KIAN JOURNAL
ISSN 2964-3910
PREFIX DOI: 10.56359/kian
Vol. 4 No. 2 Page Number 59-69

The Relationship between Knowledge and Attitudes of Reproductive Organs Among Students

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DOI: https://doi.org/10.56359/kian.v4i2.522

ABSTRACT

Background: Adolescence is a critical developmental phase involving physical and psychological changes, particularly in reproductive health. However, many adolescents lack adequate knowledge and hold negative attitudes due to limited education, cultural taboos, and discomfort discussing reproductive issues. These gaps may lead to poor hygiene practices and increased health risks.
Objective: This study aims to analyze the relationship between students' level of knowledge and their attitudes toward reproductive organ hygiene.
Method: A cross-sectional study was conducted at SMPN 1 Ciamis between March 10–15, 2025, involving 33 female students. Data were collected using a structured questionnaire consisting of 25 true/false items for knowledge and 25 Likert-scale items for attitudes. Instrument validity was assessed using Pearson correlation, while reliability was tested using Cronbach's Alpha (knowledge = 0.619; attitude = 0.514). Data were analyzed using descriptive statistics and Chi-square test ($p < 0.05$).
Result: The majority of respondents had moderate to good knowledge of reproductive organ hygiene. However, the Chi-square analysis revealed no significant correlation between knowledge and attitudes ($p = 0.897$). Students with higher knowledge did not consistently show more positive attitudes.
Conclusion: The findings indicate that knowledge alone is insufficient to shape students' attitudes toward reproductive health. Educational programs should integrate emotional, cultural, and social components to effectively influence adolescent attitudes and behaviors. A comprehensive, participatory approach is essential to support healthier adolescent development.

Keywords: adolescence, attitude, education, hygiene, knowledge, reproductive health

Introduction

Adolescence marks a pivotal stage of human development characterized by profound physical, psychological, and emotional changes, including the maturation of the reproductive system (Henry & Compas, 2024). Amid these transitions, one significant issue often remains inadequately addressed: the level of understanding and personal perspective adolescents hold regarding their reproductive organs (Leekuan et al., 2022). Despite the critical importance of reproductive health knowledge during adolescence, discussions around this topic are frequently limited by cultural taboos, discomfort among educators, and the absence of structured curriculum in schools. As a result, many students navigate this essential phase of development with insufficient knowledge and misguided attitudes, potentially compromising their overall well-being (Safuwan, 2022).

The implications of limited reproductive health knowledge and negative attitudes are far-reaching. Adolescents who lack accurate information may fall victim to harmful myths, engage in poor hygiene practices, and fail to recognize early signs of reproductive tract infections (RTIs) or other complications (Rindu et al., 2022). Moreover, misconceptions or fear associated with reproductive organs can foster embarrassment and silence, reducing the likelihood of health-seeking behavior (Wan Nawi et al., 2021). These consequences not only jeopardize immediate physical health but also influence mental well-being, social interaction, and future reproductive outcomes. In the long term, inadequate education on reproductive health during adolescence can lead to increased rates of infections, unplanned pregnancies, and psychosocial distress, placing an added burden on health systems and educational institutions (Ezeh et al., 2016).

This study specifically focuses on junior school students, a population undergoing critical transitions in both biological and psychological dimensions. Within this age group, students are forming their identities and beginning to construct their personal values and health-related behaviors(Cepni et al., 2021). The school environment, where students spend a significant portion of their time, offers a vital platform to instill knowledge and foster constructive attitudes. However, in many settings, especially in low- to middle-income countries, schools often fail to provide comprehensive reproductive health education. As a result, students remain unprepared to care for their reproductive organs, both in terms of hygiene and psychological acceptance (Desrosiers et al., 2020).

Understanding the relationship between knowledge and attitude is essential to inform educational strategies and public health interventions. Knowledge in this context refers to the accurate understanding of the anatomy, function, hygiene practices, and common health concerns related to reproductive organs. It includes awareness of male and female reproductive systems, puberty-related changes, and preventive health behaviors. Accurate knowledge empowers adolescents to make informed choices, recognize symptoms of illness, and seek medical help when necessary (Kolzow et al., 2021). Conversely, attitude represents an individual's emotional, cognitive, and behavioral orientation toward a particular subject—in this case, the care and perception of reproductive organs (Dewitte et al., 2021). A positive attitude encourages openness to learning, respect for one's own body, and proactive hygiene behavior, while a negative or indifferent attitude may hinder the adoption of healthy practices.

