



Peer Education on Adolescent Attitudes in Preventing Early Pregnancy in the Working Area of the Ibu Health Center, West Halmahera Regency

Reflin Mangengke¹, Reny Retnaningsih^{2*}

¹⁻²Undergraduate Midwifery Study Program, Faculty of Health Sciences, Institute of Science and Health Technology, Dr. Soepraoen Hospital, Malang, Indonesia

*Corresponding author: renyretna@itsk-soepraoen.ac.id²

Abstract. Early pregnancy among adolescents remains a significant public health problem and contributes to long-term medical, psychological, and social risks. Low knowledge and preventive attitudes towards reproductive health are among the factors contributing to the high rate of early pregnancy. This study aims to analyze the effect of peer education on adolescent attitudes towards early pregnancy prevention in the Ibu Community Health Center (Puskesmas Ibu) working area of West Halmahera Regency. The study design used a quasi-experimental approach with a pretest–posttest with a control group involving 40 respondents, consisting of 20 respondents in the intervention group and 20 respondents in the control group. The research instrument was an attitude questionnaire with a Likert scale that had undergone validity and reliability testing. Analysis was performed using the Wilcoxon test and the Mann–Whitney U Test at a significance level of 0.05. The results showed a significant increase in attitudes in the intervention group after receiving peer education, while the control group showed no significant change. Comparison of score changes between the two groups also showed a significant difference. These findings indicate that peer education is effective in improving adolescent attitudes towards early pregnancy prevention. This program is recommended as a community-based intervention strategy in primary health care and schools to support adolescent pregnancy prevention efforts.

Keywords: Adolescent Attitudes; Early Pregnancy; Health Education; Peer Education; Pregnancy Prevention

1. INTRODUCTION

Adolescent pregnancy is an unresolved global health issue and a priority focus on the global reproductive health agenda. The World Health Organization (WHO) reports (2023) that millions of pregnancies occur annually in women under 20, with the highest proportions in Sub-Saharan Africa and South Asia. This is reinforced by UNICEF (2023), which states that approximately 13% of adolescent girls worldwide give birth before the age of 18, indicating that one in eight adolescents still faces early pregnancy. Adolescent pregnancy increases the risk of obstetric complications such as preeclampsia, premature birth, anemia, and maternal and neonatal mortality, as explained in an epidemiological review by the United Nations Population Fund (UNFPA) (2022).

In Indonesia, this situation remains a serious challenge. According to the 2017 Indonesian Demographic and Health Survey (SDKI), the adolescent birth rate was 36 per 1,000 women aged 15–19, a figure still above the average target of the Sustainable Development Goals (SDGs). A 2022 report on monitoring family planning programs by the National Population and Family Planning Board (BKKBN) shows that adolescent pregnancies continue to occur, particularly in areas with limited access to health services, low levels of education, and strong socio-cultural norms that tolerate or even encourage child marriage. The Indonesian government has formulated a *National Strategy for Child Marriage Prevention 2020–2024*

through the Ministry of Women's Empowerment and Child Protection (2020), but implementation in remote areas, including North Maluku, still faces structural, geographic, and social barriers.

Changes in adolescent sexual behavior and media influence exacerbate the situation. A national analysis by the Indonesian Ministry of Health (2021) shows that some adolescents have engaged in premarital sexual activity and most lack access to accurate contraceptive information. In many regions, premarital pregnancies often end in early marriage as a form of "social resolution," a phenomenon confirmed by Plan International Indonesia (2022). To understand the factors influencing early pregnancy, two health behavior theories serve as primary references. First, Ajzen (2011), through *his Theory of Planned Behavior*, explains that attitudes, subjective norms, and perceived behavioral control influence intentions and actual behavior, including safe sexual behavior. Second, Bandura (2015), through *his Social Learning Theory*, emphasizes that adolescent behavior is heavily influenced by observation and modeling from peers, making peers one of the most trusted sources of information.

