

Reproductive Health Literacy Among Female Adolescents in Banda Aceh: A Descriptive Study

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ARTICLE INFO	ABSTRACT
<p>Manuscript Received: 08 Dec, 2024 Revised: 27 Jun, 2025 Accepted: 13 Jul, 2025 Date of Publication: 11 Sept, 2025 Volume: 8 Issue: 9 DOI: 10.56338/mppki.v8i9.6575</p>	<p>Introduction: Reproductive Health Literacy (RHL) plays a vital role in addressing the reproductive health challenges faced by adolescents. In Indonesia, cultural norms and beliefs heavily influence how reproductive health information is disseminated, often creating barriers to accurate and comprehensive reproductive health education for teenagers. Despite its importance, research on RHL remains limited, particularly among female adolescents. This study aims to fill that gap by providing valuable insights into the RHL of female adolescents in Banda Aceh, a region where traditional values frequently restrict access to reliable reproductive health information.</p> <p>Method: This study employed a descriptive cross-sectional design involving 694 female adolescents from four randomly selected schools in Banda Aceh. Participants were recruited through convenience sampling based on their willingness to participate. Data were collected using a self-administered questionnaire and analyzed using univariate analysis.</p> <p>Result: The study found that 85% of respondents had adequate reproductive health literacy (RHL), with 69.7% at a sufficient level and 15.3% at an excellent level. A closer examination of the four key dimensions of RHL showed that most participants demonstrated adequate ability to find, understand, appraise, and apply reproductive health information. However, notable challenges were observed in the appraising and applying dimensions, with 22.7% of respondents struggling to appraise and 36.3% experiencing difficulty in applying reproductive health information effectively. Furthermore, adolescents from families with monthly incomes above the regional minimum wage were more likely to attain higher levels of RHL.</p> <p>Conclusion: Although the majority of adolescents demonstrated sufficient levels of reproductive health literacy (RHL), a significant proportion still faced challenges, particularly in understanding and applying reproductive health information. These findings underscore the need for targeted health promotion strategies that go beyond knowledge delivery. To address these issues, it is recommended that the Banda Aceh Health Office and the Office of Education and Culture develop culturally sensitive educational programs aimed at strengthening adolescents' critical thinking and decision-making skills related to reproductive health. Such initiatives should be tailored to the local context and designed to empower adolescents to effectively evaluate and apply health information in their daily lives.</p>

KEYWORDS

Female Students;
School;
Reproductive Health;
Teenagers

Publisher: Fakultas Kesehatan Masyarakat Universitas Muhammadiyah Palu

INTRODUCTION

Reproductive health literacy (RHL) is the ability of individuals to access, understand, evaluate, and use health information in making decisions related to reproductive health(1). RHL includes understanding topics such as knowledge related to reproductive organs and their functions, contraception, pregnancy, prevention of sexually transmitted diseases, reproductive care, and medical procedures related to reproductive health (2). Individuals with good RHL are able to make informed decisions about their reproductive health (3).

The current condition of adolescent reproductive health is concerning, with a relatively high proportion of adolescents engaging in risky sexual behavior, such as risky dating behavior and early sexual initiation, which can lead to the occurrence of sexually transmitted infections, unintended pregnancies, unsafe abortions, and compromised overall reproductive health of adolescents (4,5). Globally, the prevalence of adolescents engaging in risky sexual behavior is relatively high, with 6.9% of adolescents aged 12-15 years having engaged in sexual activity, and 52% of them having multiple sexual partners (6). This behavior contributes to other reproductive issues, including a high number of sexually transmitted infection cases among female adolescents (26%) compared to males (13%) (7); and unintended pregnancies, with an estimated 21 million pregnancies happening among adolescents aged 15-19 years, and approximately half of them ending in unsafe abortions (8).

In Indonesia, between 2015 and 2019, similar problems were observed, with around 2.8 million unintended pregnancies and more than half of them ending in unsafe abortions (9). By enhancing RHL, individuals are expected to make well-informed decisions about their reproductive health. However, previous research indicates that the level of RHL among adolescents, especially girls, remains low in various regions, including Indonesia (10,11). Furthermore, much of the existing research lacks the use of structured frameworks to assess RHL comprehensively, limiting the depth of understanding.

