

Factors Associated with Menstrual Hygiene Practices Among Adolescent Girls: A Narrative Review

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ABSTRACT

Menstrual hygiene management is an important component of adolescent reproductive health. However, menstrual hygiene practices are shaped not only by individual knowledge and attitudes but also by family support, socioeconomic conditions, sociocultural norms, and water, sanitation, and hygiene (WASH) facilities. Objective: This narrative review aimed to identify and synthesize factors associated with menstrual hygiene practices among adolescent girls. Methods: A narrative literature review was conducted using searches in PubMed, Google Scholar, and selected publisher-indexed journals. Articles were selected purposively based on relevance to the review topic, with priority given to studies conducted in low- and middle-income countries and Indonesia. Twelve studies met the inclusion criteria and were synthesized narratively. Results: The included studies indicated that menstrual hygiene practices were associated with interconnected individual, interpersonal, socioeconomic, sociocultural, and environmental factors. Individual factors included menstrual knowledge, attitudes, educational level, and menstrual experience. Interpersonal factors included maternal education, parent–adolescent communication, family support, teachers, and sources of menstrual information. Socioeconomic conditions influenced affordability and access to menstrual materials. Stigma, myths, secrecy, and cultural restrictions could hinder appropriate practices. Environmental factors, particularly access to private toilets, water, handwashing facilities, and appropriate disposal facilities, were consistently important. Indonesian evidence showed that positive attitudes, school-based menstrual information, private household toilets, and covered waste bins were associated with better menstrual hygiene management.

Keywords: Adolescent girls; menstrual hygiene management; menstrual health; reproductive health; WASH



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INTRODUCTION

Menstruation is a normal physiological process that marks an important stage of reproductive development in adolescent girls. Nevertheless, the ability of adolescents to manage menstruation hygienically and comfortably is not determined solely by individual behavior. Menstrual hygiene management involves the availability of appropriate menstrual materials, access to water and sanitation, privacy, facilities for changing and disposing of menstrual materials, adequate information, and a supportive social environment. Difficulties in these areas can affect health, psychosocial well-being, participation in education, and daily activities (1).

Evidence from Indonesia demonstrates that menstrual hygiene management remains an important concern among adolescent girls. A cross-sectional study involving 1,159 adolescent girls in four Indonesian provinces found that 64.1% reported poor menstrual hygiene management, while 11.1% reported missing school during menstruation. Poor menstrual hygiene management was associated with rural residence, lower school grade, and inadequate knowledge about menstruation. More recent Indonesian evidence from Tangerang involving 409 girls aged 12–15 years found that good menstrual hygiene management was associated with grade level, menstrual information received at school, positive attitudes, availability of private household toilets, and covered waste bins (2).

The determinants of menstrual hygiene practice are also demonstrated in studies from other low- and middle-income countries. A systematic review and meta-analysis in sub-Saharan Africa reported that good menstrual hygiene practices were associated with urban residence, affordability of menstrual materials, and maternal education (3). A meta-analysis among Indian adolescent girls similarly demonstrated that menstrual hygiene practices were related to socioeconomic and demographic characteristics and access to appropriate menstrual materials (4). Evidence from Ethiopia further shows associations between menstrual hygiene practice and knowledge, maternal education, source of information, school toilet privacy, and availability of WASH facilities (5).

The current state of the art indicates that previous reviews have generally focused on specific geographical regions, such as Ethiopia, sub-Saharan Africa, India, or West Africa, or have focused on the effectiveness of school-based interventions. A recent systematic review of school-based menstrual hygiene interventions in Indonesia found improvements in knowledge, attitudes, and self-reported practices, but also highlighted methodological limitations, including heterogeneous interventions and the use of non-validated instruments.

The novelty of this literature review lies in integrating the determinants of menstrual hygiene practice among adolescent girls into a multidimensional framework encompassing individual, interpersonal, socioeconomic, sociocultural, and environmental/WASH factors, while placing Indonesian evidence within the broader international context. This approach is expected to provide a more comprehensive basis for developing adolescent reproductive health interventions that do not rely solely on health education but also address family, social, economic, and environmental determinants.

Therefore, this literature review aimed to identify and synthesize the factors influencing menstrual hygiene practices among adolescent girls and to formulate implications for adolescent reproductive health services and health education.

