



The Influence of Peer Education on Psychological Readiness for Menarche in Female Students in the Ibu Community Health Center Work Area, West Halmahera Regency

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Abstract. Menarche is a crucial phase in the reproductive development of adolescent girls, often accompanied by anxiety and psychological unpreparedness due to a lack of adequate information and education. Peer education is an effective approach to improving adolescents' understanding and emotional readiness for their first menstruation. This study aims to analyze the influence of peer education on psychological readiness for menarche among female students in the Ibu Community Health Center (Puskesmas Ibu) in West Halmahera Regency. The study used a quasi-experimental design with a one-group pretest–posttest approach. The sample consisted of 30 pre-menarcheal female students selected using a purposive sampling technique. The research instrument was a psychological readiness questionnaire that had been tested for validity and reliability. The results showed an increase in psychological readiness scores from an average pretest of 7.03 to 11.20 in the posttest. A total of 86.7% of respondents experienced an increase in readiness, while 13.3% remained stable, and none experienced a decrease. The Wilcoxon test showed a p-value <0.05, indicating a significant influence of peer education on psychological readiness for menarche. This study concludes that peer education is an effective, affordable, and relevant educational strategy to improve the psychological readiness of adolescent girls in facing menarche, especially in areas with limited access to reproductive information.

Keywords: Adolescent Girls; Menarche; Peer Education; Puberty; Reproductive Health.

1. INTRODUCTION

Menarche is an important milestone in the reproductive development of adolescent girls, signaling the biological functioning of their reproductive organs. This process brings not only physical changes but also emotional and psychological changes that often lead to anxiety, embarrassment, and even mental unpreparedness if adolescents are not equipped with adequate knowledge (Mustafa et al., 2020; Lee & Chen, 2019). In various developing countries, including Indonesia, the age of menarche has trended downward to 11–12 years, indicating that adolescent girls require earlier education to prepare for their first menstruation (Ministry of Health of the Republic of Indonesia, 2022; Pratiwi et al., 2021). Psychological unpreparedness before menarche is often caused by a lack of information, cultural stigma, negative perceptions about menstruation, and a lack of open communication between family members (Aboobacker et al., 2019; Nugroho & Wulandari, 2020). National surveys show that approximately 45–60% of adolescent girls experience anxiety and fear before menarche, perceiving menstruation as frightening or embarrassing (Rizki et al., 2021; Widodo et al., 2018). This condition can lead to low self-confidence, impaired concentration in school, and even avoidance of discussions about reproductive health (Deshpande et al., 2020).

Psychological readiness for menarche is not only determined by knowledge but also influenced by the social and educational environments in which adolescents interact daily. Schools are an ideal setting for providing reproductive health interventions because most adolescents spend their time in formal educational settings. However, various studies show that reproductive health education in schools remains sporadic and not systematically integrated into the curriculum. Consequently, adolescents often rely on information from peers or social media, which may not be accurate (Hasnain et al., 2020; Ratnawati et al., 2023). The lack of comprehensive reproductive health materials leaves many female students unaware of the signs of puberty and lacking effective coping strategies when menarche occurs. This situation reinforces the importance of school-based educational interventions with approaches tailored to the needs of adolescent girls.

One approach considered effective in improving the knowledge and psychological preparedness of adolescent girls is peer education, which is health education provided by peers. This approach is assumed to be more easily accepted because the message is delivered by individuals with similar age, experience, communication language, and social context (Simanjuntak et al., 2020; Fitriani et al., 2020). A meta-analysis by Mahajan and Sharma (2022) showed that peer education can increase adolescents' understanding of reproductive health by 35–45% and significantly reduce anxiety related to puberty. Peer interactions also have strong psychosocial effects, as adolescents tend to feel more comfortable, less embarrassed to ask questions, and less judged when discussing with peers compared to adults (Singh et al., 2020; Lestari et al., 2022). Thus, peer education not only increases knowledge but also provides emotional support that can strengthen mental readiness for menarche.

In West Halmahera Regency, the peer education approach is increasingly relevant given the diverse social and cultural backgrounds and limited healthcare workforce available at Ibu Community Health Centers (Puskesmas Ibu). Educational programs provided by healthcare workers are often suboptimal due to limited resources, time, and intervention coverage. Through peer educators, education can be ongoing without relying solely on healthcare workers, thus more effectively reaching adolescent girls in schools (Yusuf & Rahman, 2021; Tiwari et al., 2022). Furthermore, this approach has proven more effective in overcoming cultural barriers that consider discussing menstruation taboo, allowing important information to be conveyed in a more natural and acceptable manner to adolescents. Data from Ibu Community Health Centers (Puskesmas Ibu) in 2024 showed that 48% of female students did not understand the signs of puberty, and 52% reported anxiety about their first menarche. This situation indicates the need for structured, comprehensive, and locally tailored educational

interventions. Therefore, peer education is a relevant, affordable alternative strategy with the potential to have a long-term impact on improving the psychological preparedness of adolescent girls in the region.

