Journal of Innovative and Creativity
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Faculty of Education
University of Pahlawan Tuanku Tambusai
ISSN 2775-771X (Online)
ISSN 2962-570X **(Printed)**
6 (1) 2026, Page 15532 - 15539

Association Between Reproductive Health Knowledge and Menarche Preparedness Among Elementary School Girls in Bogor Regency, Indonesia

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ABSTRAK

Menarche menandai tahap penting dalam kematangan reproduksi perempuan. Namun, banyak anak perempuan muda kurang memiliki pengetahuan dan kesiapan emosional yang memadai, yang dapat menyebabkan kecemasan, kebingungan, dan sikap negatif terhadap menstruasi. Penelitian ini bertujuan untuk menganalisis hubungan antara pengetahuan kesehatan reproduksi dan kesiapan menarche di kalangan siswa sekolah dasar di Kabupaten Bogor, Indonesia. Studi potong lintang dilakukan pada 72 siswa kelas lima dan enam di SDN Sukamaju 01 Jonggol, Kabupaten Bogor. Pengambilan sampel total digunakan, dan data dikumpulkan menggunakan kuesioner yang tervalidasi dan reliabel (Cronbach's α = 0,82). Statistik deskriptif dan uji korelasi peringkat Spearman digunakan untuk menguji hubungan antara pengetahuan dan kesiapan, dengan tingkat kepercayaan 95%. Usia rata-rata peserta adalah 11,2 ± 0,7 tahun. Sebagian besar responden menunjukkan pengetahuan kesehatan reproduksi yang tinggi (59,7%), sedangkan 92% dikategorikan sebagai tidak siap menghadapi menarche. Uji korelasi Spearman mengungkapkan tidak ada hubungan signifikan antara pengetahuan dan kesiapan (r_s = 0,011, p = 0,924). Meskipun pengetahuan siswa tentang kesehatan reproduksi umumnya tinggi, kesiapan emosional dan praktis mereka untuk menarche tetap rendah. Temuan ini menunjukkan bahwa peningkatan pengetahuan saja tidak cukup untuk memastikan kesiapan. Program pendidikan kesehatan reproduksi berbasis sekolah yang komprehensif yang mengintegrasikan aspek kognitif, afektif, dan psikomotor—bersama dengan keterlibatan orang tua—sangat direkomendasikan.

Kata kunci: menarche, pendidikan kesehatan reproduksi, kesiapan emosional, kebersihan menstruasi, remaja putri

ABSTRACT

Menarche marks an essential stage in female reproductive maturity. However, many young girls lack adequate knowledge and emotional preparedness, which may lead to anxiety, confusion, and negative attitudes toward menstruation. This study aimed to analyze the relationship between reproductive health knowledge and menarche preparedness among elementary school girls in Bogor Regency, Indonesia. A cross-sectional study was conducted among 72 fifth- and sixth-grade students at SDN Sukamaju 01 Jonggol, Bogor Regency. Total sampling was employed, and data were collected using a validated and reliable questionnaire (Cronbach's α = 0.82). Descriptive statistics and Spearman's rank correlation test were used to examine the association between knowledge and readiness, with a 95% confidence level. The mean age of participants was 11.2 ± 0.7 years. Most respondents demonstrated high reproductive health knowledge (59.7%), while 92% were categorized as unprepared for menarche. The Spearman correlation test revealed no significant association between knowledge and preparedness (r_s = 0.011, p = 0.924). Although students' knowledge of reproductive health was generally high, emotional and practical readiness for menarche remained low. These findings indicate that increasing knowledge alone is insufficient to ensure preparedness. Comprehensive, school-based reproductive health education programs that integrate cognitive, affective, and psychomotor aspects—along with parental involvement—are strongly recommended

Keywords: menarche, reproductive health education, emotional readiness, menstrual hygiene, adolescent girls

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INTRODUCTION

State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

Menarche, defined as the first menstrual bleeding, represents a critical biological milestone in a girl's transition from childhood to adolescence and signifies reproductive maturity (WHO, 2023). Globally, the average age of menarche ranges between 10 and 15 years, with recent studies indicating a trend toward earlier onset, sometimes occurring as young as nine years (Zhang et al., 2023; Ali et al., 2024). This shift is influenced by several factors, including improved nutrition, changes in body mass index, and environmental exposures (UNICEF, 2023).

Despite being a normal physiological event, menarche often becomes a source of anxiety and fear for many young girls, especially when they lack sufficient understanding or emotional preparation (Rahmawati et al., 2022). Cultural taboos and limited parental communication about menstruation exacerbate misconceptions, embarrassment, and poor menstrual hygiene practices (UNFPA, 2022). These challenges highlight the importance of early reproductive health education as a means of promoting both cognitive understanding and emotional readiness for menarche (Putri & Lestari, 2021).

In Indonesia, the *Basic Health Research Survey* (*Riskesdas*, 2020) reported the national average age of menarche at 12.4 years, with West Java showing a higher proportion of girls experiencing menarche before age 12. However, the implementation of reproductive health education in elementary schools remains inconsistent, with most programs emphasizing factual knowledge rather than emotional or practical preparation (Ministry of Health of Indonesia, 2022). As a result, many students experience psychological distress, shame, or confusion during their first menstruation despite having adequate knowledge (Sari, 2019).