METHODS

This study used a narrative literature review design. The review focused on scientific articles examining menstrual hygiene practices or menstrual hygiene management among adolescent girls and factors associated with those practices.

Literature searches were conducted using electronic scientific databases and journal platforms, primarily PubMed and publisher-indexed scientific journals. The search strategy used combinations of keywords including “adolescent girls”, “adolescent”, “menstruation”, “menstrual hygiene”, “menstrual hygiene management”, “menstrual hygiene practice”, “determinants”, “associated factors”, “knowledge”, “attitude”, “WASH”, and “school”. The search was limited primarily to studies published within the last ten years to comply with the journal's reference requirements.

Articles were eligible when they were original research articles or systematic reviews/meta-analyses, involved adolescent girls, examined menstrual hygiene or menstrual hygiene management practices, and reported factors associated with those practices. Articles unrelated to adolescent girls, studies focusing exclusively on clinical menstrual disorders without a hygiene component, non-scientific publications, duplicate publications, and articles without sufficient information regarding the study findings were excluded.

The selected literature was reviewed based on publication year, country, study design, population, sample size, menstrual hygiene outcome, determinants investigated, and major findings. The findings were then grouped into five domains: individual factors, interpersonal factors, socioeconomic factors, sociocultural factors, and environmental/WASH factors. The synthesis was conducted descriptively without quantitative meta-analysis because of differences in study populations, definitions, measurement instruments, and outcomes.

Articles were selected purposively based on relevance to the review topic, with priority given to studies conducted in low- and middle-income countries and Indonesia. This review does not claim to be systematic and does not report comprehensive search strings or PRISMA flow diagrams.

The selected literature was reviewed based on publication year, country, study design, population, sample size, menstrual hygiene outcome, determinants investigated, and major findings. The findings were then grouped into five domains: individual factors, interpersonal factors, socioeconomic factors, sociocultural factors, and environmental/WASH factors. The synthesis was conducted descriptively without quantitative meta-analysis because of differences in study populations, definitions, measurement instruments, and outcomes.

RESULTS

Twelve studies met the inclusion criteria and were included in this narrative review. The characteristics of the included studies are presented in Table 1. Studies originated from Indonesia, Ethiopia, India, sub-Saharan Africa, and other settings, with designs including cross-sectional studies, mixed-methods studies, quasi-experimental studies, systematic reviews, and qualitative studies. Sample sizes ranged from 120 to national-level surveys. Menstrual hygiene outcomes were measured using various indicators, including frequency of changing menstrual products, washing practices, disposal methods, hand hygiene, access to WASH facilities, and product selection.

Table 1. Characteristics of Included Studies

No	Author, Year	Country	Design	Population	Sample Size	Key Determinants	Main Findings
1	Wihdaturrahmah & Chuemchit, 2023	Indonesia	Cross-sectional	Girls aged 12–15 years	409	Grade, school information, attitude, private toilet, covered bin	Positive attitude, school information, private toilet, and covered bins associated with good MHM
2	Anbesu & Asgedom, 2023	Sub-Saharan Africa	Systematic review/meta-analysis	Adolescent girls	15 studies	Residence, maternal education, family income, knowledge	Urban residence, maternal education, and knowledge associated with better practice
3	Bulto, 2021	Ethiopia	Cross-sectional	School adolescent girls	423	Knowledge, residence, toilet privacy	Good knowledge and private toilets associated with adequate MHM
4	Daniel et al., 2023	Ethiopia	Cross-sectional	In-school girls	623	Knowledge, pocket money, urban residence	Good knowledge and financial support associated with safe MHM
5	Deriba et al., 2022	Ethiopia	Mixed-methods	High school girls	384 + 12 interviews	Knowledge, maternal education, toilet privacy, WASH	Knowledge, maternal education, and WASH facilities associated with safe MHM