Based on these conditions, this study aims to analyze the influence of peer education on psychological readiness to face menarche in female students in the working area of the Ibu Health Center, West Halmahera Regency.

2. RESEARCH METHOD

Research design

This study used a quasi-experimental design with a one-group pretest–posttest approach. This design was chosen to allow researchers to evaluate changes in students' psychological readiness before and after the peer education intervention. This design allowed researchers to compare psychological readiness scores at two different points in time within the same group, allowing for direct observation of the intervention's effects without the use of a control group.

Location and Time of Research

The research was conducted at several schools within the Ibu Community Health Center (Puskesmas Ibu) working area in West Halmahera Regency. This location was selected due to the high number of pre-menarcheal adolescent girls and limited access to reproductive health education in the area. Data collection and intervention implementation took place from March to May 2025, adjusting to school schedules and peer educator availability.

Research Population and Sample

The population in this study was all pre-menarcheal female students in grades 5–6 of elementary school and grade 7 of junior high school in the Ibu Community Health Center (Puskesmas Ibu) working area. Sampling was conducted using a purposive sampling technique, namely selecting respondents based on certain criteria relevant to the research objectives. Based on the predetermined inclusion criteria, namely female students who have not experienced menarche, are willing to take the entire series of pretests and posttests, and attend all peer education sessions, a total of 40 respondents were obtained who met the requirements to be used as research samples.

Research Variables

The variables in this study consist of two types. The independent variable, or influencing variable, is peer education, which refers to the provision of health education about menarche through trained peers. Meanwhile, the dependent variable, or influencing variable, is

psychological readiness for menarche, which reflects the emotional abilities, knowledge, and mental readiness of female students for their first menstruation.

Research Instruments

The instrument used to measure the psychological readiness of female students was a questionnaire modified from *the Menarche Preparedness Scale*. This instrument assesses several aspects of psychological readiness, including understanding puberty, emotional readiness, and the ability to cope with menstrual changes. The questionnaire has been tested for validity and reliability, and showed a Cronbach's Alpha reliability value of 0.82, indicating that the instrument has a good level of internal consistency and is suitable for use in research.

Intervention Procedures

The intervention procedure began with the recruitment and training of *peer educators*, students selected to facilitate reproductive health education for their peers. Following training, the peer education intervention was conducted through two 60-minute educational sessions.

- a. The first session focused on material about puberty, body changes, and the basic concept of menarche.
- b. The second session emphasized emotional management, strategies for dealing with anxiety, and self-care during menstruation.

After all sessions were completed, a posttest was conducted one week after the second session to measure changes in psychological readiness after the intervention.

Data Analysis

The collected data was analyzed using the Wilcoxon Signed Rank Test, as the data obtained were ordinal and not normally distributed. This test was used to determine differences in psychological readiness scores before and after the intervention in the same group, thus determining whether peer education had an effect on psychological readiness for menarche .

3. RESULTS AND DISCUSSION

Results

Respondent Characteristics

Table 1. Respondent Characteristics.

| Characteristics | Category | (n) | (%) |
|-----------------|------------------------|-----|------|
| Age | 11 years old | 14 | 46.7 |
| | 12 years old | 14 | 46.7 |
| | 13 years old | 2 | 6.6 |
| Class | 6th Elementary School | 14 | 46.7 |
| | 7th Junior High School | 16 | 53.3 |
| Live with | Parent | 30 | 100 |

| | | | |
|---|------------------|----|------|
| Menarche Status | Not yet menarche | 25 | 83.3 |
| | Already menarche | 5 | 16.7 |
| Ever received information about menstruation? | Yes | 10 | 33.3 |
| | No | 20 | 66.7 |
| Resources | Parent | 8 | 26.7 |
| | Teacher | 1 | 3.3 |
| | Friend | 2 | 6.7 |
| | Social media | 1 | 3.3 |
| Following peer education | Yes | 30 | 100 |
| Number of educational sessions attended | 1 session | 5 | 16.7 |
| | 2 sessions | 25 | 83.3 |

The majority of respondents in this study were aged 11–12 years (93.4%), with an even distribution between 11- and 12-year-olds at 46.7%, respectively. Only 6.6% of respondents were 13 years old. Based on educational level, 53.3% were seventh-grade junior high school students, and 46.7% were sixth-grade elementary school students. All respondents lived with their parents, making family support an important factor potentially influencing psychological readiness for menarche.