Previous studies have produced mixed results regarding the association between reproductive health knowledge and readiness for menarche. For example, Nurmawati (2019) found a positive relationship, indicating that knowledge can enhance preparedness, while Fazira et al. (2022) reported no significant correlation. These inconsistencies suggest that menarche preparedness is influenced not only by cognitive knowledge but also by affective and social factors such as parental support, cultural openness, and peer communication.

According to Bloom's revised taxonomy, effective learning encompasses cognitive, affective, and psychomotor domains, which collectively determine behavioral readiness (Anderson & Krathwohl, 2001). In the context of menarche, this framework underscores the need for integrated educational interventions that not only inform but also build emotional resilience and practical self-management skills (Zhang et al., 2023).

Therefore, this study aims to analyze the relationship between reproductive health knowledge and menarche preparedness among elementary school girls in Bogor Regency, Indonesia. The findings are

expected to contribute evidence for developing comprehensive, school-based reproductive health education programs that address cognitive, affective, and psychomotor aspects of preparedness.

METHOD

Study Design and Setting

This study employed a quantitative research design using a descriptive observational and cross-sectional approach. The study was conducted in June 2025 at *SDN Sukamaju 01*, located in Jonggol District, Bogor Regency, West Java Province, Indonesia. The setting was selected because it represents a typical public elementary school in a semi-urban area where reproductive health education is delivered as part of the health curriculum.

Population and Sampling

The study population consisted of 81 female students from grades IV to VI. A total sampling technique was applied to ensure comprehensive data collection from all eligible participants. The inclusion criteria were: (1) female students in grades IV–VI, (2) able to read and comprehend the questionnaire independently, and (3) willing to participate with parental consent. Exclusion criteria included students who were absent during data collection or who declined to participate. After applying these criteria, 72 students were included in the final analysis.

Research Instrument

Data were collected using a structured questionnaire developed based on Notoatmodjo's (2018) framework of health behavior and adapted for the adolescent context. The questionnaire comprised two main sections:

1. Part I: Reproductive health knowledge (15 items) covering definitions, the menstrual cycle, hygiene management, and premenstrual symptoms.
2. Part II: Menarche preparedness (10 items) assessing emotional readiness, practical self-care, and confidence in managing menstruation.

Each item was measured using a 4-point Likert scale (1 = strongly disagree, 4 = strongly agree). The instrument was pretested among 20 students from a neighboring school to evaluate clarity and comprehension. Construct validity was confirmed using Pearson's correlation ($r > 0.361$), and reliability was tested using Cronbach's alpha ($\alpha = 0.82$), indicating good internal consistency (Gliem & Gliem, 2003).

Data Collection Procedure

Data collection was conducted in collaboration with school authorities and homeroom teachers. Researchers distributed self-administered questionnaires during classroom sessions under supervision to ensure confidentiality and standardization. Before the survey, participants received verbal explanations

regarding the study objectives and the voluntary nature of participation. Completed questionnaires were collected immediately after completion to minimize peer influence or data contamination.

Data Analysis

Data were coded and analyzed using IBM SPSS Statistics version 26.0. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize respondent characteristics, knowledge levels, and menarche preparedness. The Spearman's rank correlation test was performed to determine the relationship between reproductive health knowledge and menarche readiness. Statistical significance was set at $p < 0.05$, and results were interpreted using a 95% confidence interval (CI).

RESULT AND DISCUSSION

A total of 72 respondents participated in this study, representing 88.9% of the total population of 81 female students in grades IV–VI. The mean age of participants was 11.2 ± 0.7 years, with most respondents aged 11 (45.8%) and enrolled in grade VI (38.8%). Approximately 50% of the students had already experienced menarche before the age of 12, reflecting the national trend of earlier onset. Most respondents (69.5%) reported knowing about menstruation prior to their first experience, and the school was identified as the main source of information (91.6%). However, 70.8% admitted feeling embarrassed to discuss menstruation with their parents, particularly with their fathers (Table 1).

Table. 1 Participant Characteristic (n=72)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	10	20	27.8
	11	33	45.8
	12	15	20.8
	13	4	5.6
Grade	IV	22	30.6
	V	22	30.6
	VI	28	38.8
Menarche experience (<12 years)	Yes	36	50.0
	No	36	50.0
Knew about menstruation beforehand	Yes	50	69.5
	No	22	30.5
Main source of information	School	66	91.6
	Peers	6	8.4
Embarrassed to discuss with parents	Yes	51	70.8
	No	21	29.2

As presented in Table 2, most respondents demonstrated a high level of reproductive health knowledge (59.7%), followed by moderate (33.3%) and low knowledge levels (6.9%).

These findings suggest that menstrual health education programs at the school level have been relatively effective in conveying factual knowledge. However, differences in comprehension levels imply variability in students' ability to internalize and apply the information in daily life.

