MENSTRUAL HEALTH LITERACY AND REPRODUCTIVE AWARENESS AMONGVULNERABLE POPULATIONS IN LOW AND MIDDLE-INCOME COUNTRIES: LESSONS FOR NIGERIA

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Abstract

Menstrual health literacy (MHL) and reproductive awareness are essential for sexual and reproductive health (SRH) among women and girls worldwide. Insufficient MHL greatly impacts vulnerable groups in low- and middle-income countries, such as adolescents and girls with disabilities. Nigeria exemplifies this issue, with its significant adolescent birth rate of 107.3 per 1,000 women aged 15–19, highlighting the need for policy-focused investigations. This scoping review aimed to explore the evidence on menstrual health literacy (MHL) and reproductive awareness among vulnerable populations in low- and middle-income countries (LMICs). It focused on synthesizing barriers to accessing menstrual and reproductive health information, examining the psychosocial and educational consequences of menstrual health deficits, and identifying intervention strategies relevant to Nigeria. Utilizing the Arksey and O'Malley framework, enhanced by Levac et al. and reported per PRISMA-ScR guidelines, eight electronic databases were systematically searched for peer-reviewed literature published between January 2010 and December 2025, resulting in 83 studies that met the inclusion criteria.A thematic charting approach identified six key domains regarding menstrual and reproductive health: knowledge gaps, awareness deficits, barriers to information access, psychosocial consequences, educational outcomes, and intervention strategies. Findings highlighted prevalent knowledge deficits influenced by cultural taboos and inadequate WASH infrastructure, alongside institutional failures affecting overall wellbeing. Girls with disabilities and those in humanitarian contexts experience additional challenges. There is a critical need for comprehensive interventions within Nigeria's reproductive health policies, emphasizing menstrual health literacy, especially for marginalized groups.

Keywords: Menstrual health literacy, menstrual hygiene management, reproductive awareness, vulnerable populations, adolescents

Introduction

Menstruation is a universal biological process experienced by approximately 1.8 billion people worldwide, yet it remains embedded in layers of social stigma, cultural silence, and structural neglect, particularly in low- and middle-income countries (Sommer et al., 2016; World Health Organization [WHO], 2022). Menstrual health literacy (MHL), defined as the level of knowledge, understanding, and capacity to act on matters related to menstrual health, is increasingly recognised as a determinant not only of physical health but also of educational participation, psychosocial wellbeing, and gender equity (Holmes et al., 2021; Plesons et al., 2021).

The convergence of inadequate MHL, absent or insufficient water, sanitation, and hygiene (WASH) infrastructure, and socio-cultural taboos creates a toxic matrix of disadvantage for girls and women in LMICs. This is particularly pronounced among populations rendered vulnerable by disability, displacement, extreme poverty, geographic remoteness, or systemic exclusion from education (Wilbur et al., 2019; Logie et al., 2024). The past decade has witnessed growing scholarly attention to these issues, culminating in the United Nations Human Rights Council resolution of July 2024 declaring menstrual hygiene management essential to the human right to health and gender equity (European Society of Medicine, 2024).

Nigeria, with around 44 million adolescents aged 10–19, faces significant challenges including a high adolescent birth rate of 107.3 per 1,000 women aged 15–19, considerable school dropout rates among girls, a large internally displaced population, and severe WASH deficits. Despite having policies such as the National Policy on the Health and Development of Adolescents and Young People (2020–2024) and the National Reproductive Health Policy (2010), there are ongoing implementation gaps, particularly regarding menstrual health literacy as a specific focus area.

Within the social work and public health disciplines at Nigerian higher education institutions, growing scholarly attention to adolescent psychosocial wellbeing in the context of educational settings has begun to illuminate the psychosocial dimensions of these challenges. Research from Oyekola and Adebowale (2025), highlights how anxiety and depression significantly impair adolescent psychosocial wellbeing in Nigerian schools, findings that intersect directly with the documented emotional sequelae of menstrual stigma and poor MHL. Separately, the field of women's reproductive health research in Nigeria has benefited

from significant contributions around maternal health. SRH access, and contraceptive use, including work by researchers such as Afolabi whose scholarship on high-risk obstetric care and maternal reproductive health provides important structural context for understanding women's reproductive health trajectories in Nigeria (Banke-Thomas et al., 2020).

Against this backdrop, a comprehensive scoping review of the global evidence base, with a focused lens on its implications for Nigeria, is both timely and academically necessary.

Objectives

This scoping review was guided by four objectives:

1. To map the scope, volume, and nature of evidence on MHL and reproductive awareness among vulnerable populations in LMICs between 2010 and 2025.
2. To synthesise evidence on barriers to accessing menstrual and reproductive health information among vulnerable groups.
3. To examine the psychosocial and educational consequences of inadequate menstrual health literacy.
4. To identify and critically evaluate intervention strategies, with particular attention to their transferability to the Nigerian context.

Methods

Methodological Framework

This review adopts the Arksey and O'Malley (2005) scoping review framework, enhanced by Levac et al. (2010) and reported in accordance with PRISMA-ScR (Tricco et al., 2018), because it provides a systematic and transparent approach to mapping the breadth, nature, and gaps in the existing evidence on the research topic. Comprising five iterative stages: (1) identifying the research question; (2) identifying relevant studies; (3) study selection; (4) charting the data; and (5) collating, summarising, and reporting the results. Specifically: greater clarity in the rationale for the review purpose, iterative team-based study selection, and rigorous analytical synthesis rather than descriptive charting alone. Reporting follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist (Tricco et al., 2018; see Table 1 below).