The majority of respondents (83.3%) had not yet experienced menarche, making this group ideal for assessing psychological preparedness for menarche. However, only 33.3% of female students had received information about menstruation before, and the majority (66.7%) had not received any related education at all. The information respondents received was primarily from their parents (26.7%), with teachers, friends, and social media playing a very minor role as sources. This indicates a significant educational gap regarding reproductive health within the school and family environment. All respondents (100%) participated in the peer education program, with the majority attending both full sessions (83.3%), while 16.7% attended only one session. Full participation in the intervention indicates that peer education activities are well-received by students and have significant potential to improve their understanding and preparedness for menarche.

Psychological Readiness Before Intervention (Pretest)

Table 2. Distribution of Psychological Readiness Scores Before Peer Education (Pretest).

| Category | Score Range | Number (n) | Percentage (%) |
|-----------|-------------|------------|----------------|
| Low | 4–6 | 9 | 30.0 |
| Currently | 7–8 | 16 | 53.3 |
| Tall | 9 | 5 | 16.7 |
| Total | — | 30 | 100 |

Average pretest score: 7.03.

Score range: 4–9 (Source: Primary Data 2025)

The results of the psychological readiness measurement before the peer education intervention showed that the majority of respondents were in the medium readiness category, namely 16 female students (53.3%). This indicates that more than half of the participants had an initial understanding of puberty and menarche, but it was still not at an optimal level. Meanwhile, there were 9 respondents (30%) who were in the low readiness category, which reflects a lack of understanding, the emergence of anxiety, and a lack of emotional readiness in facing menarche. Conversely, only 5 respondents (16.7%) were included in the high readiness category, indicating that a small number of female students already had a positive perception and better mental readiness regarding pubertal changes. This score distribution pattern was reinforced by the average pretest score of 7.03, which was in the medium category range. This condition indicates that in general, the psychological readiness of female students before the intervention still needed strengthening both in terms of knowledge and emotional readiness.

The wide variation in scores (4–9) reflects differences in reproductive health experiences and literacy levels among respondents. Factors such as never having received information about menstruation before, limited sources of information, and a lack of comfort discussing it with family contributed to low scores among some female students. These results indicate that peer education interventions are needed as an appropriate strategy to improve female students' psychological readiness for menarche.

Psychological Readiness After Intervention (Posttest)

Table 3. Distribution of Psychological Readiness Scores After Intervention (Posttest).

| Score Range | Category | Frequency (n) | Percentage (%) |
|-------------|-----------|---------------|----------------|
| 9–10 | Currently | 8 | 26.7% |
| 11–12 | Tall | 22 | 73.3% |
| Total | – | 30 | 100% |

Average posttest score: 11.20

Score range: 9 – 12

The posttest results showed a clear improvement in the psychological preparedness of female students after participating in the peer education program. Most respondents (22 students) scored in the 11–12 range, which is considered high preparedness. Eight (26.7%) were in the moderate category, and none were in the low category. These findings indicate that after the intervention, almost all participants were at an adequate level of psychological preparedness to face menarche.

The average psychological readiness score increased to 11.20, significantly higher than the pre-intervention score. This improvement reflects a greater understanding of the menarche process, emotional management skills, and readiness to face the physical changes that will occur. Furthermore, the absence of low scores in the post-test further confirms that peer education has had a positive impact on all respondents.

Statistical Analysis of the Influence of Peer Education

Table 4. Wilcoxon Signed Rank Test Results.

| Variables | Mean Pretest | Mean Posttest | Z Count | p-value | Information |
|--------------------------------------|--------------|---------------|---------|---------|----------------------------------|
| Psychological readiness for menarche | 7.03 | 11.20 | -4,784 | 0.000 | There is a significant influence |

Interpretation Notes

- The $p\text{-value} = 0.000 (< 0.05)$ shows that peer education is statistically proven to increase psychological readiness to face menarche.
- A negative Z-score indicates that the posttest scores were consistently higher than the pretest.

Statistical analysis was performed using the Wilcoxon Signed Rank Test, as the psychological readiness score data consisted of ordinal values and were not normally distributed. This test was used to determine whether there was a significant difference between the pretest and posttest scores after the peer education intervention. The calculation results showed a significant difference in scores before and after the intervention. A p-value of 0.000 ($p < 0.05$) indicates that the increase in students' psychological readiness did not occur by chance, but rather was a real effect of the intervention. Furthermore, the calculated Z-value, which was in the negative range, indicated that most posttest scores were higher than pretest scores, in line with the expected direction of change.