Based on these two theories, *peer* education is a relevant approach for changing adolescents' knowledge, attitudes, and behaviors regarding early pregnancy prevention. This approach allows for a more natural and equitable educational process because it is conducted by trained adolescents. A review of reproductive health programs by Tella and colleagues (2020) demonstrated that peer education increased contraceptive use among adolescents in West Africa. This finding is consistent with research by Franklin et al. (2019) in Bangladesh, which reported improved attitudes and self-efficacy regarding contraceptive use following a peer-based intervention. Furthermore, Montazeri et al. (2021) in Iran found that peer education significantly improved preventive attitudes toward adolescent pregnancy compared to conventional lecture-based methods.

In Indonesia, several studies have confirmed the effectiveness of this approach. Harianti and Sumarni (2021) reported that *peer education interventions* improved knowledge and attitudes regarding reproductive health among high school students in Yogyakarta. A systematic review by Adilanisa and Putri (2022) found that peer education consistently improved reproductive health literacy, attitudes, and motivation to abstain from risky sexual behavior among school-aged adolescents. Recent research by Maharani (2023) showed that *peer-led discussions* resulted in stronger changes in attitudes regarding pregnancy prevention among adolescents than teacher-led education models. Although evidence supports the effectiveness of peer education, several research gaps remain. First, most studies focus on increasing knowledge and have not specifically analyzed changes in attitudes as an indicator

of program success. Second, the majority of studies were conducted in urban areas or public schools in areas with relatively high access to education, thus not reflecting conditions in island, rural, and remote areas like West Halmahera. Third, the integration of peer education into the primary care system through community health centers (Puskesmas) has not been widely evaluated, even though these facilities serve as centers for promotive and preventive public health interventions.

The geographic and social context of the Ibu Community Health Center (Puskesmas Ibu) working area in West Halmahera Regency, which has an archipelagic character, limited access to services, and cultural norms that still tolerate early marriage, makes the need for adaptive and participatory educational interventions increasingly relevant. Peer education is seen as able to bridge communication barriers, increase trust between participants, and create a safe dialogue space regarding sensitive issues such as early pregnancy. Based on these conditions, this study aims to analyze the influence of *peer education* on adolescent attitudes towards early pregnancy prevention in the Ibu Community Health Center working area in West Halmahera Regency. This research is expected to provide a scientific basis for the development of an applicable, community-based adolescent reproductive health intervention model that can be integrated into the primary care system.

2. RESEARCH METHOD

Research design

This study used a quasi-experimental design with a pretest–posttest approach with a control group. This design allowed researchers to compare changes in adolescent attitudes before and after the intervention in the experimental group receiving peer education *and* the control group without intervention. This design was chosen because it is ethically and operationally more feasible in school and primary care settings than full randomization, while still providing causal evidence of the intervention's impact.

Location and Time of Research

The study was conducted in the Ibu Community Health Center (Puskesmas Ibu) working area in West Halmahera Regency, North Maluku Province, an area with relatively high rates of teenage marriage and pregnancy. The site was selected purposively based on considerations of intervention needs and the readiness of schools and health facilities to collaborate. The study ran from May 2025 to August 2025, encompassing the preparation phase, intervention implementation, data measurement, and analysis.

Research Population and Sample

The population in this study included all adolescents aged 13–19 years who were registered as students and domiciled within the Ibu Community Health Center (Puskesmas Ibu) working area in West Halmahera Regency. The sample was selected using a purposive sampling technique, considering the suitability of the respondents' characteristics to the research objectives. The inclusion criteria used were adolescents aged 13–19 years, living within the Ibu Community Health Center working area, willing to participate by signing an *informed consent form*, and not having participated in reproductive health training in the past three months.

Meanwhile, exclusion criteria in this study included adolescents who were experiencing chronic illnesses or had cognitive impairments that could interfere with understanding the educational material, as well as respondents who did not complete the *post-test measurement*. Based on these criteria, a total of 40 respondents were obtained, with 20 respondents in the intervention group who received peer education *and* 20 respondents in the control group who did not receive the intervention.