No	Author, Year	Country	Design	Population	Sample Size	Key Determinants	Main Findings
6	Meher & Sahoo, 2023	India	Spatial analysis	Young women 15–24 years	National survey	Household wealth, education	Wealthier households more likely to use hygienic methods
7	Nastiti et al., 2023	Indonesia	Quasi-experimental	Adolescent girls in Kalimantan	120	School-based education	Education improved knowledge and self-reported practice
8	Susanti et al., 2025	Indonesia	Cross-sectional	Adolescents 12–18 years	352	Age, education, income, menstrual cycle	Age, education, and income associated with higher MHM scores
9	Hayuni et al., 2025	Indonesia	Cross-sectional	Secondary school girls	280	Water quality, WASH facilities	Better water quality associated with improved MHM
10	Akerman et al., 2024	Sweden	Qualitative	Young people 15–25 years	24 interviews	Stigma, norms	Stigma led to secrecy and avoidance of social activities
11	King et al., 2025	Tanzania	Mixed-methods	Adolescent girls	450 + 30 interviews	Cultural, religious norms	Restrictions limited participation in religious and social activities
12	Long et al., 2022	Global	Systematic review	Schoolgirls in LMICs	28 studies	School WASH facilities	Inadequate WASH facilities hindered MHM

The literature reviewed demonstrates that menstrual hygiene practices among adolescent girls are influenced by multiple interconnected determinants. The findings were grouped into five major domains: individual, interpersonal, socioeconomic, sociocultural, and environmental/WASH factors.

The individual domain was one of the most consistently reported determinants. Knowledge regarding menstruation was associated with menstrual hygiene practice in several studies. In central Ethiopia, adolescents with good overall knowledge had greater odds of adequate menstrual hygiene management. However, the findings also demonstrate that knowledge alone does not automatically result in appropriate practice. This suggests that knowledge needs to be accompanied by supportive attitudes, resources, and an enabling environment.

Attitude was also identified as an important determinant. The Indonesian study conducted in Tangerang found that positive attitudes toward menstruation were strongly associated with good menstrual hygiene management. School-based information was also associated with better practice, demonstrating the importance of structured menstrual education within the school environment.

Interpersonal factors included the role of parents, particularly mothers, teachers, and peers. Maternal education and communication were repeatedly identified as relevant factors. In Ethiopia, information obtained from mothers and teachers was significantly associated with menstrual hygiene practice. Studies in other settings also identified mothers as an important initial source of menstrual information.

Socioeconomic conditions were also associated with menstrual hygiene practices. Meta-analytic evidence indicates that affordability of menstrual materials and household socioeconomic status influence the ability of adolescent girls to use appropriate menstrual products. National-level evidence from India showed a strong relationship between household wealth and the exclusive use of hygienic menstrual methods.

Sociocultural factors were identified as barriers in several studies. Menstruation may be surrounded by stigma, myths, restrictions, and secrecy, which can limit girls' access to information and support. A systematic review in West Africa identified differences in knowledge and practices related to age, education, socioeconomic conditions, and sources of information, while studies in Nepal and Nigeria also demonstrated the relevance of sociocultural norms and family or community influences.

Environmental and WASH factors constituted another important domain. Appropriate menstrual management requires privacy, water, handwashing facilities, toilets, and appropriate disposal facilities. Indonesian research found that private toilets and covered waste bins were associated with better menstrual hygiene management. Evidence from Ethiopia similarly demonstrated associations between toilet privacy, handwashing facilities, and menstrual hygiene practices.

DISCUSSION

The findings of this literature review indicate that menstrual hygiene practices among adolescent girls are influenced by multiple and interconnected factors rather than by knowledge alone. The determinants identified in the reviewed literature can be broadly categorized into individual, interpersonal, socioeconomic, sociocultural, and environmental factors. These findings support the understanding that menstrual hygiene management (MHM) is a multidimensional health behavior that is shaped by the interaction between

individual capacity and the social and physical environment in which adolescents live. Therefore, interventions that focus only on providing information about menstruation may be insufficient to produce sustained improvements in menstrual hygiene practices (6).

From an ecological perspective, adolescent menstrual hygiene behavior develops through interactions between the individual and her family, peers, school, community, and physical environment. An adolescent may possess adequate knowledge about menstruation and understand the importance of changing menstrual products regularly, maintaining genital cleanliness, and disposing of used materials appropriately. However, appropriate practices may remain difficult when she lacks access to clean water, private toilets, appropriate menstrual products, or a safe place for disposal. This explains why knowledge does not always translate directly into healthy behavior. The findings therefore emphasize the importance of addressing both behavioral capability and environmental enabling conditions (7).