Scoping reviews are methodologically distinct from systematic reviews in that they do not appraise evidence quality or perform meta-analysis; rather, they map the existing landscape of evidence, identify research gaps, and inform policy and practice (Munn et al., 2018). This

approach is appropriate given the heterogeneity of study designs, populations, and outcomes across the MHL and reproductive awareness literature in LMICs.

PRISMA-ScR Compliance Table

Table 1 presents the PRISMA-ScR compliance checklist, indicating where each reporting item is addressed in this review.

Methods

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This review adopts the Arksey and O'Malley (2005) scoping review framework, comprising five iterative stages: (1) identifying the research question; (2) identifying relevant studies; (3) study selection; (4) charting the data; and (5) collating, summarising, and reporting the results. The framework was operationalised with enhancements recommended by Levac et al. (2010), specifically: greater clarity in the rationale for the review purpose, iterative team-based study selection, and rigorous analytical synthesis rather than descriptive charting alone. Reporting follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist (Tricco et al., 2018; see Table 1 below).

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Table 1: PRISMA-ScR Checklist Adherence

PRISMA-ScR Item	Checklist Item	Location in This Review
Title	Identify the report as a scoping review	Title page
Abstract	Structured abstract: background, objectives, eligibility, sources, methods, results, conclusions	Abstract section
Introduction: Rationale	Describe the rationale for the review in the context of what is already known	Introduction
Introduction: Objectives	Provide an explicit statement of the questions and objectives	Objectives section
Methods: Protocol	Indicate whether a review protocol exists	Methods
Methods: Eligibility criteria	Specify inclusion/exclusion criteria and provide rationale	Eligibility criteria
Methods: Information sources	Describe all information sources searched	Search strategy
Methods: Search	Present full electronic search strategy for at least one database	Table 2 – Search terms
Methods: Selection	State process for selecting studies	Study selection
Methods: Data charting	Describe method of data charting	Data charting
Results: Selection	Provide numbers of records identified and included	Figure 1 – PRISMA flow
Results: Synthesis	Summarize key findings thematically	Results sections 4.1–4.6
Discussion	Summarize and interpret results; discuss limitations	Discussion
Conclusions	Provide general interpretation of results; implications for practice/research	Conclusion

Search Strategy and Information Sources

A comprehensive search was conducted across eight electronic databases: PubMed, Scopus, Web of Science, CINAHL, PsycINFO, Embase, African Journals Online (AJOL), and

Google Scholar. The search covered peer-reviewed literature published between January 2010 and December 2025. Boolean operators (AND, OR) were used to combine search terms across three conceptual domains: menstrual health, reproductive awareness/SRH, and vulnerable/marginalised populations in LMICs. Table 2 presents the full search strategy.

Table 2: Search Strategy and Key Terms by Domain

Search Domain	Primary Search Terms	Secondary/MeSH Terms
Menstrual Health	Menstrual health literacy; menstrual hygiene management; MHM; menarche; menstruation knowledge	Period poverty; sanitary products; dysmenorrhea; WASH
Reproductive Awareness	Reproductive health knowledge; sexual and reproductive health (SRH); SRH awareness; contraception knowledge	Family planning literacy; fertility awareness; SRH education
Vulnerable Populations	Adolescents; girls with disabilities; refugees; internally displaced persons; IDPs; rural populations; urban poor	Marginalised girls; out-of-school girls; slum communities; forced migration
Geographic Scope	Low- and middle-income countries; LMICs; sub-Saharan Africa; Nigeria; West Africa	Nigeria; Ghana; Uganda; Kenya; Ethiopia; Tanzania; Bangladesh; India
Outcomes	School absenteeism; psychosocial outcomes; mental health; educational performance; stigma; information barriers	Anxiety; depression; self-esteem; coping; gender-based violence
Interventions	School-based programmes; community interventions; peer education; health education; sanitary pad distribution	WASH intervention; comprehensive sexuality education; CSE; capacity building

Database-specific filters applied included: peer-reviewed articles; English language; publication date 2010–2025; human participants; female subjects or mixed-sex with disaggregated female data. Reference lists of included studies and key review articles were hand-searched to identify additional relevant studies. Grey literature (World Health Organization, United Nations Children's Fund (official name; originally *United Nations International Children's Emergency Fund*. United Nations Population Fund reports) was reviewed for contextual background but was not included as primary evidence in the thematic synthesis.

Eligibility Criteria

Inclusion Criteria

- Studies focusing on menstrual health literacy, menstrual hygiene management, reproductive awareness, SRH knowledge, or access to reproductive health information.
- Populations: adolescents, girls/women with disabilities, refugees, IDPs, rural communities, urban poor in LMICs.
- Geographic scope: any LMIC (World Bank classification); studies with specific Nigeria data prioritised for policy synthesis.
- Study designs: quantitative (cross-sectional, cohort, Randomized Controlled Trial), qualitative (phenomenological, ethnographic, grounded theory), mixed methods, and systematic/narrative reviews.
- Published January 2010–December 2025 in peer-reviewed journals.

