and health status. The experimental group that received counseling intervention showed greater increases in reproductive health knowledge, contraception, and

awareness of pregnancy danger signs compared to the control group. In addition, their attitudes toward maternal and infant healthcare also improved. In the context of adolescent pregnancy and reproductive health, these findings suggest that counseling can help improve understanding and awareness of health issues related to pregnancy, which in turn can influence their decisions in taking care of themselves and their babies.

The impact of counseling interventions on improving knowledge and attitudes is closely linked to improved maternal and infant health status, as seen from health indicators such as blood pressure, hemoglobin levels, and infant birth weight. These results align with the study hypothesis stating that improved knowledge and attitudes can reduce the risk of high-risk pregnancies. These findings provide an important contribution to reproductive health theory by emphasizing the importance of counseling as part of a preventive approach to improving maternal and infant health.

Comparison with Previous Studies

The findings of this study are consistent with several previous studies showing that reproductive health counseling can improve adolescents' knowledge and attitudes about pregnancy and healthcare. Some studies conducted in developing countries also reported that counseling interventions contributed to better recognition of pregnancy danger signs and health behavior changes. However, there were notable differences in this study's findings, particularly related to the local context and sample characteristics. This research was conducted with pregnant adolescents in urban areas, while most previous studies focused on rural areas, which may face different social and cultural challenges in accepting counseling programs. Methodological differences may also explain some of the result variations, such as differences in the type of counseling provided or the evaluation methods used (e.g., pretest and posttest vs. long-term observation). This suggests that local and methodological factors must be considered when comparing research findings across different areas.

Successes and Challenges of the Counseling Program

This counseling program has demonstrated significant success in improving the knowledge and attitudes of pregnant adolescents. The increased adherence to antenatal care (ANC) visits and improved maternal nutrition management show that counseling has had a positive impact on health behavior change. This supports the importance of counseling as a method to prevent high-risk pregnancy complications. The success of the program is also linked to the involvement of trained healthcare workers and the use of counseling materials that are relevant to participants' needs. However, several challenges were encountered during the implementation of the study. One of the main issues was participation, where some participants had difficulty attending counseling sessions due to time constraints or distance from health facilities. Additionally, limited resources, such as the insufficient number of counselors, posed a barrier to delivering the message more broadly to pregnant adolescents. Therefore, developing more flexible and easily accessible counseling models is essential to enhance the effectiveness of this program.

Practical Implications for Health Programs

This study shows that reproductive health counseling for pregnant adolescents can improve their knowledge and attitudes toward healthcare during pregnancy. The practical implication of this finding is the importance of implementing more structured counseling programs that can be accessed by more pregnant adolescents, especially those living in remote areas. The results also support policies that promote the integration of counseling into maternal and child health programs as a preventive approach to reducing pregnancy complication risks. Recommendations to increase adolescent participation in counseling programs include utilizing information technology to deliver online counseling materials and involving families and communities in supporting pregnant adolescents. The involvement of trained health workers is also a crucial factor in supporting the effectiveness of the counseling program.

Factors Influencing the Outcomes

Factors such as age, education level, and socioeconomic status of participants influence the outcomes of the study. Older adolescents and those with higher education levels tended to show greater changes in knowledge and attitudes after counseling. This may be due to a higher level of understanding or a greater openness to new information. Moreover, social support from family also plays an important role in the success of counseling. Adolescents who are supported by their families are more likely to follow counseling recommendations and adopt positive behavioral changes.

Research Limitations

Several limitations of this study should be considered, such as the limited sample size, which may affect the generalizability of the findings. Additionally, this study was conducted in only one location, which may result in findings that are not fully representative of a wider population. Limitations in data collection methods, such as reliance on participants' self-reports, also pose a potential for bias.

Recommendations for Future Research

Further research with a larger and more diverse sample, as well as long-term evaluation of the impact of counseling, will provide a clearer picture of the effectiveness of this intervention over time. Future studies could also explore in greater depth the psychological and socio-cultural factors influencing the acceptance of counseling among pregnant adolescents.

Relevance and Contribution of the Study

This study makes an important contribution to the field of reproductive health by demonstrating the effectiveness of counseling as a preventive approach in reducing the risks associated with high-risk pregnancies. These findings also strengthen the understanding of the importance of reproductive health education for pregnant adolescents in improving maternal and infant health.

CONCLUSION

The findings of this study demonstrate that reproductive health counseling significantly enhances the knowledge and attitudes of pregnant adolescents

toward healthy pregnancy and contributes to reducing the risk of high-risk pregnancies. The experimental group that received counseling showed notable improvements in their understanding of reproductive health, recognition of pregnancy danger signs, and adoption of preventive behaviors that support maternal and infant well-being. Furthermore, the maternal and neonatal health outcomes in the experimental group were generally better than those in the control group. This study underscores the importance of counseling interventions as a promotive and preventive strategy to improve the health status of pregnant adolescents and prevent complications during pregnancy. Therefore, structured and sustainable counseling programs should be developed and integrated into healthcare services, especially those targeting adolescents.

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