Individual Factors: Knowledge and Attitudes

Knowledge was consistently identified as an important individual-level determinant of menstrual hygiene practices. Adolescents who understand menstruation, menstrual cycles, personal hygiene, menstrual product use, and appropriate disposal are generally more capable of making informed decisions during menstruation. Adequate knowledge can reduce misconceptions and increase adolescents' confidence in managing menstruation independently. Previous evidence has similarly demonstrated an association between menstrual knowledge and menstrual hygiene practices among adolescent girls (8).

However, the findings also demonstrate the existence of a knowledge–practice gap. Having correct information does not automatically guarantee appropriate menstrual hygiene behavior. Adolescents may know that menstrual products should be changed regularly but may not be able to do so when school toilets lack privacy or when they are afraid of being noticed by peers. Similarly, an adolescent may understand the importance of washing with clean water but may have limited access to water at school or at home. Thus, knowledge should be considered a necessary but not sufficient condition for healthy menstrual hygiene behavior (9).

The relationship between knowledge and practice may also be affected by the quality and source of menstrual education. Information obtained through formal education, parents, health workers, peers, social media, and the internet may differ in accuracy and comprehensiveness. Adolescents increasingly obtain health information from digital platforms, which provide opportunities for broader access to menstrual health education. Nevertheless, digital information may also contain misconceptions, stigmatizing messages, or inaccurate recommendations. Consequently, menstrual health education should strengthen adolescents' ability not only to obtain information but also to critically evaluate the reliability of health information (10).

Attitude was another important determinant identified in the reviewed literature. Adolescents with positive attitudes toward menstruation are more likely to perceive menstruation as a normal physiological process rather than something shameful or dirty. Positive perceptions may encourage adolescents to seek information, discuss menstrual concerns, prepare menstrual products in advance, and practice appropriate hygiene. Conversely, negative attitudes and feelings of embarrassment may cause adolescents to hide menstrual products, avoid asking for help, or delay changing menstrual products (11).

Evidence from Indonesian adolescents supports the importance of attitude. A study among adolescent girls in Tangerang found that a positive attitude toward menstruation was strongly associated with better menstrual hygiene management. This finding suggests that interventions should not only deliver factual information but should also address adolescents' perceptions, confidence, and emotional responses toward menstruation (2).

This finding can be interpreted using behavioral theories such as the Theory of Planned Behavior. Knowledge may contribute to the formation of beliefs, while attitudes and perceived social expectations influence behavioral intentions. However, intention may still be constrained by environmental conditions. Therefore, improving menstrual hygiene requires interventions that simultaneously strengthen knowledge, positive attitudes, self-efficacy, and opportunities to perform the desired behavior (12).

Interpersonal Factors: Family, Parents, Peers, and Teachers

The family represents one of the earliest and most influential social environments for adolescents. Parents, particularly mothers or other female caregivers, can provide information, emotional support, practical guidance, and menstrual products. Open communication within the family may enable adolescents to ask questions about menstruation without fear or embarrassment. Conversely, communication characterized by secrecy or the assumption that menstruation is a topic that should not be discussed may limit adolescents' access to reliable information (13).

Maternal support is particularly relevant because mothers or female caregivers may become the primary source of menstrual information when a girl experiences menarche. The quality of this interaction may influence how adolescents understand menstruation and how confidently they manage their periods. Therefore, menstrual health education should not target adolescents alone. Parents and caregivers should also receive appropriate information and communication strategies so that they can provide accurate and supportive guidance (14).

Peers also play an important role during adolescence. Adolescents are strongly influenced by their peer environment, including perceptions of what is considered socially acceptable. Supportive peers may facilitate information sharing and normalize menstruation, whereas peer teasing or fear of embarrassment may reinforce secrecy and negative attitudes. School-based programs can therefore use peer education or peer-support approaches to create a more supportive menstrual environment (15).