Exclusion Criteria

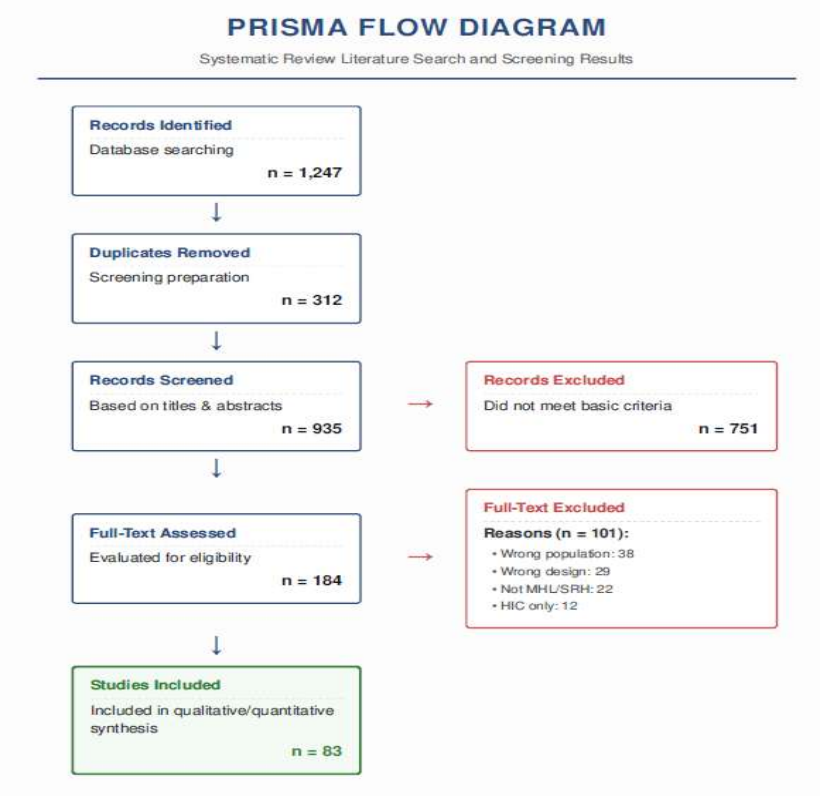
- Studies focusing exclusively on menstrual disorders (endometriosis, PCOS) without MHL/MHM dimensions.
- Studies in high-income countries (unless used for comparative conceptual framing).
- Editorials, commentaries, conference abstracts, and book chapters without empirical data.
- Studies lacking disaggregated data for female participants.

Study Selection and Data Charting

Title and abstract screening were conducted independently by two reviewers, followed by full-text review of potentially eligible articles. Disagreements were resolved through discussion. A standardised data charting form captured: first author, year, country, study design, population, sample size, key outcomes, and thematic domain. Following Levac et al. (2010), thematic synthesis was employed to move beyond mere description toward interpretive analysis relevant to Nigerian policy and practice.

A total of 1,247 records were identified through database searching. After removal of duplicates (n = 312), 935 titles/abstracts were screened. Following full-text review of 184 articles, 83 studies met the inclusion criteria andwere included in the final synthesis. Figure 1 illustrates the PRISMA-ScR flow diagram.

FIGURE 1 – PRISMA-ScR Flow Diagram



Conceptual and Theoretical Framework

This review integrates the Socio-Ecological Framework for menstrual hygiene management in schools (Sommer et al., 2016), the Reproductive Empowerment Framework developed by the International Center for Research on Women (ICRW), and Intersectionality Theory (Collins & Bilge, 2016) to provide a comprehensive understanding of menstrual health literacy (MHL) among vulnerable girls and women in low- and middle-income countries (LMICs). The socio-ecological framework explains how MHL is shaped by interacting influences at the individual, interpersonal, institutional, community, and policy levels, highlighting the role of structural determinants such as water, sanitation and hygiene (WASH) infrastructure, education systems, and sociocultural norms (Sommer et al., 2016). Building on this structural perspective, the reproductive empowerment framework emphasises that menstrual health extends beyond knowledge acquisition to include access to resources, decision-making autonomy, supportive social environments, and the ability to exercise reproductive agency (International Center for Research on Women [ICRW], n.d.). Complementing these perspectives, intersectionality theory recognises that vulnerabilities are

not experienced uniformly but are intensified by the interaction of multiple social identities and systems of oppression, including gender, disability, poverty, displacement, geographic location, and cultural or religious norms (Collins & Bilge, 2016). Together, these frameworks demonstrate that menstrual health literacy is a multidimensional construct influenced by structural environments, individual empowerment, and intersecting forms of social disadvantage. Consequently, improving MHL requires multi-level interventions that address systemic barriers, strengthen reproductive agency, and prioritise equity by responding to the diverse experiences of marginalised populations, particularly within complex contexts such as Nigeria (Sommer et al., 2016; Collins & Bilge, 2016)

Drawing on the psychosocial wellbeing literature relevant to Nigerian adolescents (Oyekola& Adebowale, 2025; Omigbodun& Belfer, 2016), this review further situates menstrual health within a mental health framework, recognising menstrual stigma and inadequate MHL as contributors to anxiety, depression, and reduced self-efficacy among adolescent girls. This integrative framing aligns with the emerging literature linking menstrual experience to mental health outcomes in sub-Saharan Africa (Kansiime et al., 2024; Okello et al., 2024).

