



Advancing Menstrual Health Literacy:

A Systematic Review of its Psychological Impacts on Adolescent Girls

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Abstract: Menstrual health literacy is a critical yet often overlooked component of adolescent health, with far-reaching implications for psychological well-being. This systematic review explores the relationship between menstrual health literacy interventions and their psychological impacts on adolescent girls. Drawing on evidence from peer-reviewed studies published between 2010 and 2024, the review synthesizes findings on how improved knowledge and awareness about menstruation contribute to reduced anxiety, enhanced self-esteem, and greater emotional resilience. Key intervention strategies, including school-based education, community engagement programs, and digital tools, are analyzed for their effectiveness in fostering positive psychological outcomes. The review also highlights barriers to successful implementation, such as cultural taboos, inadequate resources, and gender disparities in education. In essence, this study highlights the potential of menstrual health literacy interventions as a transformative approach to promoting mental health among adolescent girls and offers actionable recommendations for policymakers, educators, and healthcare providers. Future research directions are proposed to further optimize intervention strategies and expand their reach.

Keywords: Menstrual Health Literacy, Adolescent Girls, Psychological Well-Being, Menstrual Health Education, Mental Health, Menstrual Knowledge, Emotional Resilience. Self-Esteem, Anxiety Reduction, School-Based Education, Community Engagement Programs, Digital Interventions, Cultural Taboos, Gender Disparities, Intervention Strategies.

INTRODUCTION

Menstruation is a natural biological process marking reproductive capability in females, involving the cyclical shedding of the uterine lining from menarche to menopause. Despite its normalcy, menstruation remains surrounded by social taboos, cultural misconceptions, and inadequate awareness, leading to poor preparedness and menstrual hygiene practices among adolescent girls (Kashyap et al., 2023; Oeche et al., 2012).

Menstrual health literacy (MHL) encompasses knowledge, attitudes, and practices regarding menstruation, including hygiene management and access to sanitary products. Studies link improved MHL to reduced anxiety, increased self-efficacy, and better coping mechanisms (Long et al., 2022). However, many adolescent girls, particularly in low- and middle-income regions, face misinformation, stigma, and limited education, contributing to stress, absenteeism, and emotional distress (Uzoechi et al., 2023; Dharmalingam et al., 2022).

Limited menstrual knowledge often leads to stress, embarrassment, and social withdrawal (Dutta, 2024). Research highlights a strong correlation between menstrual-related anxiety and mental health issues such as

depression and low self-esteem (Bhalerao et al., 2024; Okello et al., 2024). Inadequate education and hygiene facilities further hinder school participation and well-being (Chen et al., 2023). Conversely, comprehensive menstrual health education programs reduce stigma, enhance emotional resilience, and boost girls' confidence in managing menstruation (Long et al., 2022).

Societal taboos, cultural restrictions, and inadequate education exacerbate mental health challenges like anxiety and depression (Ssesanga et al., 2024; Kashyap et al., 2023). Targeted interventions, such as educational programs and improved school WASH facilities, can dispel myths, boost confidence, and ensure dignified menstrual management, significantly easing psychological burdens (Bhalerao et al., 2024; Long et al., 2022; Roux et al., 2019).

METHODOLOGY

Study Design

The present systematic review essentially followed the guidelines laid by the Preferred Reporting Items for Systematic Reviews and Meta Analyses (PRISMA) statement 2020.

Search Strategy and Search Criteria

The data was retrieved using PubMed and Google Scholar, where Boolean Search Operators were used to enhance the search strategy. Relevant keywords were searched across the search engines, for Peer-Reviewed Full Paper Articles, published after 2010.

Inclusion Criteria

The studies included followed a strict and stringent exclusion criteria; studies in languages other than English were deselected. Studies that were Preprint were rejected. Studied that had the Risk of Bias were not selected. Only studies with Full Papers, published between 2010 till 2024, in Peer Reviewed Journals were selected.