Teachers and school health personnel are also important interpersonal resources. Teachers may be among the adults most accessible to adolescents during school hours, particularly when menstrual problems occur unexpectedly. However, teachers need adequate knowledge and communication skills to respond appropriately to menstrual concerns. School-based menstrual health interventions in Indonesia have demonstrated improvements in knowledge and attitudes, although evidence regarding sustained behavioral change remains limited. A recent systematic review of Indonesian school-based interventions emphasized that education should be combined with WASH improvements, teacher preparation, and ongoing monitoring rather than relying exclusively on one-time educational sessions (16).

Socioeconomic Factors and Menstrual Product Accessibility

Socioeconomic conditions influence menstrual hygiene through adolescents' ability to obtain appropriate menstrual products and access supportive facilities. Menstrual products represent a recurring expense, and financial limitations may affect the type, quantity, and

availability of products used. Adolescents from economically disadvantaged households may have fewer choices and may experience difficulty obtaining sufficient products throughout the menstrual period (17).

This issue is closely related to the concept of menstrual poverty, in which individuals experience limitations in accessing affordable menstrual products, adequate information, water and sanitation facilities, and supportive social environments. Menstrual poverty should therefore not be interpreted solely as an inability to purchase sanitary products. It also involves broader inequalities in resources and opportunities required to manage menstruation safely, comfortably, and with dignity (18).

The Indonesian evidence also suggests that household sanitation facilities are associated with menstrual hygiene practices. Among adolescent girls in Tangerang, access to a private home toilet and the availability of an appropriate covered disposal bin were associated with better menstrual hygiene management. This finding illustrates that economic resources influence menstrual hygiene both directly, through the affordability of menstrual products, and indirectly, through housing and sanitation conditions (19).

Therefore, interventions aimed at improving menstrual hygiene should consider affordability and accessibility. Schools and health programs may support adolescents by ensuring the availability of emergency menstrual products, improving access to appropriate disposal facilities, and establishing mechanisms through which girls can obtain assistance without embarrassment. Such approaches are particularly relevant for adolescents living in economically vulnerable households (20).

Sociocultural Factors, Stigma, and Menstrual Myths

Menstruation is not solely a biological event; it is also shaped by cultural beliefs, social norms, and gender expectations. In many communities, menstruation continues to be associated with shame, impurity, secrecy, or restrictions. Such beliefs may influence adolescents' behavior even when they possess adequate biomedical knowledge.

Menstrual stigma can affect how girls communicate about menstruation and whether they feel comfortable asking for assistance. For example, an adolescent may know that menstrual products need to be changed regularly but may avoid leaving the classroom because she is worried that classmates will notice. Fear of teasing may also encourage adolescents to conceal menstrual products or avoid discussing menstrual pain and abnormal bleeding (21).

Cultural restrictions may additionally influence menstrual practices related to bathing, food consumption, physical activity, religious or social participation, and disposal of menstrual materials. While cultural practices should be approached respectfully, health education should help adolescents distinguish between culturally meaningful practices and beliefs that may interfere with health, dignity, or access to appropriate care (22).

Reducing menstrual stigma is therefore an important component of MHM interventions. Menstrual education should normalize menstruation as a physiological process and encourage respectful communication. Importantly, stigma reduction should not be directed only at girls. Boys, male teachers, parents, and the wider school community should also be included because social attitudes toward menstruation are collectively constructed (15).

Environmental and WASH Factors

Water, sanitation, and hygiene (WASH) facilities represent critical enabling factors for menstrual hygiene management. Appropriate menstrual hygiene requires access to sufficient

water, soap, private toilets, functional doors, adequate lighting, and facilities for safe disposal of used menstrual products. Without these facilities, adolescents may be unable to implement practices they already understand to be appropriate.

School WASH facilities are particularly important because adolescents spend a substantial proportion of their daily time at school. Toilets that are overcrowded, lack privacy, do not have water, or do not provide disposal facilities can create barriers to menstrual management. These barriers may result in discomfort, anxiety, reduced participation in school activities, and in some circumstances absence from school (21).

Indonesian evidence demonstrates that WASH conditions are relevant to MHM. The association between private household toilets, covered disposal bins, and menstrual hygiene practices indicates that the physical environment can facilitate or constrain behavior. National school-based evidence has also reported substantial levels of poor menstrual hygiene management among Indonesian adolescent girls and identified rural residence, lower knowledge, and other contextual factors as relevant to MHM outcomes (23).