Results: Thematic Synthesis

The 83 included studies spanned 24 countries, with the largest representation from sub-Saharan Africa (SSA; n = 54), South Asia (n = 18), and the Middle East/North Africa (n = 5). Six studies focused exclusively on Nigeria. Nigeria-specific studies were from the South-West (Ile-Ife, Lagos, Ibadan) and North-East (Taraba State). Populations included in-school adolescents (n = 38 studies), out-of-school adolescents (n = 10), girls with disabilities (n = 8), refugee/IDP populations (n = 11), rural women (n = 9), and urban poor (n = 7). Table 3 presents a summary thematic matrix.

Table 3: Thematic Evidence Matrix

Theme	No. Studies	Key Populations	Key Finding
Menstrual Knowledge Gaps	18	Adolescent girls, rural communities	Substantial pre-menarche knowledge deficit; mothers as primary (but inconsistent) information source
Reproductive	14	Adolescents, urban	Low contraception knowledge; SRH

Awareness Deficits		poor, IDPs	misconceptions prevalent; access to formal information limited
Barriers to Information Access	16	All vulnerable groups	Cultural taboos, poverty, inadequate WASH, teacher unpreparedness, school dropout
Psychosocial Consequences	12	School-going adolescents	Stigma, anxiety, depression, reduced self-esteem, social exclusion
Educational Outcomes	10	In-school girls	Menstruation-related absenteeism 20–40%; higher dropout risk
Intervention Strategies	13	School-based, community	Multi-component interventions most effective; peer education + WASH + product provision

Menstrual Knowledge Gaps

Across 18 studies, substantial knowledge gaps regarding menstruation were documented, particularly among pre-menarchal girls and those in rural settings. Holmes et al. (2021) conducted a narrative review of 61 studies across LMICs and high-income countries (HICs), finding that girls in LMICs were disproportionately uninformed about the biological basis of menstruation, commonly perceiving it as a sign of illness, curse, or punishment, particularly in sub-Saharan African and South Asian contexts. A culture of silence surrounds menstruation in many LMIC settings, with inadequate facilities predisposing adolescents to psychosocial trauma and cyclical school absenteeism (Ene et al., 2024).

In the Nigerian context, Ene et al. (2024), in a mixed-methods study among in-school adolescent girls in Abuja, found that students' class level and age at first menstruation were the major factors associated with good knowledge of menstruation and menstrual hygiene management; respondents' class, religion, and parents' educational qualifications were associated with positive attitudes, while religion and parity were associated with menstrual hygiene practice. A systematic narrative review of menstrual health and hygiene (MHH) across Nigeria, Ghana, Liberia, and The Gambia (International Health, 2025, advance publication) confirmed that socio-economic disparities, cultural stigma, and insufficient educational resources were major barriers to effective MHM, and that MHH needs in humanitarian settings, especially for IDPs, remain largely unmet.

Research from Taraba State, Nigeria, found that the mean age at menarche was 13.7 years, that over three-quarters (76.1%) of girls knew about menstruation before experiencing it, and that mothers were the leading information source (48.1%); yet only 57.6% had good menstrual hygiene management practices, and knowledge was significantly associated with good practice ($p < 0.001$; Mela et al., 2021). A Southeast Nigerian study found that only 44% of girls received pre-menarchal training, resulting in inappropriate menstrual experiences and poorer hygiene practice (cited in Mela et al., 2021).

These findings corroborate the global picture from Plesons et al. (2021), whose mapping review highlighted that adolescent girls in LMICs typically relied on informal, inconsistent, and often inaccurate information from mothers, older female relatives, and peers. Teachers and health professionals were rarely reported as primary sources, reflecting a systemic failure of formal education systems to incorporate comprehensive MHL curricula.

Reproductive Awareness Deficits

Fourteen studies documented significant deficits in broader reproductive awareness, including knowledge of contraception, STIs, the menstrual cycle's relationship to fertility, and SRH services. These deficits were most pronounced among adolescent girls in rural LMICs, but were also marked among urban poor and displaced populations.

Ivanova et al. (2018), in a systematic review covering 15 studies of refugee, migrant, and displaced girls and young women across Africa, found that knowledge of contraceptive methods, STIs, and HIV/AIDS was consistently limited. This population group frequently experienced gender-based and sexual violence, and access to SRH services was significantly constrained, particularly for IDPs living outside formal camp settings.

Logie et al. (2024), in a JBI scoping review of SRH among forcibly displaced persons in urban LMICs, drew on evidence from 90 documents (53 peer-reviewed articles, 37 grey literature reports) spanning 100 countries. The review found that most forcibly displaced persons were hosted in LMICs, with a growing urbanisation of displacement whereby the majority of refugees and nearly half (48%) of IDPs lived in urban areas. Findings underscored critical gaps in addressing SRH needs around fertility care, safe abortion, and sexual function, alongside regional knowledge gaps regarding urban refugees in Africa, Latin America, and the Caribbean.

In Nigeria, the SRH knowledge gap among young women has been documented in multiple national surveys. The NDHS 2018 reported that comprehensive knowledge of HIV/AIDS was below 30% among young women nationally, with stark rural-urban and North-South disparities. The adolescent birth rate of 107.3 per 1,000 women aged 15-19 reflects, in part, inadequate contraceptive knowledge and access, particularly in the predominantly rural North-East and North-West zones. A cross-sectional analysis of the 2018 NDHS further found that SRH knowledge was significantly associated with protective sexual behaviours among young women aged 15–24, mediated through reproductive empowerment dimensions (Afolabi Bolarinwa et al., cited in Ene et al., 2024).