Banda Aceh, the capital of Aceh Province, represents a unique and underexamined context in RHL research. As a major urban center, Banda Aceh is increasingly influenced by digital media and modern youth lifestyles, which shape how adolescents engage with reproductive health information (12). However, the city is also deeply rooted in Islamic traditions, with religious and cultural values playing a central role in shaping attitudes and behaviors related to reproductive health (13,14). This duality, urban exposure alongside conservative norms, creates a complex environment where reproductive health information may be selectively communicated or restricted, particularly for female adolescents navigating strict gender expectations (15). Topics related to sexuality and reproductive health are often considered taboo, leading to discomfort, stigma, or misinformation, which may undermine adolescents' ability to access, appraise, and apply health information effectively.

Despite the significance of these contextual factors, limited research has explored the RHL of adolescents in Banda Aceh. To address this gap, this study adopts Sørensen's (2012) integrated model of health literacy, which frames health literacy as a multidimensional construct comprising the ability to access, understand, appraise, and apply health information (16). This approach allows for a deeper examination of adolescent reproductive health literacy, not only assessing their knowledge and attitude related to reproductive health matters. Therefore, this study aims to assess the level of RHL among female adolescents in Banda Aceh and explore how demographic factors—particularly age and family income—affect their health literacy. The research addresses the following questions: (1) What is the overall level of RHL among female adolescents in Banda Aceh? and (2) How do age and family income influence RHL levels in this population?

The findings of this study hold significance for policymakers, healthcare professionals, educators, and other stakeholders engaged in adolescent reproductive health promotion. Insights from this research can inform the design of targeted interventions, culturally appropriate educational strategies, and policies that meet the specific needs of adolescents in conservative contexts. Ultimately, enhancing reproductive health literacy can empower female adolescents to make informed decisions that protect their reproductive rights, health, and overall well-being.

METHOD

This was a descriptive study to assess the level of reproductive health literacy among female adolescents. The population was female students in public senior high school and Islamic Public High School in Banda Aceh. The sample was 694 female students from two Public Islamic Senior High Schools (MAN 1 and MAN 2) and two Public Senior High Schools (SMA 9 and SMA 10) in Banda Aceh. The schools were selected randomly. Meanwhile, this

study used a convenience sampling method to select the sample. While the convenience sampling method ensured participant willingness, it limits generalizability. Future studies should consider random sampling technique for broader applicability (17). Data collection was conducted from July 23 to September 23, 2022.

To measure RHL, the instrument was modified from the Health Literacy Measure for Adolescents (HELMA) developed by Ghanbari, Ramezankhani, Montazeri, & Mehrabi (18). The questionnaire was carefully constructed to gather information on various aspects of RHL, including the ability of respondents to access, comprehend, appraise, and apply information related to reproductive health to make informed decisions related to their reproductive health. Although the HELMA tool is a recognized instrument, this study did not conduct prior validation or reliability testing. Despite the absence of revalidation, the instrument's original psychometric properties and its relevance to the study population justified its use.

The survey was conducted in a classroom setting to ensure a conducive and controlled environment for data collection. The respondents were given sufficient time to complete the questionnaire. The questionnaire consisted of closed-ended response options, allowing for easy quantification and analysis of the data. The data in this study was analyzed descriptively to assess the levels of reproductive health literacy (RHL) among female adolescents. The researchers used frequency distribution tables to report the characteristics of the respondents, such as age, school origin, and family income. They also analyzed the level of RHL in relation to different dimensions, such as the ability to access, understand, appraise, and apply reproductive health information.

Before the data collection process, ethical considerations and informed consent protocols were obtained. Ethical clearance was obtained from the Health Research Ethics Commission, Faculty of Medicine, Universitas Syiah Kuala, and Dr. Zainoel Abidin Hospital number: 183/EA/FK-RSUDZA/2022.

RESULTS

Characteristics of Respondents

The study participants range in age from 11 to 19 years old. These participants come from four schools in Banda Aceh, and their family income are categorised into below and equal to or more than regional payment rate of Aceh Province, Indonesia.