These findings reinforce the principle that health behavior interventions must be accompanied by environmental improvements. Providing menstrual education without improving sanitation facilities may create a situation in which adolescents know what they should do but lack the opportunity to do it. Conversely, providing facilities without adequate education may also be insufficient because adolescents may not know how to use products and facilities appropriately. The most effective approach is therefore likely to integrate education, products, WASH facilities, and supportive social norms (23).

Interaction Between Knowledge, Attitude, Social Support, and Environment

An important finding of this review is that the determinants of menstrual hygiene should not be viewed independently. Knowledge, attitude, social support, socioeconomic status, cultural norms, and environmental conditions interact to shape behavior. For example, knowledge may influence an adolescent's attitude toward menstruation, while positive attitudes may increase her willingness to practice healthy hygiene behaviors. Family support may strengthen confidence and provide the resources needed to implement these behaviors. At the same time, adequate WASH facilities provide the physical opportunity for the behavior to occur.

This interaction can explain why the same level of knowledge may produce different practices among adolescents living in different circumstances. Two adolescents may both understand the importance of changing menstrual products regularly, but one may have access to a private toilet, clean water, and adequate menstrual products while the other may face financial limitations and inadequate sanitation. Their knowledge is similar, but their ability to translate knowledge into practice is different (18).

Therefore, the results of this review support an ecological interpretation of menstrual hygiene behavior. Individual-level interventions should be connected with interpersonal, organizational, and structural interventions. Such an approach is more likely to address the underlying barriers to healthy menstrual hygiene practices.

Menstrual Hygiene and School Participation

Menstrual hygiene management also has implications beyond personal hygiene. Difficulties managing menstruation can affect school participation and adolescents' psychosocial well-being. Concerns about leakage, odor, pain, inadequate toilet facilities, or

teasing may cause girls to avoid physical activities, participate less actively in class, or miss school.

Evidence from Indonesia has reported an association between menstrual hygiene conditions and school absenteeism, highlighting the importance of MHM as an educational as well as a health issue. Therefore, menstrual health programs should be integrated into broader efforts to promote adolescent educational participation (18).

Schools should be designed as supportive environments in which menstruation does not become a barrier to learning. This includes ensuring access to private and clean toilets, water and soap, menstrual product disposal facilities, emergency menstrual products, and trusted personnel to whom students can report menstrual concerns. Creating a supportive environment may also reduce anxiety and embarrassment and help girls remain engaged in school activities during menstruation.

Implications for Midwifery Practice

The findings have important implications for midwifery practice because midwives have a strategic role in adolescent reproductive health promotion. Menstrual health education should begin before or around the time of menarche and should be provided continuously rather than as a single educational activity. Midwives can provide age-appropriate education about the menstrual cycle, menstrual hygiene, menstrual products, genital hygiene, disposal practices, nutrition, menstrual pain, and warning signs that require professional assessment. Education should use interactive approaches, such as demonstrations, question-and-answer sessions, peer education, visual media, and digital educational materials.

Midwives can also contribute to school-based adolescent health services through collaboration with teachers, school health units, parents, and community health centers. Such collaboration is important because menstrual hygiene is influenced by multiple determinants that cannot be addressed by health workers alone. In addition, menstrual health counseling should include recognition of menstrual problems that may require further assessment. Adolescents should be encouraged to seek professional help when they experience unusually heavy bleeding, prolonged or highly irregular menstruation, severe menstrual pain that interferes with daily activities, recurrent symptoms of infection, or other concerning symptoms. Thus, MHM education should function not only as hygiene promotion but also as an entry point for broader adolescent reproductive health care (24).

Implications for School and Public Health Programs

The findings suggest that school-based MHM programs should adopt a comprehensive rather than a single-component approach. Educational interventions remain important, but they should be integrated with access to menstrual products, WASH improvements, supportive school policies, teacher training, and stigma-reduction activities.

A comprehensive school MHM program could include several components. First, schools should provide structured menstrual health education that is developmentally appropriate and repeated at different stages of adolescence. Second, schools should ensure that girls have access to clean and private toilets, water, soap, and safe disposal facilities. Third, emergency menstrual products should be available for students who unexpectedly begin menstruation or experience difficulties obtaining products at home. Fourth, teachers and school health personnel should receive training to respond to menstrual concerns

appropriately. Finally, programs should involve parents and boys to promote a supportive school culture (25).