Barriers to Information Access

Sixteen studies across all six vulnerability domains identified barriers to MHL and SRH information access, which operated at individual, household, community, school, and systems levels, consistent with the socio-ecological framework.

Socio-cultural and Attitudinal Barriers

Cultural taboos and menstrual stigma, often rooted in religious, traditional, and patriarchal norms, functioned as powerful barriers to open communication about menstruation and SRH across sub-Saharan Africa and South Asia. Across several LMICs in SSA, inadequate disposal options for menstrual products intensified shame and posed health risks (PMC, 2025). In humanitarian settings, limited access to accurate SRH information fostered misconceptions. A psychosocial review on menstrual stigma and discrimination in reproductive health access (PMC, 2025) confirmed that in displacement contexts, public spaces were perceived as unsafe and marked by fear and social isolation.

In Nigeria, the culture of silence surrounding menstruation documented by Ene et al. (2024) and the International Health narrative review (2025) reflects deep-seated patriarchal norms in which menstruation is considered a private matter to be managed invisibly. Interference with this norm by formal educational interventions frequently encounters parental and community resistance, particularly in conservative northern states.

Structural and Infrastructure Barriers

WASH deficits were identified as a pervasive structural barrier in 14 of the 16 barrier-focused studies. The lack of private, clean, and functional toilets in schools constituted a significant impediment to effective MHM; the absence of privacy and dignity in toilet facilities discouraged girls from changing menstrual products, leading to discomfort and

embarrassment (Frontiers in Reproductive Health, 2025). Studies from Kenya found that the lack of separate toilets for boys and girls was a major barrier to girls' education during menstruation (Sommer et al., 2016). Nigeria's progress on SDG 6 (WASH) has remained below regional averages, with UNICEF data indicating that a majority of public primary and secondary schools lack functional sex-segregated toilets and handwashing facilities.

For girls with disabilities, WASH barriers are compounded by physical inaccessibility of facilities. Wilbur et al. (2019), in a systematic PLOS ONE review of MHM requirements and barriers among disabled people in LMICs, documented that physical barriers (inaccessible latrines, absence of handrails, narrow doorways), communication barriers (inadequate health information in accessible formats), and attitudinal barriers (carer/family shame, healthcare provider discomfort) collectively rendered MHM deeply challenging. Approximately 80% of persons with disabilities globally live in LMICs, and a review of 15 LMICs found that only slightly more than 50% of children with disabilities were attending school (UNICEF, cited in Wilbur et al., 2019).

Economic Barriers

Period poverty, the inability to afford adequate menstrual products due to economic deprivation, was identified as a significant barrier in 11 studies. In many LMICs, girls used bark, paper, sand, mud, or cloth to absorb menstrual blood (Wilbur et al., 2019). Evidence from western Kenya documented adolescent girls engaging in transactional sex to obtain sanitary pads, with attendant risks of STIs, pregnancy, and school dropout. In Nigeria, the economic burden of commercial sanitary products on low-income families was documented as a key reason girls missed school during menstruation or used inadequate materials. The UNICEF Nigeria menstrual health case study (cited in IJISRT, 2025) highlighted peer-to-peer mentorship and local pad production as promising community responses to period poverty.

Educational System Barriers

Teacher unpreparedness and discomfort in addressing menstrual and reproductive health topics were consistently identified across African settings. Many teachers lacked training in MHM facilitation, and school curricula largely failed to incorporate evidence-based, age-appropriate menstrual and reproductive health content. The Family Life and HIV Education (FLHE) curriculum in Nigeria, while nationally mandated, suffered inconsistent implementation, frequently omitted menstrual health components, and was often taught by untrained teachers (Lagos Ministry of Health, 2022; UNFPA West Africa, 2017).

Psychosocial Consequences of Inadequate Menstrual Health Literacy

Twelve studies documented a range of psychosocial consequences associated with inadequate MHL, poor MHM, and menstrual stigma. These consequences included anxiety, depression, reduced self-esteem, shame, social exclusion, and in more severe cases, exposure to gender-based violence.

A cross-sectional analysis using the Mood and Feelings Questionnaire among adolescent girls in primary schools in Panyijar County, South Sudan (PLOS Global Public Health, 2025), found that knowing whether female classmates had their period was significantly associated with poorer mental health ($\beta = 1.75$, $p < 0.001$). Menstrual stigma, characterised by negative beliefs and practices surrounding menstruation, led to social exclusion and discrimination of menstruators. The intersection of menstrual stigma and period poverty had a profound impact on mental health and wellbeing, particularly in LMICs.

Kansiime et al. (2024), using baseline data from the MENISCUS trial in 60 secondary schools in Uganda, found a growing burden of mental health problems among adolescents in SSA, with a median prevalence of 40.8% (IQR 31.2–41.4%) in general population studies. Menstrual-related factors, including dysmenorrhea, stigma, and inadequate menstrual products, were significantly associated with total difficulties scores on the Strengths and Difficulties Questionnaire. In Tanzania, menstrual symptoms were found to be associated with depression and anxiety among adolescent girls (cited in Kansiime et al., 2024).