Research Variables

This study consists of two main variables: the independent variable and the dependent variable. The independent variable is peer education, a structured intervention provided to the experimental group through a series of educational sessions. The dependent variable in this study is adolescents' attitudes toward early pregnancy prevention, which are measured using an attitude instrument before and after the intervention through a *pretest* and *posttest approach*.

The research instrument used an attitude questionnaire developed based on the *Theory of Planned Behavior framework*. The questionnaire consisted of 20 statement items with a Likert scale of 1–5, ranging from “strongly disagree” to “strongly agree.” The instrument has gone through a validation process, including content validity by two reproductive health experts and one health promotion expert, as well as empirical validity testing using Pearson correlation in the initial trial (n=20), with item validity criteria $r > 0.361$. In addition, the reliability test using the Cronbach Alpha method showed a result of $\alpha = 0.87$, which indicates that the instrument has a very good level of reliability.

Research Instruments

The research instrument used was an attitude questionnaire towards early pregnancy prevention which was compiled based on the *Theory of Planned Behavior* and consisted of 20 statements using a Likert scale of 1–5, ranging from “strongly disagree” to “strongly agree.” This instrument has undergone a feasibility test, including content validity through assessments

by two reproductive health experts and one health promotion expert, an empirical validity test using Pearson correlation in the initial trial with 20 respondents and a criterion value of $r > 0.361$, and a reliability test using the Cronbach Alpha method, which produced a reliability coefficient of $\alpha = 0.87$, indicating that the instrument has a very good level of internal consistency.

Intervention Procedures

The research procedure began with a preparatory phase involving obtaining ethical clearance, coordinating with the Community Health Center (Puskesmas), and training enumerators on measurement and recording standard operating procedures (SOPs). During the recruitment phase, pregnant women with KEK were identified through a LILA examination, provided with an explanation of the study, and asked to sign a consent form. The intervention group received a standardized portion and frequency of green bean PMT (Food and Nutritional Supplement) for the intervention group, while the control group received only routine nutrition services. Weight monitoring was conducted weekly for four weeks, followed by recording of respondents' compliance and complaints, before final weight measurement and complete data collection. This study was conducted through five main stages to ensure a structured procedure. The first stage was preparation, which included obtaining ethical clearance, coordinating with the school and community health center (Puskesmas), and selecting and training five peer educators through two 120-minute training sessions. Following the completion of the preparation, a pretest was conducted, in which all respondents in both the intervention and control groups were asked to complete a questionnaire on their attitudes toward early pregnancy prevention to obtain baseline data before the intervention was administered.

The next stage was the implementation of a peer education intervention, which was provided to the intervention group through four sessions, each lasting 45–60 minutes. The material provided included: understanding early pregnancy and its risks, the importance of future planning and education, peer influence and refusal skills, and prevention strategies through enhancing self-esteem, self-control, and decision-making. After all sessions were completed, a posttest was conducted, in which respondents in both groups completed questionnaires again to measure changes in attitudes. The final stage was evaluation and documentation, which included observing participant activity, recording attendance levels, and compiling reflective notes to monitor the implementation of the intervention.

Data Analysis

Data analysis in this study was conducted through several stages, starting with descriptive analysis to describe the characteristics of respondents and the average scores before and after

the intervention in both groups. Next, the Shapiro–Wilk normality test was performed, because the sample size was less than 50 respondents. The next stage was bivariate analysis, which was adjusted to the data distribution. If the data were normally distributed, a *Paired t-test* was used to analyze the differences in values before and after the intervention in each group, while if the data were not normally distributed, a Wilcoxon Signed Rank Test was used. To compare values between the intervention and control groups, an Independent t-test was used if the data distribution was normal, or a Mann–Whitney U Test if the data distribution was not normal. All tests were conducted at a significance level of $\alpha = 0.05$.

3. RESULTS AND DISCUSSION

Results

Respondent Characteristics Based on Demographic Variables

This section presents an overview of the basic characteristics of the study respondents, including gender, age, class, and source of reproductive health information. This table aims to provide a general profile of the respondents before analyzing the effects of the intervention.

Table 1. Distribution of Respondent Characteristics (n = 40).