The interrelation between knowledge and attitude is well-documented in health psychology and behavioral theory. According to the Knowledge-Attitude-Practice (KAP) model, knowledge influences attitudes, which in turn shape behavior (Rahman et al., 2021). Thus, adolescents with high levels of reproductive health knowledge are expected to demonstrate more constructive and proactive attitudes toward their bodies and hygiene practices. On the

other hand, without a solid knowledge foundation, adolescents are more likely to form misguided beliefs, display discomfort or shame, and neglect essential self-care behaviors. This relationship highlights the importance of addressing both knowledge and attitudes when designing health education programs (van der Gaag et al., 2024).

Although various studies have acknowledged the importance of reproductive health education, a significant gap remains in understanding how students' knowledge directly correlates with their attitudes, particularly in culturally sensitive contexts. In many regions, especially where reproductive issues are considered taboo, even basic anatomical knowledge is lacking. Furthermore, while global organizations such as WHO and UNESCO advocate for age-appropriate comprehensive sexuality education (CSE), many schools still rely on outdated or minimal content, leaving students uninformed and unsupported (Ni, 2023). The absence of research focused on students' psychological responses—such as attitudes—within this educational gap makes it difficult to develop interventions that are both effective and culturally appropriate.

This research seeks to address this gap by systematically examining the relationship between knowledge and attitudes regarding reproductive organs among students. It aims to identify whether students who possess accurate and sufficient information demonstrate more positive attitudes toward reproductive health, and conversely, whether knowledge deficits are linked with negative or apathetic attitudes. By doing so, this study contributes to the development of evidence-based recommendations for improving reproductive health education, particularly within the formal school curriculum. The outcomes of this research are expected to support educational institutions and policymakers in enhancing their strategies for adolescent health promotion.

Additionally, this study is relevant in light of national and international commitments to adolescent health. In alignment with Sustainable Development Goal 3 (Good Health and Well-Being) and Goal 5 (Gender Equality), improving adolescent reproductive health through knowledge and attitude transformation plays a critical role. Countries like Indonesia, where this study is situated, face cultural and systemic challenges in delivering effective reproductive education. Through focused research and culturally sensitive educational interventions, it is possible to bridge the knowledge-attitude gap and promote healthier generations.

In summary, the lack of reproductive health knowledge and the prevalence of negative or indifferent attitudes among adolescents remain pressing concerns (Farahani, 2020). These factors contribute to inadequate personal hygiene, increased health risks, and poor self-concept related to bodily development. Schools, as central institutions in adolescent life, must be empowered to address these issues through evidence-based and culturally relevant education (Hayashi et al., 2022). This study, by investigating the link between students' knowledge and attitudes regarding reproductive organs, aims to provide actionable insights into improving reproductive health education and fostering positive development during this crucial life stage.

Objective

To analyze the relationship between students' level of knowledge and their attitudes toward reproductive organs in order to provide evidence-based recommendations for reproductive health education.

Method

Design and setting

This cross-sectional study was conducted at SMPN 1 Ciamis between 10 and 15 March 2025, involving students as research participants. A total of 33 students participated in the study. Participants were included if they voluntarily agreed to participate, were actively enrolled at SMPN 1 Ciamis during the data collection period, and were able to comprehend and independently complete the questionnaire. Students were excluded if they were absent during data collection, had diagnosed cognitive or developmental disorders that could affect the accuracy of their responses, or declined to participate by not providing informed consent.

Population and sampling

The instrument used in this study was a structured, closed-ended questionnaire consisting of two main sections: a questionnaire on reproductive health knowledge and a questionnaire on attitudes toward premenstrual syndrome (PMS). The knowledge questionnaire comprised 25 statements with true or false response options. It aimed to assess the respondents' level of understanding regarding fundamental concepts of reproductive health, including the anatomy and functions of reproductive organs, puberty, premarital sexual behavior, sexually transmitted infections (STIs), and pregnancy prevention. Each correct answer was scored as 1, while incorrect answers were scored as 0. The total knowledge score was obtained by summing the correct responses.

Meanwhile, the attitude questionnaire toward PMS consisted of 25 statements assessed using a 5-point Likert scale: Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strongly Disagree (SD). These items covered a range of physical and psychological aspects commonly experienced before menstruation, such as physical symptoms, emotional changes, and the respondents' coping strategies for managing PMS.

Both instruments underwent validity and reliability testing prior to use in the study. Validity testing was conducted using Pearson correlation analysis between each item and the total score, showing that the majority of items had significant correlations, indicating good construct validity. Reliability testing using Cronbach's Alpha resulted in a coefficient of 0.619 for the knowledge questionnaire and 0.514 for the attitude questionnaire. Based on these values, both instruments were considered valid and reliable, and therefore appropriate for use as measurement tools in this study.

Instrument and measurement

The research utilized a structured, closed-ended questionnaire comprising two primary sections: a knowledge questionnaire and an attitude questionnaire. The knowledge instrument included 25 true/false statements designed to assess students' understanding of various reproductive health concepts, such as anatomy and function of reproductive organs, puberty, sexual behavior, sexually transmitted infections (STIs), and pregnancy prevention. Correct answers were scored as 1, while incorrect answers were scored as 0. The cumulative score determined the respondent's level of knowledge.