These psychosocial dimensions have direct resonance for Nigerian social work and public health scholarship. The emerging body of evidence from Nigeria documents a significant burden of anxiety and depression among secondary school adolescents, with anxiety and depression significantly affecting psychosocial wellbeing and poor family dynamics linked to higher symptoms (Oyekola& Adebowale, 2025). School-based mental health programmes were found to effectively promote healthy coping mechanisms and enhance students' psychosocial wellbeing. The structural parallels between this Nigerian evidence and the global MHL-mental health literature suggest that menstrual health is an underappreciated determinant of adolescent mental health in Nigeria's school system.

For girls in displacement and humanitarian contexts, the psychosocial burden is particularly acute. Research on access to preventive SRH care for women from refugee-like backgrounds (PMC, 2022) noted that women were afforded lower social status, experienced heightened vulnerability to gender-based violence, and faced significant barriers to mental health and

SRH services. The psychosocial toll of managing menstruation in unsafe, unequipped, and surveilled humanitarian spaces compounds pre-existing trauma and displacement stress.

Educational Outcomes

Ten studies examined the relationship between menstrual health and educational participation, consistently documenting a significant association between poor MHL/MHM and school absenteeism.

In the Ile-Ife study (Adedigba et al., cited in IJISRT, 2025), menstruation-related school absenteeism was 30.8%, with abdominal pain (37.7%) and malaise (18.5%) as the main menstrual disturbances. In Taraba State, Mela et al. (2021) found that absenteeism was significantly associated with menstrual knowledge and hygiene practice. Globally, a systematic review referenced in the MENISCUS trial (Kansiime et al., 2024) found that reviews published in 2013, 2016, and 2020 collectively identified limited and heterogeneous evidence on the educational impact of MHM interventions, calling for studies addressing pain management as the major reason for menstruation-related absenteeism.

The MENISCUS randomised controlled trial in Uganda (Kansiime et al., 2024; Lancet Global Health, 2025) the largest school-based MH trial in Africa to date assessed a multi-component intervention (menstrual health education, pain management, menstrual product provision, teacher training, WASH improvements) across 60 secondary schools between 2021 and 2024. The trial found statistically significant improvements in menstrual health outcomes, mental health problems, and educational performance in intervention schools. This represents landmark evidence for the effectiveness of multi-component, theory-driven MH interventions on education and psychosocial outcomes.

The MEGAMBO trial in The Gambia (Greenan et al., 2025; Journal of Adolescent Health) similarly used a cluster-randomised design across 50 villages, finding that a multi-component NGO-led intervention reduced self-reported school absenteeism due to menstruation, improved knowledge and attitudes, and reduced reproductive tract infection symptoms among school girls aged 13 and over.

Intervention Strategies

Thirteen studies evaluated or reviewed intervention strategies for improving MHL, reproductive awareness, and associated outcomes. The typology of interventions identified in the literature spans five categories: (1) educational/curriculum-based programmes; (2)

product provision and WASH infrastructure improvements; (3) community-based and peer education approaches; (4) health system strengthening; and (5) digital and technology-mediated interventions.

Educational and Curriculum-Based Interventions

School-based comprehensive sexuality education incorporating menstrual health components demonstrated consistent evidence of knowledge improvement, though effects on behavioural outcomes were more variable (Holmes et al., 2021). The MENISCUS-2 pilot (Kansiime et al., 2020, BMC Women's Health–adjacent literature) showed that a multi-component MHM intervention was acceptable, feasible to deliver, and potentially effective in improving menstruation knowledge and management. A multifaceted menstrual health intervention in Northwest Tanzania (BMC Women's Health, 2025) demonstrated improvements in psychosocial outcomes and menstrual practices among secondary schoolgirls. The PASS MHW study protocol (Okello et al., 2022, BMJ Open) documented a co-development process for a menstrual, sexual, and reproductive health intervention for schoolgirls in Northern Tanzania, emphasising co-production and participatory approaches.

Product Provision and WASH Infrastructure

The combination of sanitary product provision with WASH infrastructure improvement consistently outperformed either intervention in isolation. A scoping review of factors influencing MHM knowledge, attitudes, and practices in African rural schools (Frontiers in Reproductive Health, 2025) confirmed that WASH facility improvements, when combined with product provision and puberty education, produced the most sustained outcomes. Studies in Madagascar, Nepal, and Ethiopia documented that distribution of disposable and reusable menstrual products alone, without accompanying education, yielded limited long-term benefits.

Community and Peer Education

Peer education models that leverage social networks and community trust have demonstrated particular promise in contexts where formal health education is constrained by cultural or resource barriers. The UNICEF Nigeria case study (cited in IJISRT, 2025) highlighted peer-to-peer mentorship and local pad production as effective community-level responses. The MEGAMBO trial's peer education camp and mother outreach components produced significant improvements in knowledge and social support (Greenan et al., 2025).

Inclusive Interventions for Girls with Disabilities

A qualitative BMC Public Health study (Scott et al., 2021) in Kavrepalanchok District, Nepal, documented barriers to MHM among adolescents with various disabilities and emphasised that interventions must be tailored to impairment type. Girls with hearing impairments who attended specialised schools reported better MHM support than peers in mainstream settings, suggesting that inclusive school environments with trained teachers and accessible information materials are key. UNICEF's Guidance Note on Menstrual Health and Hygiene for Girls and Women with Disabilities (UNICEF, 2020) recommended that MHM interventions be co-designed with disabled girls and their carers, incorporate accessible communication formats, and integrate into broader disability-inclusive education policies.