Table 1. Respondents' characteristics

Respondent's Characteristics	Total	
	n (694)	%
Age		
Early adolescence (11-14 years old)	1	0.14
Middle adolescent (15-17 years old)	687	98.99
Late adolescence (18-19 years old)	6	0.86
Schools		
MAN 1 Banda Aceh	370	53.31
MAN 2 Banda Aceh	150	21.61
SMAN 9 Banda Aceh	81	11.67
SMAN 10 Banda Aceh	93	13.40
Family Income		
≥ Regional payment rate	423	60.95
< Regional payment rate	271	39.05

Table 1 provides an overview of the characteristics of the 694 respondents who participated in this study. The majority of respondents were middle adolescent, accounting for 98.99%. The educational background of the respondents varied, with 53.31% being students at MAN 1 Banda Aceh, and 21.61% attending MAN 2 Banda Aceh. The remaining respondents were distributed among students from SMAN 9 (11.67%) and SMAN 10 Banda Aceh

(13.40%). Additionally, the table indicates that three out of five respondents came from families with a monthly income equal to or above the regional payment rate, while the remaining had family incomes less than regional payment rate.

Level of RHL of Adolescents

Table 2. Level of RHL of Adolescents

RHL level	Respondents	
	n (694)	%
Inadequate	6	0.9
Problematic	98	14.1
Sufficient	484	69.7
Excellent	106	15.3
Total	694	100.0

Table 2 presents the overall levels of reproductive health literacy (RHL) among respondents. The findings indicate that a substantial majority of adolescents demonstrated adequate RHL, with 69.7% classified as having a sufficient level and an additional 15.3% exhibiting an excellent level. This suggests that existing reproductive health education programs may be effectively meeting the basic informational needs of most adolescents. However, it is important to note that approximately 15% of respondents had low levels of RHL, with 14.1% at a problematic level and 0.9% at an inadequate level.

Dimension of RHL of Adolescents

Table 3. Dimension RHL of Adolescents

Dimensions of RHL	Level RHL									
	Inadequate		Problematic		Sufficient		Excellent		Total	
	N	%	n	%	n	%	n	%	n	%
Finding reproductive health information	19	2.7	130	18.7	397	57.2	148	21.3	694	100
Understanding reproductive health information	8	1.2	77	11.1	397	57.2	212	30.5	694	100
Appraising reproductive health information	15	2.2	142	20.5	378	54.5	159	22.9	694	100
Applying reproductive health information	57	8.2	195	28.1	357	51.4	85	12.2	694	100

Table 3 presents the distribution of adolescents' reproductive health literacy (RHL) across four key dimensions: finding, understanding, appraising, and applying reproductive health information. The majority of respondents demonstrated sufficient levels of RHL across all dimensions, with the highest proportions found in the domains of finding and understanding reproductive health information (both 57.2%). In these two dimensions, more than one-fifth of participants also reached an excellent level (21.3% and 30.5%, respectively), indicating relatively strong performance in accessing and comprehending reproductive health content.

In contrast, lower percentages of adolescents demonstrated excellence in appraising (22.9%) and applying (12.2%) reproductive health information, suggesting challenges in critically evaluating and utilizing the information

in decision-making. Notably, the dimension of applying reproductive health information had the highest proportion of respondents categorized as problematic (28.1%) and inadequate (8.2%), underscoring this as the most difficult aspect of RHL among participants. These findings highlight a variation in RHL skills, where adolescents are more adept at acquiring and understanding information than at analyzing and applying it.