Data Management and Selection Process

Eligible studies were imported into Mendeley (Version 2.1.28) for systematic reference management. Two independent reviewers screened titles and abstracts for eligibility, with mutually agreed studies proceeding to full-text evaluation. Discrepancies were resolved through discussion with a third reviewer. Full-text articles were then comprehensively screened for final inclusion based on eligibility criteria.

Data Extraction

A Data Extraction spreadsheet was developed, and the following data was extracted from the included studies: 1) Author(s) and Year of Publication, 2) Summarized Abstract, 3) Objectives, 4) Study Design, 5) Population, 6) Interventions and Control/Comparator, 7) Outcomes, 8) Findings, 9) Challenges, 10) Research Gaps and Future Research Direction.

Risk of Bias

The Risk of Bias was assessed using the RoB 2 tool, which is a standardized tool to assess the Risk of Bias for assessment of RCTs; and PRISMA 2020 Checklist for Systematic Reviews. Studies with 'High' and 'Critical' Risk of Bias were deselected.

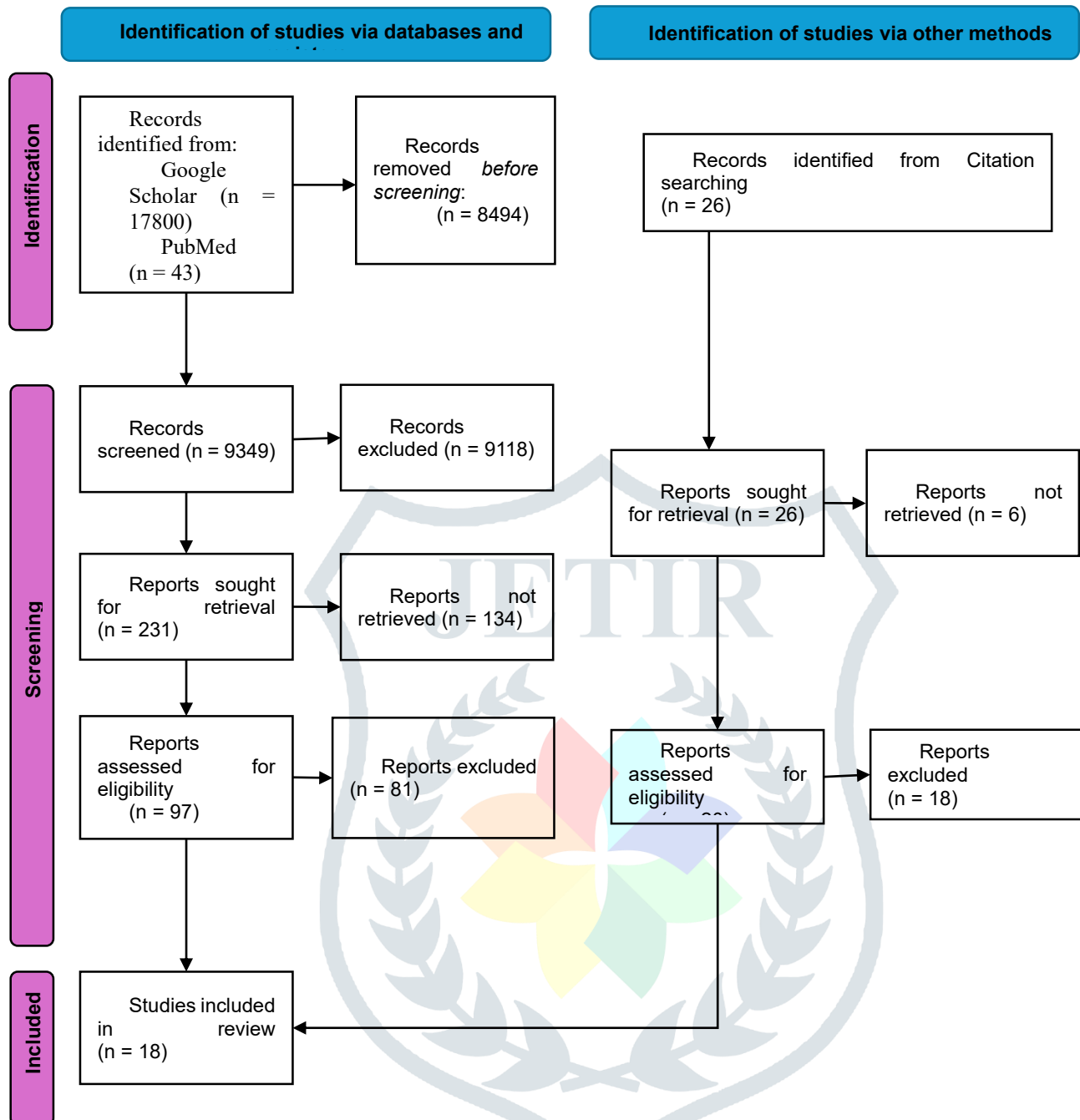


Figure 1: PRISMA Flowchart of the Systematic Review conducted.

Data Synthesis

The extracted data was summarized into tables, and relevant information was extracted and categorized into themes, and recurrent themes were noted, along with interaction between the themes.

RESULT

The studies encompass systematic reviews, intervention studies, cross-sectional surveys, and qualitative research, highlighting various aspects of menstrual health. The key themes explored include menstrual health literacy and its impact on psychological well-being (Long et al., 2022), menstrual hygiene practices and the challenges faced by adolescent girls in schools (Kashyap et al., 2023; Uzoechi et al., 2023; Oeche et al., 2012), the association between menstruation and mental health issues such as anxiety, depression, and stress (Bhalerao et al., 2024; Ssesanga et al., 2024; Sundari et al., 2022), and the effectiveness of menstrual education programs and interventions (Chen et al., 2023; Dharmalingam et al., 2022; Long et al., 2022).