Humanitarian and Displacement Contexts

In refugee and IDP settings, the WHO/Global Health Cluster partnership in Cox's Bazar, the Democratic Republic of Congo, and Yemen (WHO, 2020) demonstrated that integrated SRH and MHM programmes, delivered through community health workers and female peer supporters, improved access to menstrual products and SRH services. Self-care strategies (e.g., HIV self-testing, long-acting injectable contraception, reproductive health self-management) were identified by Logie et al. (2024) as holding significant promise for urban refugees unable to access formal health services.

Discussion

Synthesis of Key Findings

The 83 studies synthesised in this review converge on a consistent narrative: menstrual health literacy and reproductive awareness are systematically compromised among vulnerable populations in LMICs, not by individual deficiency, but by the intersection of structural inequality, institutional failure, cultural silencing, and resource deprivation. The six thematic domains knowledge gaps, reproductive awareness deficits, barriers to access, psychosocial consequences, educational outcomes, and intervention strategies — are not discrete but are mutually reinforcing. Knowledge deficits produce psychosocial harm; psychosocial harm produces educational dropout; dropout deepens vulnerability; vulnerability deepens knowledge deficits.

The evidence base has matured considerably since 2010. Earlier literature was largely descriptive and cross-sectional, documenting the extent of the problem without adequately

testing solutions. By contrast, the 2020–2025 period has seen a significant increase in rigorous trial evidence (MENISCUS, MEGAMBO, PASS MHW) demonstrating that multi-component, theory-grounded interventions can produce measurable improvements in MHL, mental health, and educational outcomes. This represents an important transition from characterisation to solution-building.

However, critical gaps persist. Evidence on girls with disabilities in sub-Saharan African LMICs remains sparse and methodologically weak. Evidence on urban poor populations, as distinct from rural populations, is underrepresented despite growing urbanisation of poverty and displacement. The intersection of menstrual health with child marriage, adolescent pregnancy, and gender-based violence is documented but insufficiently theorised in most intervention literature. Moreover, the evidence base remains overwhelmingly English-language and based on formal education settings, potentially excluding the most marginalised out-of-school populations.

Implications for Nigeria

Nigeria's policy and programmatic landscape presents both opportunities and significant gaps for translating this evidence into action. Table 4 maps key Nigerian policies against evidence-based recommendations.

Table 4: Nigeria Policy Landscape and Evidence-Based Recommendations

Policy / Programme	Relevance to Menstrual & Reproductive Health Literacy	Evidence-Based Gap / Recommendation
National Reproductive Health Policy (2010)	Acknowledges SRH needs of adolescents; mandates youth-friendly services	MHL not explicitly operationalised; no MHM indicators in policy monitoring framework
National Policy on Health & Development of Adolescents & Young People (2020–2024)	Prioritises ASRH; mandates Family Life and HIV Education (FLHE)	FLHE implementation varies widely; no mandatory menstrual health component
National Health Act (2014)	Establishes basic health care provision including SRH	IDPs and refugees largely excluded from SRH benefit package in practice
National School Health	Promotes healthy school	WASH infrastructure targets

Policy (2006, revised)	environments; includes puberty education	unmet in majority of public schools; disability inclusion absent
SDG 6 (WASH) & SDG 3 (Health)	Government WASH commitments affect MHM in schools and communities	Nigeria SDG progress on WASH below regional average; rural–urban divide persistent

Curriculum and Education Policy

The integration of evidence-based menstrual health literacy into the FLHE curriculum is an immediate policy priority. The MENISCUS and MEGAMBO trial evidence demonstrate that school-based multi-component interventions can improve both menstrual health outcomes and educational performance. Nigeria's national curriculum requires revision to include standardised, age-appropriate, culturally contextualised MHL content in upper primary and junior secondary school, delivered by trained teachers. Pre-service and in-service teacher training must include MHL facilitation as a core competency.

The evidence on school-based mental health interventions reviewed by Oyekola and Adebowale (2025) from the Social Work Department at the University of Ibadan is particularly pertinent here. Their finding that school-based mental health programmes effectively promote healthy coping mechanisms and enhance students' psychosocial wellbeing reinforces the case for embedding MHL within a broader school mental health framework, rather than treating it as a standalone public health programme. Social workers in Nigerian schools are ideally placed to facilitate this integration, given their training in psychosocial support, community engagement, and rights-based practice.

WASH Infrastructure

Nigeria's failure to meet SDG 6 WASH targets in school settings is a critical bottleneck. The evidence reviewed consistently demonstrates that menstrual hygiene management is impossible without functional, sex-segregated, private toilet facilities with access to water and handwashing facilities. The Federal Ministry of Education's WASH in Schools (WinS) initiative requires significantly increased budgetary allocation and accountability mechanisms to ensure that WASH facilities are maintained, accessible, and specifically designed to support menstrual hygiene. Local government areas with the highest proportions of out-of-school girls and IDP populations should be prioritised.

Girls with Disabilities

Nigeria's reproductive health policy framework is largely silent on the specific MHM needs of girls with physical, sensory, cognitive, and intellectual disabilities. Drawing on Wilbur et al. (2019) and the UNICEF Guidance Note (2020), Nigeria should adopt disability-inclusive MHL and MHM standards, requiring that WASH facilities in schools and health centres be physically accessible, that MHL educational materials be produced in accessible formats (Braille, sign language video, easy-read), and that healthcare providers receive training in supporting girls with disabilities in menstrual management.