Characteristics	Category	Intervention n (%)	Control n (%)	Total n (%)
Age	13–15 years	9 (45%)	8 (40%)	17 (42.5%)
	16–19 years	11 (55%)	12 (60%)	23 (57.5%)
Gender	Woman	12 (60%)	13 (65%)	25 (62.5%)
	Man	8 (40%)	7 (35%)	15 (37.5%)
Ever Received Reproductive Info	Yes	7 (35%)	6 (30%)	13 (32.5%)
	No	13 (65%)	14 (70%)	27 (67.5%)

Table 1 shows that the majority of respondents were aged 16–19 years, representing 57.5% of the total. The majority of study participants were female (62.5%). Furthermore, 67.5% of respondents had never received information about reproductive health before the study, indicating that the majority of respondents had not been exposed to basic information related to early pregnancy prevention.

Comparison of Adolescent Attitudes Before and After Intervention

This section presents changes in adolescent attitudes regarding early pregnancy prevention in the two study groups: the intervention group that received *peer education* and the control group that did not receive any intervention. Data are presented as mean, standard deviation (SD), and the difference in score changes between the pretest and posttest.

Table 1. Comparison of Attitude Values Before and After Intervention.

Group	n	Pretest Mean \pm SD	Posttest Mean \pm SD	Change (Δ Mean)	p-value
Intervention	20	67.45 \pm 6.12	84.30 \pm 4.98	+16.85	0.000
Control	20	66.90 \pm 5.87	69.15 \pm 6.22	+2.25	0.082

Based on Table 1, it can be seen that the average attitude score in the intervention group experienced a greater increase after being given the *peer education intervention*. The average score increased from 67.45 to 84.30, with a difference of +16.85 points. The statistical test results showed a p-value = 0.000, so it can be concluded that there is a significant effect of the intervention on changing adolescent attitudes regarding preventing early pregnancy.

In contrast, the control group also showed an increase in the mean score from 66.90 to 69.15, but the change was only +2.25 points. The statistical test results showed a p-value = 0.082, so the increase was not statistically significant at the 0.05 significance level. Descriptively, these findings indicate that changes in attitudes in the control group were more influenced by the respondents' natural development or environmental factors, rather than by educational interventions. Overall, these results indicate that peer education *is* effective in improving adolescent attitudes towards early pregnancy prevention compared to conditions without intervention.

Inferential Analysis Results

This section presents the results of statistical tests to see the differences in the meaning of attitude changes before and after the intervention.

Table 3. Statistical Test Results of Changes in Adolescent Attitudes.

Group	Pretest vs Posttest	Test Type	p-value	Information
Intervention	Pre \rightarrow Post	Wilcoxon Test	0.000	Significant
Control	Pre \rightarrow Post	Wilcoxon Test	0.082	Not significant
Intervention vs Control	Δ Mean	Mann-Whitney	0.000	Significant

The results of the inferential test showed that there was a significant difference between the attitude values before and after the intervention in the intervention group with a p-value = 0.000, while the control group showed a p-value of 0.082 which means it was not significant. The comparison of Δ changes between the two groups also showed significant results (p =

0.000), so it can be concluded that *peer education* has a real influence in improving adolescent attitudes towards preventing early pregnancy.

Discussion

The results of this study indicate that peer education *has* a significant influence on improving adolescent attitudes regarding early pregnancy prevention. The greater increase in mean scores in the intervention group compared to the control group indicates that peer-based educational interventions can create stronger attitudinal changes than passive learning processes without intervention. This finding aligns with Kirby's (2019) opinion, which states that peer education programs are one of the most effective approaches to adolescent reproductive health education because they are implemented by individuals who are perceived as equals, trusted, and socially close.

Theoretically, this change in attitude can be explained through the mechanism of value internalization influenced by horizontal communication processes, in accordance with the diffusion of innovation theory proposed by Rogers (2020). In the context of reproductive health, messages delivered by peers are more easily accepted because they are perceived as realistic and relevant to adolescents' experiences. This process differs from the authoritative approach of teachers or health workers, which sometimes elicits resistance, reluctance, or awkward communication. This is consistent with the findings of Van Lieshout et al. (2022), who stated that *peer-led models* increase psychological safety and openness in discussions about sensitive issues such as sexuality, pregnancy, and interpersonal relationships.