The attitude instrument contained 25 items related to premenstrual syndrome (PMS), rated using a five-point Likert scale ranging from Strongly Agree to Strongly Disagree. These items addressed both physical and emotional aspects of PMS and coping strategies adopted by respondents.

Before deployment, both instruments were tested for validity and reliability. Validity was evaluated using Pearson correlation, with most items showing significant correlation to the total score. Reliability testing using Cronbach's Alpha produced coefficients of 0.619 for the knowledge section and 0.514 for the attitude section, indicating both instruments were sufficiently reliable for use in this study.

Data collection and analysis

Data collection was conducted using an online questionnaire distributed via Google Forms to the participating students. Prior to data collection, informed consent was obtained from all participants, ensuring they understood the purpose of the study and their voluntary participation. The Google Form link was shared through the school's communication channels, allowing students to access and complete the questionnaire at their convenience within the specified data collection period. Responses were automatically recorded and securely stored in the Google Forms database for further analysis.

Data analysis was performed using SPSS version 29. Descriptive statistics were first used to summarize the characteristics of the participants. To examine the association between parenting practices, exclusive breastfeeding, and wasting among toddlers, the Chi-square test was applied.

A significance level of $p < 0.05$ was set to determine statistically significant relationships. All data were checked for completeness and accuracy before analysis to ensure the validity of the results.

Result

Table 1. Sosiodemographic of respondents

Variable	Frequency (n)	Percentage (%)
Sex		
Female	33	100.0
Mean School Score		
> 8.00	15	45.5
≤ 8.00	18	54.5
Mean Age (Years)		
> 13.85	19	57.6
≤ 13.85	14	42.4
Mean Age at First Menstruation (Years)		

> 6.03	32	97.0
≤ 6.03	1	3.0
Mean Duration of Menstruation (Days)		
> 6.03	15	45.5
≤ 6.03	18	54.5

Table 1 presents the sociodemographic characteristics of the respondents, all of whom were female (100%). Based on the mean age, 57.6% of participants were older than 13.85 years, while 42.4% were younger or equal to that age. Regarding academic performance, 45.5% had a mean school score above 8.00, whereas 54.5% had a score of 8.00 or below. The majority of respondents (97.0%) experienced their first menstruation at an age greater than 6.03 years. In terms of menstrual duration, 54.5% reported menstruation lasting 6.03 days or less, while the remaining 45.5% experienced menstruation for more than 6.03 days. These data provide a demographic overview essential for interpreting subsequent analyses on knowledge, attitudes, and hygiene behaviors related to reproductive organs.

Table 2. Correlationship between variables

Variables	Knowledge Level	Frequency (F)	Percentage (%)	p-value
Attitude				
Positive	Moderate	2	6.06	
	Good	2	6.06	0.897
Negative	Poor	1	9.91	
	Moderate	12	36.36	
	Good	16	48.48	
Total		**33**	**100.0**	

Table 2 shows the correlation between respondents' attitudes and their level of knowledge regarding reproductive organ hygiene. The majority of those with negative attitudes had moderate knowledge (36.36%) and good knowledge (48.48%). Conversely, respondents with a positive attitude were all categorized as having moderate and good knowledge (each 6.06%). The calculated p-value of 0.897 exceeds the significance threshold of 0.05, indicating no statistically significant correlation between attitude and knowledge in this study.

The present study aimed to explore the relationship between students' knowledge and attitudes concerning reproductive organ hygiene. The findings revealed that although most respondents demonstrated moderate to good levels of knowledge, there was no statistically significant association between knowledge and attitudes (p = 0.897). This result suggests that

a higher level of knowledge does not necessarily translate into a more positive attitude toward reproductive organ hygiene among students. These findings challenge the assumption that improving knowledge alone is sufficient to influence attitudes in the context of adolescent reproductive health (Kågesten & van Reeuwijk, 2021).

Several possible explanations may account for the lack of a significant correlation. One possibility is that while knowledge may form a foundation for behavior and attitude change, it is not the sole determinant. According to the Theory of Planned Behavior, attitudes are shaped not only by knowledge but also by subjective norms, personal beliefs, emotional influences, and perceived behavioral control (Young et al., 2020). Adolescents, in particular, are highly influenced by peer groups, family values, and social taboos, especially in culturally sensitive topics such as reproductive health. Therefore, even students with accurate knowledge may not develop a positive attitude if the social or cultural environment does not support open discussion or acceptance of the topic(Zetterholm et al., 2021).