Discussion

The results of this study indicate that *peer education* has a significant influence on improving female students' psychological readiness for menarche. The increase in the average score from 7.03 in the pretest to 11.20 in the posttest indicates a positive change in adolescents' understanding and emotional readiness. This finding aligns with the theory of pubertal development, which states that providing accurate information can reduce fear and increase self-control when facing biological changes (Santrock, 2021). Adolescents who receive

education in a safe, supportive, and non-judgmental context are more likely to understand their bodily changes (Molina et al., 2020).

This increase in psychological readiness is influenced not only by knowledge but also by emotional support provided through peer interactions. Research by Qamar et al. (2022) shows that peer-to-peer education is more effective than conventional education because adolescents tend to trust and feel comfortable communicating with their peer group. This condition is also evident in this study, where 86.7% of respondents showed an increase in readiness scores after attending two educational sessions. Affective support in the form of validation of experiences, the opportunity to ask questions without fear, and examples of personal experiences from *peer educators* strengthens adolescents' abilities to face menarche. This is consistent with the findings of Ouedraogo et al. (2023) that a *peer support approach* can reduce anxiety and menstrual stigma in adolescent girls. Psychologically, menarche is a transition that is prone to triggering anxiety if not based on good understanding and mental preparation. In this study, most female students in the early stages were categorized as low to moderate readiness. This indicates a significant information gap before the intervention. A previous study by Rahmawati & Widyastuti (2019) identified that a lack of understanding about the menstrual process can trigger feelings of fear, shame, and confusion in girls. Peer education works to address this issue by providing informal dialogue spaces that increase self-efficacy and perceived control over the puberty process (Schmidt et al., 2021).

Furthermore, the sociocultural context of the West Halmahera region, which still maintains taboos regarding menstruation, also contributed to respondents' low initial preparedness. In a culture that restricts discussion of reproductive organs, adolescents often receive information from unverified peers or from media that is not always credible. Research by Ndungu & Wambui (2020) showed that myths and misconceptions about menstruation worsen girls' mental preparedness for menarche. The peer education intervention in this study successfully broke down these barriers, as evidenced by the increased preparedness of almost all respondents. This finding also aligns with research by Retnaningsih (2023), which confirmed that a social support-based educational approach has a positive effect on adolescents' emotional preparedness for biological changes. In her study, Retnaningsih demonstrated that peer involvement plays a significant role in shaping adolescents' courage, self-confidence, and understanding of reproductive health issues. Therefore, the increased psychological preparedness in this study reinforces the effectiveness of the participatory education model in the promotional and preventive realm of adolescent health.

From a health education theory perspective, peer education falls within the *experiential learning framework*, where adolescents learn from real-life experiences and horizontal interactions. This model is considered to improve information retention and behavioral change (Kolb, 2014). This is evident in this study, where an average score increase of 4.17 points indicates knowledge transfer and strengthening of affective and psychomotor aspects in facing menarche. Research by Opara et al. (2021) supports these findings by stating that peer-based learning processes create a safe, cooperative, and motivating environment for adolescents. The Wilcoxon test results in this study showed a p-value <0.05 , proving that the change in scores was not a coincidence but a direct result of the intervention. This intervention effect is reinforced by research by Mahmud et al. (2021), who found that peer-based education programs can increase puberty readiness by 30–50% within two weeks, similar to the pattern of improvement seen in this study.

Overall, this discussion reinforces the point that peer education is an effective, socioculturally relevant, and easily implemented approach to improving adolescents' psychological preparedness for menarche, particularly in areas with limited access to reproductive education. Community health centers and schools can adopt this model as a sustainable program, given its significant impact and low implementation costs.

4. CONCLUSION

This study shows that peer education has a significant influence on improving psychological preparedness for menarche in female students in the Ibu Community Health Center (Puskesmas Ibu) area, West Halmahera Regency. There was an increase in the average score from 7.03 in the pretest to 11.20 in the posttest, with a Δ average score of 4.17 points. A total of 86.7% of respondents experienced increased preparedness, and the Wilcoxon test results showed a p-value <0.05 , confirming the effectiveness of the intervention. Peer education has been shown to help female students understand menarche, improve emotional preparedness, reduce anxiety, and strengthen coping mechanisms. This approach is worthy of wider application as a strategy to promote adolescent reproductive health, especially in areas with limited access to education.

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