RHL Level Based on Respondent's Characteristics

Table 4. RHL Level Based on Respondent's Characteristics

Respondent's Characteristics	Level of RHL									
	Inadequate		Problematic		Sufficient		Excellent		Total	
	n	%	n	%	n	%	n	%	n	%
Age										
Early adolescence (11-14 years)	0	0	1	100	0	0	0	0	1	100
Middle adolescent (15-17 years)	6	0.9	95	13.8	480	69.9	106	15.4	687	100
Late adolescence (18-19 years)	0	0	2	33.3	4	66.7	0	0	6	100
Family Income										
≥Regional payment rate	3	0.7	44	10.4	295	69.7	81	19.1	423	100
<Regional payment rate	3	1.1	54	19.9	189	69.7	25	9.2	271	100

Table 4 presents the distribution of reproductive health literacy (RHL) levels based on respondents' age and family income. Among age groups, the majority of middle adolescents (15–17 years) demonstrated a sufficient level of RHL (69.9%), with an additional 15.4% classified as having an excellent level. Similarly, 66.7% of late adolescents (18–19 years) showed sufficient RHL, while 33.3% were categorized as having a problematic level. Notably, the only respondent in the early adolescence group (11–14 years) was categorized as having a problematic level of RHL.

In terms of family income, adolescents from families earning at or above the regional payment rate had a higher proportion of excellent RHL levels (19.1%) compared to those from families earning below the rate (9.2%). However, both groups had an identical proportion of adolescents with sufficient RHL (69.7%), suggesting that while economic status may influence higher-level literacy, the basic level of sufficiency is consistent across income levels. Conversely, a greater proportion of adolescents from lower-income families exhibited problematic (19.9%) and inadequate (1.1%) RHL levels than their higher-income peers.

These findings suggest that age and income level may influence adolescents' ability to engage with and utilize reproductive health information, highlighting the importance of targeted educational interventions for younger and lower-income adolescents.

DISCUSSION

This study aimed to measure the level of RHL of female adolescents and how factors such as age and family income contribute to RHL level. The finding revealed that significant number of adolescents demonstrates adequate RHL level (Table 2). This result does not support previous findings reporting that substantial number of adolescent with inadequate RHL level (1,11). The percentage of adolescent having an adequate level of RHL was higher that anticipated. Our study also found that more than 15.3% of respondents had an excellent level of RHL and 69,7% respondents have sufficient RHL level. In contrast, a study conducted in Semarang, Indonesia, found that below a fourth of adolescents have sufficient level of RHL (11).

Inconsistency in the finding can be attributed to the differences in the study population. Unlike past studies that included both male and female adolescents, this research exclusively focused on female adolescents, who tend to exhibit better reproductive health awareness (3,19,20). This suggests that targeted reproductive health education for females may be more effective in improving RHL levels. Furthermore, societal norms and educational programs often place greater emphasis on reproductive health knowledge for females, which may explain the higher RHL levels observed in this study (1,10).

Another contributive factor is the research instrument. The tool used in this study was specifically designed to assess various aspects of RHL in female adolescents, which may have resulted in higher reported literacy levels compared to studies using more generalized instruments (3,11). This finding highlights the importance of using context-specific tools when evaluating RHL. Another plausible explanation is the unique cultural and religious context of Banda Aceh, which promotes values emphasizing female reproductive health. However, these values may also introduce challenges, such as limitations on discussing sensitive topics, which could hinder comprehensive RHL development among adolescents (21). In highly conservative regions, reproductive health is often considered a taboo subject, limiting opportunities for adolescents to access accurate and age-appropriate information through formal or informal channels (22). This silence can foster misinformation, reinforce stigma, and create barriers to critical thinking and informed decision-making regarding reproductive health choices (23).

Upon examining the dimensions of RHL, the majority of participants demonstrated a good ability to access and comprehend reproductive health information (Table 3). However, this study also revealed that a noteworthy proportion of adolescents have difficulty to access the valid reproductive health information and apply the information to make decisions pertaining to their reproductive health. One out of five respondents faced challenges in critically assessing the credibility of the information, while a third of the respondents had difficulty in effectively applying reproductive health information. These findings indicate that, although teenagers have better access to reproductive health resources and understanding information related to reproductive health, they also face challenges in effectively discerning and applying the information. These difficulties may be caused by limited exposure to reliable sources, inadequate critical thinking skills, and cultural taboos surrounding reproductive health (24,25).

One major concern is the prevalence of misinformation from digital sources. Adolescents increasingly rely on social media platforms such as TikTok, Instagram, and YouTube for reproductive health information (26,27). While these platforms provide accessible content, they also expose adolescents to misinformation and hoax, making it difficult to distinguish credible sources from misleading content (28,29). This underscores the need for digital literacy programs to educate adolescents on how to critically evaluate health information on social media platforms.