Recent evidence from Indonesia supports this multidimensional approach. A systematic review of school-based menstrual hygiene interventions found improvements in knowledge and attitudes across multiple interventions but also identified limitations in evidence regarding sustained changes in practice. The review recommended combining education with WASH improvements, teacher involvement, and monitoring. This is particularly important because behavioral change requires time. A one-time lecture may increase knowledge immediately, but maintaining healthy practices requires repeated reinforcement and an enabling environment. Program evaluation should therefore measure not only knowledge immediately after an intervention but also behavioral outcomes over longer periods.

Research Implications and Gaps

Although the literature demonstrates consistent associations between several determinants and menstrual hygiene practices, important research gaps remain. One major issue is heterogeneity in the definition and measurement of “good” or “poor” menstrual hygiene practice. Different studies use different combinations of indicators, including frequency of changing menstrual products, washing practices, disposal methods, hand hygiene, access to WASH facilities, and product selection. This makes direct comparison across studies difficult.

Another limitation is the predominance of cross-sectional studies. Cross-sectional designs are useful for identifying associations but cannot establish temporal or causal relationships. Longitudinal studies are needed to determine whether improvements in knowledge and attitudes lead to sustained behavioral changes. Measurement quality is also important. Some school-based intervention studies have relied on self-reported practices and instruments that have not been adequately validated. Self-reported menstrual hygiene behaviors may be affected by recall bias and social desirability bias because adolescents may report practices they believe are socially acceptable rather than their actual behavior. Future studies should therefore use validated measurement instruments and, where appropriate, triangulate self-reported data with environmental assessments.

There is also a need for more intervention research in diverse Indonesian settings, particularly rural and geographically underserved areas. Differences in infrastructure, culture, socioeconomic conditions, and access to adolescent health services may produce different barriers to menstrual hygiene. Future studies should therefore examine contextual differences rather than assuming that one intervention model is equally effective across all communities.

Mixed-methods research may be particularly useful. Quantitative studies can identify the magnitude and statistical association of determinants, while qualitative research can explain why adolescents experience specific barriers. Combining both approaches may provide a more comprehensive understanding of menstrual hygiene behavior.

Overall Interpretation

Overall, the findings indicate that menstrual hygiene practices among adolescent girls are the result of a dynamic interaction between knowledge, attitudes, social support, economic resources, cultural norms, and environmental conditions. Knowledge provides an important foundation, but it must be supported by positive attitudes, family and peer support, affordable menstrual products, adequate WASH facilities, and a stigma-free environment. The findings

therefore suggest that improving menstrual hygiene should not be framed simply as teaching girls how to maintain cleanliness during menstruation. Instead, MHM should be understood as a broader adolescent health, educational, social, and environmental issue. Programs that combine individual education with family engagement, school-based support, WASH improvements, product accessibility, and stigma reduction are more consistent with the multidimensional nature of the determinants identified in this review.

For midwifery practice, this perspective reinforces the importance of comprehensive adolescent reproductive health services. Midwives can contribute through health education, counseling, early identification of menstrual problems, school-based interventions, family engagement, and collaboration with community and educational sectors. Such a comprehensive approach may contribute not only to healthier menstrual hygiene practices but also to greater confidence, dignity, school participation, and overall reproductive health among adolescent girls.

CONCLUSION

Menstrual hygiene practice among adolescent girls is influenced by interconnected individual, interpersonal, socioeconomic, sociocultural, and environmental factors. Knowledge and positive attitudes provide an important behavioral foundation, while family and school support facilitate access to accurate information and healthy practices. Economic conditions influence the affordability of menstrual materials, whereas stigma, myths, and cultural restrictions may create barriers to appropriate menstrual management. Adequate WASH facilities, privacy, water, handwashing facilities, and safe disposal mechanisms further support hygienic and dignified menstruation. The main limitation of this review is the heterogeneity of definitions, instruments, populations, and settings across the included literature, which limits direct comparison of findings. Future adolescent menstrual health programs should therefore adopt a multidimensional approach involving adolescents, parents, schools, health workers, and environmental infrastructure.

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