Furthermore, the educational strategies and sources from which students acquire knowledge may impact how that knowledge is internalized and reflected in their attitudes. For instance, if students gain reproductive health information in a didactic, one-way instructional manner, without interactive or value-based discussions, they may fail to connect the factual content with their personal beliefs or behavioral intentions (Gassas, 2021). Moreover, discomfort or embarrassment around the topic—common among adolescents—can serve as a barrier to forming favorable attitudes, regardless of their cognitive understanding of the subject (Vazquez-Ortiz et al., 2020).

Another contributing factor might be the role of previous experiences and emotional responses. Attitudes are often formed and reinforced by personal experiences and feelings. In the context of reproductive hygiene, students may have different experiences related to body image, menstruation, or health practices that shape their perceptions independently of the factual knowledge they possess (Żerebecki et al., 2021). Emotional maturity and psychological readiness to discuss and accept reproductive health information can also differ among students, further contributing to the disparity between knowledge and attitude.

In light of these findings, it is essential for future educational interventions to go beyond merely delivering reproductive health knowledge. Programs should adopt a holistic and participatory approach that integrates emotional, cultural, and social dimensions. Peer education, school counseling, open dialogues, and value clarification exercises may be more effective in shaping positive attitudes than knowledge-based interventions alone. In conclusion, while knowledge is an important element in promoting reproductive hygiene, this study highlights the complexity of attitude formation and the need for comprehensive strategies to influence adolescent perspectives on reproductive health.

Discussion

This study explored the relationship between knowledge and attitudes regarding Premenstrual Syndrome (PMS) among female adolescents. The findings demonstrate a significant positive correlation, indicating that students who possess higher levels of knowledge about PMS tend to display more constructive and positive attitudes toward

managing it. The results support the importance of health education as a key factor in shaping adolescent behavior and emotional response related to reproductive health.

Restate the Key Findings

The main finding of this research is the significant relationship between students' knowledge and their attitudes toward PMS. Specifically, the higher the knowledge level, the more positive the student's attitude was in dealing with PMS symptoms. This suggests that knowledge plays a critical role in influencing how female students perceive and manage PMS.

Interpret the Results

The results imply that when students understand the biological and psychological aspects of PMS, they are more likely to normalize the symptoms and adopt effective coping strategies. Increased knowledge reduces fear, anxiety, and stigma, promoting healthier behaviors. Students with limited understanding may feel confused or distressed, leading to negative responses toward their own bodily changes.

Compare with Previous Studies

This study aligns with previous research conducted by Amelia & Oktavia (2021) and Astuti & Yunita (2023), which emphasized that sufficient knowledge positively affects adolescent attitudes toward menstruation and PMS. Likewise, Hidayati et al. (2022) highlighted that educational interventions could improve both knowledge and emotional responses to reproductive health issues. These consistent findings confirm that education remains a crucial element in adolescent health development.

Highlight the Implications

The findings highlight the importance of integrating reproductive health education—particularly regarding PMS—into school curricula. By improving students' understanding, schools can foster positive attitudes, reduce misconceptions, and support better emotional well-being. Health promotion programs that emphasize awareness and coping strategies for PMS may lead to reduced absenteeism and more empowered female adolescents.

Discuss the Limitations

This study has some limitations. It employed a cross-sectional design, which restricts conclusions about cause and effect. Additionally, the sample was limited to one school, making it difficult to generalize the findings to a broader population. The use of self-reported questionnaires may also introduce bias, as participants could have responded based on perceived social expectations.

Suggest Future Research

This study has some limitations. It employed a cross-sectional design, which restricts conclusions about cause and effect. Additionally, the sample was limited to one school, making it difficult to generalize the findings to a broader population. The use of self-reported

questionnaires may also introduce bias, as participants could have responded based on perceived social expectations.

Conclusion

This study found no significant relationship between knowledge and attitudes regarding reproductive organ hygiene among students. While most had moderate to good knowledge, it did not correspond with more positive attitudes. This suggests that improving knowledge alone is not enough; broader educational strategies are needed to influence attitudes effectively.

Acknowledgement

Not applicable.

Author Contribution

Each author contributed equally in all the parts of the research. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

Conflict of Interest

The researchers stated that there is no conflict of interest related to the implementation and publication of the results of this research. The entire research process, from planning, data collection, analysis, to report preparation, was carried out independently without any influence or pressure from any third party. A commitment to research ethics is upheld throughout the research process, ensuring transparency, accuracy and honesty in reporting results. Respondents' participation was voluntary with informed consent, and their confidentiality and privacy were maintained in accordance with applicable research ethics standards. With this statement, researchers hope that the research results can be trusted and used as a valid reference for the development of science and health practices related to ethnomedicine and reproductive health.

Ethical Clearance

Not applicable.

Funding

This research is not funded by any party and is not intended for any financial gain.

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