Internally Displaced Persons and Humanitarian Contexts

With over two million IDPs, predominantly in the North-East, Nigeria's humanitarian context demands specialised attention. The evidence from Logie et al. (2024), Ivanova et al. (2018), and the WHO Global Health Cluster (2020) indicates that SRH and MHM needs in humanitarian settings are systematically neglected. The National Health Act (2014)'s basic health care provision framework must be explicitly extended to IDP populations through emergency health protocols. Community health extension workers (CHEWs) and social workers deployed in IDP camps should receive training in MHL facilitation and be equipped with menstrual hygiene products for distribution.

Reproductive Health Literacy Beyond School

A significant proportion of Nigerian adolescent girls are out of school: 35% by some estimates, and higher in northern states. These girls are entirely excluded from school-based MHL interventions. Community-based approaches, leveraging community health workers, women's organisations, and peer educators, are essential to reach out-of-school girls, young mothers, and women in informal settlements. The evidence on self-care strategies for SRH (Logie et al., 2024) and the effectiveness of community-based peer education models (MEGAMBO; UNICEF Nigeria) supports investment in community-level MHL infrastructure.

The Role of Social Work

Social work's distinctive contribution to MHL and reproductive health programming lies in its systemic, rights-based, and person-in-environment orientation. Research from the University of Ibadan's Social Work Department (Oyekola& Adebowale, 2025) demonstrates the importance of school-based social work interventions in addressing adolescent mental health, anxiety, and psychosocial wellbeing. Given the documented link between menstrual

stigma, knowledge deficits, and psychological distress, social workers in Nigerian secondary schools and community settings are critical frontline actors. Importantly, the Social Work Department, University of Ibadan, has also produced scholarship on social welfare practitioners' roles in adolescent reproductive health, noting that social workers have not fully embraced the relationship between their professional functions and adolescent reproductive health (Academia.edu, UI Social Work Department). Mainstreaming reproductive health literacy into social work curricula and practice guidelines at Nigerian universities would strengthen this institutional capacity.

Similarly, the contributions of Nigerian reproductive health researchers such as Bosede Bukola Afolabi (LASUCOM, LUTH) to scholarship on maternal reproductive health in Nigeria's megacity context (Banke-Thomas et al., 2020) provide an important structural backdrop: the emergency obstetric and maternal health vulnerabilities she documents are downstream consequences of reproductive health literacy deficits that begin in adolescence. Strengthening MHL in the formative adolescent years is a preventive reproductive health investment with direct implications for reducing maternal morbidity and mortality.

Limitations of This Review

Several limitations should be noted. First, as a scoping review, this paper does not perform quality appraisal of individual studies; the inclusion of lower-quality evidence is a deliberate methodological choice to map the breadth of the field, but limits the strength of conclusions drawn. Second, the search was restricted to English-language publications, potentially excluding important evidence from Francophone West Africa and Lusophone countries. Third, the review's focus on published literature may under-represent evidence from grey literature and programmatic evaluations. Fourth, direct comparability across studies is limited by heterogeneity in population definitions, outcome measures, and contextual factors.

Conclusion

This comprehensive scoping review has mapped the extensive evidence base on menstrual health literacy and reproductive awareness among vulnerable populations in LMICs, synthesising findings from 83 peer-reviewed studies across six thematic domains. The evidence converges on a powerful conclusion: inadequate MHL is not a private failing of individual girls or their families, but a structural injustice that intersects with poverty,

disability, displacement, gender inequality, and institutional neglect to compromise the health, education, and life trajectories of millions of girls and women in LMICs.

For Nigeria, the implications are urgent and actionable. The country's scale, demographic structure, regional disparities, and existing policy architecture create both a formidable challenge and a unique opportunity for transformative investment in MHL and reproductive health awareness. Evidence-based, multi-component, equity-responsive, and disability-inclusive programmes grounded in the lessons of the MENISCUS, MEGAMBO, and PASS MHW trials and adaptable to Nigeria's specific contexts represent the policy gold standard.

Three cross-cutting imperatives emerge from this review. First, MHL must be elevated from a marginal hygiene concern to a central pillar of Nigeria's reproductive health, education, and social protection frameworks. Second, the most vulnerable populations girls with disabilities, IDPs, out-of-school girls, and urban poor youth must be the primary beneficiaries of targeted, community-grounded interventions, not afterthoughts in universal programmes. Third, social work and community health disciplines must be formally integrated into MHL and reproductive health programme design and delivery, drawing on their distinctive competencies in psychosocial support, community mobilisation, and advocacy.

Future research should prioritise: longitudinal studies tracking MHL trajectories across the adolescent lifecycle; randomised controlled trials of community-based MHL interventions for out-of-school girls in Nigeria; mixed-methods studies exploring the intersection of MHL with child marriage and adolescent pregnancy in northern Nigeria; and disability-inclusive MHM intervention studies in sub-Saharan African settings. The time for action is now.

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Conflict of Interest

The authors declare no conflict of interest.

Data Availability

All data supporting this review are derived from published, peer-reviewed literature and are available through the respective journals and databases cited.

Ethical Approval

Not applicable. This is a scoping review of published literature and did not involve primary data collection from human participants.

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