Key Findings

A. Menstrual Health Literacy and Psychological Well-Being

Menstrual health literacy significantly influences adolescent girls' psychological well-being. Studies show that higher menstrual literacy correlates with lower stress and anxiety (Long et al., 2022). Girls who receive education on menstruation feel more in control and exhibit higher self-efficacy (Long et al., 2022). Conversely, a lack of menstrual education before menarche leads to fear, distress, and emotional trauma (Dutta, 2024).

B. Menstrual Hygiene Challenges

A critical barrier to menstrual health is limited access to sanitary products and safe disposal methods, especially in low-income and rural areas (Okello et al., 2024; Kashyap et al., 2023; Oeche et al., 2012). Additionally, cultural taboos and myths prevent open discussions about menstruation, leading to misinformation and negative perceptions (Uzoechi et al., 2023; Dharmalingam et al., 2022). Many girls miss school due to menstruation-related challenges, which adversely impacts their academic performance (Okello et al., 2024).

C. Mental Health Implications

Menstrual disorders, including dysmenorrhea (painful periods) and menorrhagia (heavy bleeding), are strongly linked to stress, anxiety, and depression (Bhalerao et al., 2024; Sundari et al., 2022). The stigma and embarrassment associated with menstruation contribute to lower self-esteem and social withdrawal (Dutta, 2024). Furthermore, for girls with pre-existing mental health conditions, menstruation exacerbates symptoms of depression and anxiety (Ssesanga et al., 2024).

D. Effectiveness of Interventions

Several intervention programs have demonstrated positive impacts on menstrual health and psychological well-being. School-based menstrual education programs improve knowledge, reduce anxiety, and promote better hygiene practices (Long et al., 2022). Providing reusable menstrual pads and puberty education enhances psychosocial well-being and helps girls feel more prepared (Chen et al., 2023). Additionally, integrating menstrual health into public health policies is essential for sustainable impact (Dharmalingam et al., 2022).