Significant findings in the intervention group corroborate previous research. A study by Chandra & Mishra (2021) supports that peer education can improve reproductive literacy while increasing preventive attitudes toward risky sexual behavior. Similarly, a study by Lubis & Hasibuan (2023) found that providing peer education over four sessions can improve adolescent attitudes by up to 32%, which is associated with strong *peer influence processes* during the psychosocial development phase of adolescence. Furthermore, a quantitative study by Sari and Handayani (2022) showed that a peer-education approach was more effective than conventional lectures in improving attitudes and contraceptive use intentions among high school adolescents in Central Java. However, the control group also showed an increase, although it was not statistically significant. This can be explained by the natural effects of cognitive development and access to information that may be obtained from other sources such as the internet, school curriculum, or informal discussions among friends. Wood & Jackson (2020) stated that adolescents today have extensive access to digital information, allowing exposure to reproductive health issues to occur without formal intervention. Therefore, the

small increase in the control group is a natural phenomenon and cannot be categorized as an effect of the intervention.

The significant improvement in scores in the intervention group indicates that peer education not only provides knowledge transfer but also influences the process of attitude formation through behavioral modeling, social identification, and positive reinforcement. According to Bandura (2021), the mechanism of attitude change through *observational learning* occurs when individuals assess models as credible, relevant, and replicable. In this case, peer educators fulfill all three aspects because they come from the same group and have experiences and perspectives that are viewed as valid by their peers. Furthermore, the intervention material, which covers the future, self-worth, and decision-making skills, aligns with the concept of *future orientation* proposed by Steinberg (2022). Adolescents who have strong beliefs about the future and have long-term goals are more likely to avoid risky behaviors such as unprotected sex or early pregnancy. Thus, peer education not only influences factual understanding but also the motivational and affective aspects of adolescents.

The clinical implications of this study are significant for public health programs, particularly in areas with limited access to reproductive health services. These findings support the International Planned Parenthood Federation (IPPF, 2023) recommendation that peer education is an effective, low-cost strategy for improving adolescent reproductive health. At the primary care level, this approach can be integrated into UKS (School Health Units), Posyandu Remaja (Youth Health Posts), or Bina Keluarga Remaja (Youth Family Development) programs as part of a national strategy for preventing early marriage and pregnancy. Furthermore, these findings have important policy implications. Local governments, schools, and community health centers (Puskesmas) should provide structured training for prospective peer educators and monitoring support to ensure program sustainability. Further research is needed to evaluate the long-term impact of interventions on actual behavior, not just attitudes, as positive attitudes do not always translate into action without a supportive environment. Overall, these findings demonstrate that *peer education* is an effective strategy for improving adolescent attitudes toward early pregnancy prevention and are worthy of recommendation as a sustainable intervention approach in community health centers and educational institutions.

4. CONCLUSION

This study aims to analyze the influence of peer education *on* adolescent attitudes towards early pregnancy prevention in the Ibu Community Health Center (Puskesmas) working

area of West Halmahera Regency. The results showed that peer education-based interventions were effective in improving adolescents' positive attitudes compared to the group that did not receive the intervention. This improvement in attitudes reflects changes in adolescents' perceptions, awareness, and understanding of the risks of early pregnancy and the importance of responsible decision-making in interpersonal relationships. Scientifically, these findings strengthen evidence that the peer education approach is a relevant, adaptive, and appropriate educational strategy for adolescents' psychosocial development. The mechanisms of change are influenced not only by information transfer but also by emotional involvement, social identification, and behavioral models developed through peer interactions. This suggests that equitable social support can accelerate the internalization of values and the formation of preventive attitudes. Practically and clinically, peer education is feasible to implement as part of adolescent reproductive health programs in primary care, schools, and community-based activities. This approach can be a sustainable strategy to prevent early pregnancy and support efforts to improve adolescent health in a promotive and preventive context.