Table 2. Distribution of Reproductive Health Knowledge Levels

Knowledge Level	**Frequency (n)**	**Percentage (%)**
High	43	59.7
Moderate	24	33.3
Low	5	6.9
Total	**72**	**100**

As shown in Table 3, only 6 respondents (8%) were categorized as *ready* to face menarche, whereas the vast majority (66 respondents or 92%) were *not ready*. This imbalance highlights that despite adequate cognitive knowledge, most students lacked emotional and practical preparedness for menarche. Qualitative responses obtained during observation also indicated feelings of anxiety, fear of pain, and embarrassment in managing menstrual hygiene, particularly at school.

Table 3. Distribution of Menarche Preparedness

Readiness Category	**Frequency (n)**	**Percentage (%)**
Ready	6	8.0
Not Ready	66	92.0
Total	72	100

Table 4 presents the cross-tabulation between reproductive health knowledge levels and menarche readiness. The Spearman's rank correlation test yielded an $r_s = 0.011$ and $p = 0.924$, indicating no statistically significant relationship between knowledge and preparedness ($p > 0.05$).

Table 4. Relationship Between Reproductive Health Knowledge and Menarche Readiness

Knowledge Level	**Ready (n, %)**	**Not Ready (n, %)**	**Total (n, %)**
High	1 (6%)	16 (94%)	17 (100%)
Moderate	5 (10%)	48 (90%)	53 (100%)
Low	0 (0%)	2 (100%)	2 (100%)
Total	6	66	72

The absence of a significant relationship between knowledge and readiness suggests that cognitive understanding alone is insufficient to ensure psychological and behavioral preparedness for menarche. This is consistent with Bloom's revised taxonomy, which posits that learning outcomes encompass three interrelated domains — cognitive, affective, and psychomotor (Anderson & Krathwohl, 2001). Although students may cognitively understand the biological aspects of menstruation, they may still lack emotional acceptance or practical coping mechanisms.

Similarly, Fazira et al. (2022) found no correlation between menstrual knowledge and readiness among adolescents, arguing that cultural taboos and communication barriers within families hinder the translation of knowledge into behavior. In contrast, Nurmawati (2019) and Putri & Lestari (2021) reported a significant relationship between knowledge and preparedness, indicating that differences in social context, educational methods, and family engagement may explain these inconsistencies.

The current results align with Zhang et al. (2023), who highlighted that participatory reproductive health education — integrating emotional, social, and practical components — was more effective than lecture-based instruction in preparing girls for menarche. Hence, this study reinforces the argument that knowledge dissemination must be complemented by affective learning approaches, such as role-playing, peer discussions, and counseling, to build emotional resilience and self-efficacy.

The finding that 70.8% of respondents were embarrassed to discuss menstruation with parents underscores the persistence of sociocultural taboos surrounding reproductive topics. Similar observations have been made in other Asian contexts, where menstruation remains a sensitive or "private" issue, often associated with shame and secrecy (UNICEF, 2023; Ali et al., 2024). This communication gap deprives children of accurate information and emotional reassurance, leaving them to rely on peers or social media — sources that may perpetuate myths or misinformation (Rahmawati et al., 2022).

In Indonesia, family-centered education is crucial because parental support has been identified as a strong predictor of menstrual preparedness (Utami & Handayani, 2021). When mothers openly share their experiences, girls are more likely to perceive menstruation as a natural and manageable process. Therefore, strengthening intergenerational dialogue should be prioritized in reproductive health education programs.

The results emphasize the need to transform reproductive health education in elementary schools from a fact-based to a holistic, skill-oriented model. Incorporating affective and psychomotor components — such as empathy building, hygiene demonstrations, and coping exercises — could improve preparedness outcomes.

Interactive and experiential learning, as evidenced by Ali et al. (2024) and Zhang et al. (2023), fosters not only comprehension but also confidence and positive attitudes toward menstruation.

Moreover, cross-sectoral collaboration between schools, parents, and health professionals can create a comprehensive learning ecosystem that integrates medical accuracy, emotional support, and gender-sensitive pedagogy. This approach aligns with the World Health Organization's (2023) global framework on adolescent menstrual health, which advocates for multi-dimensional educational interventions combining biological, psychological, and social perspectives.

CONCLUSION

This study concluded that although most elementary school girls in Bogor Regency demonstrated a high level of reproductive health knowledge, the majority were still not emotionally or practically prepared to face menarche. The absence of a significant correlation between knowledge and readiness ($r_s = 0.011$; $p = 0.924$) indicates that cognitive understanding alone is insufficient to foster true preparedness.

These findings emphasize the importance of comprehensive reproductive health education that integrates cognitive, affective, and psychomotor learning components. Effective menarche preparedness requires not only factual understanding but also emotional resilience, self-efficacy, and parental communication. Therefore, schools, families, and healthcare providers should collaborate to develop participatory, culturally sensitive, and holistic educational programs that empower girls to experience menarche as a natural and positive transition in their reproductive life.

ACKNOWLEDGMENTS

We would like to express our deepest gratitude to our advisor who has guided us throughout the research process and to the respondents who have made significant contributions to the success of this study. Your support, guidance, and participation have been invaluable, and we greatly appreciate your effort and dedication.

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