These findings were further assessed, and the following theme were derived along with the frequency of their occurrence:

Table 1 showing the frequency of occurrence of each identified theme.

| <i>S. No.</i> | <i>Themes</i> | <i>f</i> |
|---------------|---|----------|
| 1 | Emotional Distress and Anxiety | 12 |
| 2 | Menstrual Stigma and Social Isolation | 10 |
| 3 | Increased Risk of Depression | 8 |
| 4 | Inadequate Coping Mechanism | 7 |
| 5 | School Absenteeism and Academic Struggles | 9 |
| 6 | Cultural and Social Restrictions | 6 |
| 7 | Inadequate Support and Misinformation | 5 |
| 8 | Improvement with Interventions | 11 |

DISCUSSION

The frequency analysis provided insight into how often each theme appeared in the selected studies, indicating its prevalence as a factor in the broader discussion about menstrual health literacy and its impact on adolescent mental health:

Most Frequent Themes:

1. Emotional Distress and Anxiety (12 occurrences)
2. Improvement with Interventions (11 occurrences)
3. Menstrual Stigma and Social Isolation (10 occurrences)

Moderately Frequent Themes:

1. School Absenteeism and Academic Struggles (9 occurrences)
2. Increased Risk of Depression (8 occurrences)

Less Frequent Themes:

1. Inadequate Coping Mechanisms (7 occurrences)
2. Cultural and Social Restrictions (6 occurrences)
3. Inadequate Support and Misinformation (5 occurrences)

The themes further reveal the following:

Emotional Distress and Anxiety

Adolescents with low menstrual health literacy often report feelings of fear, shame, and anxiety associated with menstruation. This lack of understanding exacerbates mental health challenges, including stress and reduced emotional well-being (Townsend et al., 2023), which can be deduced from statements like:

- *"Most common psychological problems reported by adolescents before menstruation were tiredness, anger, headache, irritability, fear, and depression."* (Sundari et al., 2022)
- *"Menstruation is stressful for many girls due to the physical and practical challenges they have to go through."* (Dutta, 2024)
- *"Most girls experienced stress, mood swings, and restlessness during their menstrual cycle."* (Bhalerao et al., 2024)

Menstrual Stigma and Social Isolation

Poor literacy leads to misconceptions and stigma, causing adolescents to avoid school or social activities during their menstrual cycle. This isolation has been linked to feelings of inadequacy, loneliness, and low self-esteem (Dutta, 2024; Dharmalingam et al., 2022) deduced from the statements:

- *"The theme 'Feelings of Isolation' highlighted recurrent accounts of feeling alone and without physical and emotional support from family and other female authority figures in their lives."* (Townsend et al., 2023)

- *"Shame and fear were the factors associated with the management of menstruation. The girls reported that they have to go through a constant fear of leakage of the menstrual absorbent specifically when they are at school."* (Dutta, 2024)

Increased Risk of Depression

Studies reveal a significant correlation between inadequate menstrual education and higher rates of depression. Adolescents experiencing menstrual-related problems without adequate support or understanding are more prone to depressive symptoms (Mann & Pradeep, 2023; Kulkarni et al., 2022), which was deduced from the following statements:

- *"There seems to be an association between menstruation and suicide."* (Sundari et al., 2022)
- *"Depression was the most prominent feature of PMDD diagnosis, whereas irritability was most frequently associated with functional impairment."* (Mann & Pradeep, 2023)
- *"Menstruation-related impacts are mostly negative, including worry, cramps, discomfort, and mood swings."* (Kochhar & Ghosh, 2022)

Inadequate Coping Mechanisms

Limited access to education about menstrual management results in poor coping strategies. This affects adolescents' confidence and can lead to long-term psychological impacts, such as reduced self-efficacy and chronic stress (Ssesanga et al., 2024; Long et al., 2022), that were deduced from the following statements:

- *"Approximately 25% of them felt ashamed and guilty about their pubertal changes, and experienced menarche in fear, shyness, and sadness."* (Bhalerao et al., 2024)
- *"Girls who use cloths as menstrual absorbents must wash them early in the morning or at night so that nobody can see them, adding an extra layer of stress."* (Dutta, 2024)

School Absenteeism and Academic Struggles

Poor menstrual health literacy contributes to high absenteeism among schoolgirls due to shame, lack of facilities, or pain management issues. This disruption in education negatively impacts mental health through feelings of falling behind academically or being socially excluded (Okello et al., 2024; Townsend et al., 2023), that were deciphered from:

- *"Girls' self-reports of reduced academic and school participation, fear and distraction, self-isolation, missing class, and leaving school during the day."* (Long et al., 2022)
- *"Dysmenorrhea and menorrhagia increased the risk of school absenteeism among rural girls."* (Sundari et al., 2022)

Cultural and Social Restrictions

Cultural taboos and misinformation amplify emotional burdens, as girls face restrictions in participation in daily activities or rituals. These experiences can lead to a lasting psychological burden and hinder positive identity development (Dutta, 2024; Sundari et al., 2022), that were noted in statements by:

- *"Restrictions in social interaction, self-medication, lack of knowledge about unhealthy coping with menstruation were problems experienced by adolescent girls in low and middle-income countries."* (Sundari et al., 2022)
- *"Menstruation was associated with emotional pressure due to cultural and religious restrictions."* (Dutta, 2024)

Inadequate Support and Misinformation

Without proper menstrual education, adolescents often rely on peers or family, who may perpetuate myths. This misinformation increases stress and can foster feelings of embarrassment and confusion during menstruation (Kochhar et al., 2022), deduced from:

- *"Knowledge attained by participants came from female friends and family members, but many held inaccurate ideas about their periods."* (Townsend et al., 2023)
- *"Poor knowledge, inadequate information, and exclusion lead to misconceptions and unhygienic practices during menstruation."* (Sundari et al., 2022)

Improvement with Interventions

Interventions, such as school-based menstrual education and accessible resources, have shown promise in reducing stress, improving self-efficacy, and fostering better emotional resilience among adolescents (Chen et al., 2023; Long et al., 2022), which can be interpreted from:

- "Early interventions may improve gender-based violence, adolescent pregnancy, early marriage, and school dropout outcomes." (Long et al, 2022)
- "Menstrual health interventions in schools have been shown to increase knowledge, confidence, and positive psychological health." (Ssesanga et al., 2023)

A matrix analysis of menstrual health literacy and adolescent mental health reveals a deeply interconnected web of challenges. Emotional distress, anxiety, stigma, and depression are closely linked, as menstrual stigma often leads to social isolation, exacerbating distress and depressive symptoms. Inadequate knowledge and misconceptions heighten shame and fear, making girls more vulnerable to mental health struggles.

A strong connection also exists between school absenteeism and cultural restrictions. Norms discouraging menstruating girls from daily activities, including school, contribute to absenteeism and academic struggles, reinforcing stigma and misconceptions.

Indirect interactions among these themes further complicate the issue. Poor coping mechanisms and depression are intertwined, as a lack of knowledge and support leads to helplessness and stress, increasing vulnerability to depression. While poor coping alone may not cause depression, its impact intensifies when combined with stigma, misinformation, and isolation.

Interventions play a crucial role in mitigating these effects. Access to menstrual education, hygiene products, and supportive environments reduces anxiety, boosts self-efficacy, and equips girls with the confidence to manage menstruation.

A key insight is that cultural and social restrictions act as a root cause, perpetuating stigma, absenteeism, and distress. Addressing these norms can break the cycle of misinformation and fear. Additionally, structured interventions, such as school and community menstrual health programs, providing accurate information and safe discussion spaces, serve as protective buffers against these challenges.

CONCLUSION

Menstrual health literacy is vital for reducing anxiety among adolescent girls, giving them a sense of control over their bodies. Research shows that education before menarche boosts confidence and reduces fear. Well-informed girls experience less stress and manage their cycles more effectively. However, menstrual hygiene remains a challenge, especially in low-income and rural areas, where limited access to sanitary products, poor disposal facilities, and cultural taboos contribute to school absenteeism and academic struggles, reinforcing gender disparities. Ensuring affordable menstrual products and better school hygiene facilities is crucial.

Interventions like school-based education programs, reusable menstrual products, and policy integration have proven effective in improving hygiene and psychological resilience. Research highlights key challenges: emotional distress, stigma, misinformation, and poor coping mechanisms. Addressing cultural restrictions is essential to dismantle stigma and encourage healthier attitudes. To tackle these issues, menstrual education should be part of school curricula, policies must prioritize hygiene management, and communities should work to break taboos.

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