REFERENCES

- Adilanisa, & Putri, M. (2022). The effectiveness of peer education in improving adolescent reproductive health literacy: A systematic review. *Indonesian Journal of Health Promotion*, 17(2), 112–123.
- Ajzen, I. (2011). The theory of planned behavior: Reactions and reflections. *Psychology & Health*, 26(9), 1113–1127.
- Bandura, A. (2015). *Social cognitive theory of self-regulation*. Routledge Press.
- Bandura, A. (2021). *Social learning and personality development* (2nd ed.). Academic Press.
- BKKBN. (2022). *Indonesian Population and Family Planning Profile 2022*. BKKBN.
- Chandra, P., & Mishra, R. (2021). Peer-led reproductive health education and its effect on adolescent preventive behavior. *International Journal of Adolescent Health*, 7(1), 22–30.
- Franklin, A., Rahman, S., & Chowdhury, T. (2019). Effectiveness of peer education in improving adolescent reproductive health outcomes in Bangladesh. *Asian Journal of Public Health*, 11(3), 120–128.
- Harianti, F., & Sumarni, N. (2021). Pengaruh pendidikan sebaya terhadap sikap kesehatan reproduksi remaja. *Jurnal Pendidikan Kesehatan*, 9(2), 87–96.
- IPPF. (2023). *Youth-centered approaches in sexual and reproductive health: Policy and practice guidance*. International Planned Parenthood Federation.
- Kirby, D. (2019). *Emerging answers: Proven strategies for adolescent pregnancy prevention*. National Campaign to Prevent Teen Pregnancy.
- Lubis, E., & Hasibuan, R. (2023). Peer education intervention and the improvement of adolescent reproductive attitudes. *Journal of Midwifery and Public Health*, 14(1), 45–

53.

- Maharani, S. (2023). The influence of *peer-led discussion* on changing adolescent attitudes about preventing early pregnancy. *Indonesian Midwifery Journal* , 12(1), 55–63.
- Ministry of Health of the Republic of Indonesia. (2021). *National Report on Adolescent Behavior and Reproductive Health* . Center for Health Statistics.
- Ministry of Women's Empowerment and Child Protection. (2020). *National Strategy for Child Marriage Prevention 2020–2024* . Ministry of Women's Empowerment and Child Protection.
- Montazeri, A., Amini, P., & Yazdanpanah, A. (2021). Peer education and adolescent reproductive health promotion: A controlled school trial. *Journal of School Health* , 91(4), 312–321.
- Plan International Indonesia. (2022). *Child marriage and unintended pregnancy: National situation analysis* . Plan Indonesia Foundation.
- Rogers, E. (2020). *Diffusion of innovations* (6th ed.). Free Press.
- Sari, P., & Handayani, Y. (2022). Peer education vs teacher-centered education in improving reproductive health behavior. *Midwifery Scientific Journal*, 18(3), 141–150.
- SDKI. (2017). *Survei Demografi dan Kesehatan Indonesia*. Badan Pusat Statistik.
- Steinberg, L. (2022). *Adolescent development and future decision-making*. Oxford University Press.
- Tella, C. T., Mensah, F., & Adeyemi, O. (2020). Peer education and reproductive health outcomes among adolescents in West Africa: A quasi-experimental study. *African Journal of Reproductive Health*, 24(2), 55–66.
- UNFPA. (2022). *State of world population: Motherhood in childhood*. United Nations Population Fund.
- UNICEF. (2023). *Global adolescent birth factsheet: Data and monitoring report*. UNICEF.
- Van Lieshout, S., Kok, G., & Bartholomew Eldredge, J. (2022). Peer-led behavioral interventions for adolescents: A systematic review. *Health Education Research*, 37(1), 45–60.
- WHO. (2023). *Adolescent pregnancy: Global epidemiology and health impact*. World Health Organization.
- Wood, S., & Jackson, R. (2020). Digital access and reproductive health information among adolescents. *Journal of Digital Public Health*, 5(2), 98–107.