Another challenge is the current focus of reproductive health education programs in Indonesia, which primarily aim to increase knowledge rather than enhance critical thinking and decision-making skills (30). As a result, while adolescents may have a strong foundational understanding of reproductive health concepts, they often lack the ability to assess the credibility of information and apply it effectively in real-life scenarios (31). To address this gap, curriculum modifications that incorporate interactive learning, case studies, and real-world decision-making exercises are required.

Additionally, a critical barrier to effectively applying reproductive health information is the stigma and taboos surrounding open discussions on reproductive health (32). Adolescents may fear judgment from peers, parents, or teachers when seeking or asking information related to reproductive health, leading to reliance on unverified sources (33). Addressing this requires integrating open, stigma-free discussions in schools and communities to encourage safe and informed decision-making.

The difficulty in applying reproductive health information is also linked to broader systemic issues, such as inadequate youth-friendly health services (32). Many adolescents, particularly those from lower-income backgrounds, may lack access to professional guidance or counseling (34). Strengthening school-based health services and community outreach programs could help bridge this gap and provide adolescents with sources for obtaining reproductive health support.

Our study also found that family's income contributes to reproductive health literacy (Table 4). Adolescents from families with monthly income exceeding or equal to the regional payment rate are more likely to possess better RHL. Our finding is consistent with past studies reporting that economic status of the family is related to a better reproductive health outcomes among adolescents (20,35). Higher family income provides adolescents with better access to educational resources, including schools with comprehensive sex education programs and libraries with books and materials on reproductive health (30,35). These resources can significantly contribute to improving their knowledge and understanding of reproductive health matters. Moreover, adolescents from more affluent families may have better access to healthcare facilities, allowing them to seek medical advice, counseling, and reproductive health services when needed (24,36). Regular access to healthcare professionals can also foster more open and informed

discussions about sexual and reproductive health, leading to better decision-making and healthier reproductive behaviors (35,36).

Conversely, lower-income adolescents face barriers that limit their access to quality reproductive health education and services. Economic constraints may prevent them from obtaining reliable information or accessing healthcare facilities, leading to gaps in their reproductive health knowledge (35,36). These findings suggest the need for policies that promote equitable access to reproductive health resources, such as subsidized educational materials, school-based health programs, and community health initiatives targeting low-income families.

The data showed that early adolescents (11–14 years old) had a higher proportion of problematic RHL levels compared to older age groups (Table 4). The influence of age on RHL of adolescents has been reported in past studies (19,37). As noted by Brown and Anistranski (2020), age is significantly linked to psychological and social maturity in adolescents. Older adolescents have better communication and problem-solving skills when it comes to reproductive health matters (38). Moreover, older adolescents demonstrate superior skills in comprehending reproductive health information and making informed decisions regarding their reproductive choices (10,39). Given this, reproductive health education should be tailored according to developmental stages. Early adolescents may benefit from simplified, interactive educational materials that introduce basic concepts, while older adolescents should receive more advanced content focusing on critical thinking and real-world application. Implementing age-specific interventions could improve overall RHL outcomes across different developmental stages.

Limitations and Cautions

While our study offers valuable insights, some limitations should be acknowledged. Firstly, the study was conducted in a specific region of Indonesia, which may limit the generalization of the findings to other regions with different sociocultural contexts and educational system. Therefore, caution should be exercised when applying these results to broader populations. Additionally, our study relied on self-reported data, which may be subject to recall bias or social desirability bias. Participants might have provided responses they perceived as socially acceptable, potentially influencing the accuracy of the data.

Recommendations for Future Research

Future research should focus on exploring the specific factors that influence the more challenging dimensions of reproductive health literacy (RHL), particularly understanding and applying information. Investigating variables such as digital literacy, critical thinking ability, family communication, and cultural beliefs may help clarify why some adolescents struggle despite having generally adequate RHL levels. Qualitative studies are also recommended to gain deeper insights into adolescents' personal experiences, perceived barriers, and cultural or social constraints that hinder their ability to apply reproductive health information in real-life situations. In addition, intervention-based studies should be conducted to evaluate the effectiveness of targeted educational strategies, such as digital tools, peer-led programs, or interactive learning in improving appraisal and application skills. Longitudinal research would also be valuable in assessing the long-term impact of reproductive health literacy on adolescents' behaviors and health outcomes.

CONCLUSION

While the majority of adolescents demonstrated adequate RHL, significant gaps remain, particularly in the areas of appraising and applying information, highlighting systemic weaknesses in reproductive health education. These findings carry important implications for educational strategies, policymaking, and healthcare services. These findings have important implications for reproductive health education, policy-making, and healthcare services. The results highlight the need to shift from knowledge-based programs to approaches that build adolescents' critical thinking, appraisal, and application skills in the context of reproductive health. At the policy level, the Banda Aceh Health Office and Office of Education and Culture, in collaboration with schools and community leaders, should develop and implement culturally tailored, skill-oriented reproductive health literacy programs. These programs should go beyond information delivery and focus on building adolescents' capacity to access, critically assess, and apply health information. Interactive methods such as case-based discussions, scenario role-plays, peer education, and digital media literacy modules should be incorporated to enhance both engaging and effectiveness. Furthermore,

local government agencies should integrate adolescent reproductive health literacy into regional education and health development plans, ensuring sustainable implementation, funding, and regular monitoring.

For educators, schools should embed reproductive health topics into existing curricula across relevant subjects, using age-appropriate, gender-sensitive content. Teachers need training to confidently deliver sensitive material and foster open, stigma-free classroom discussions. Given that middle and early adolescents showed relatively lower RHL levels, interventions should be tailored to developmental stages, using simplified tools for younger adolescents and critical-thinking exercises for older students.

For healthcare providers, both school-based health services and community health centers should be equipped to provide youth-friendly reproductive health counseling. Services should be confidential, non-judgmental, and focused on helping adolescents apply health knowledge in real-life decisions. Special outreach efforts are recommended for adolescents from lower-income families, who may face greater barriers to accessing reliable information and services. By implementing these targeted strategies, policymakers, educators, and healthcare providers can collectively improve reproductive health literacy among adolescents in Banda Aceh, ultimately contributing to healthier choices, reduced risk behaviors, and improved reproductive health outcomes.

AUTHOR'S CONTRIBUTION STATEMENT

All authors have confirmed their contributions to the paper. W conceptualized and designed the study, coordinated the overall research activities, wrote the initial draft of the manuscript, and revised it throughout the process. RS was involved in data collection and analysis, as well as drafting and revising the manuscript. PA contributed to the literature review and data collection, and participated in drafting and revising the manuscript. NA assisted in the study design, data collection and analysis, and revised the manuscript. TM was responsible for conducting the literature review and contributed to manuscript revisions. N managed data collection, imputation, and cleaning, and revised the manuscript. M contributed to the literature review and assisted with writing and revising the content. MG was involved in writing and revising the manuscript. IH contributed to writing the manuscript and performed proofreading. SFIA contributed by writing the discussion section and conducting proofreading.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors confirm that generative AI tools (ChatGPT and Grammarly) were minimally utilized. These tools were used for refining grammar and sentence structure. Ideas related to content and data analysis were written and processed by all authors.

SOURCE OF FUNDING STATEMENTS

This study was funded by the University of Muhammadiyah Aceh under the Lecturer Grant scheme for 2022 (Research Grant Number: 19/LP4M.UM/IV/2022). The funding agency had no involvement in the study's design, data collection, analysis, interpretation of results, or the writing and submission of the manuscript. The authors affirm that the research was conducted independently, ensuring the integrity and credibility of the findings.

ACKNOWLEDGMENTS

We would like to express our sincere gratitude to respected teachers at MAN 1 Banda Aceh, MAN 2 Banda Aceh, SMAN 9 Banda Aceh, and SMAN 10 Banda Aceh for their invaluable support in facilitating the data collection process. We are especially thankful to the students from these schools for their active participation in this study. Additionally, we extend our appreciation to the University of Muhammadiyah Aceh for providing the financial support that made this research possible.

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