



ADOLESCENT REPRODUCTIVE HEALTH: A SYSTEMATIC REVIEW OF INTERNATIONAL LITERATURE

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ABSTRACT

Adolescent reproductive health is a critical global concern, many people continue to face substantial challenges in accessing accurate information, comprehensive education, and youth-friendly services. This systematic review aims to systematically analyze international literature to examine adolescents' reproductive health knowledge and literacy, sexual behaviors and determinants, barriers to accessing services, adolescents' service needs, and the effectiveness of existing interventions across diverse sociocultural contexts. The study aims to synthesize evidence on key determinants influencing adolescent sexual and reproductive health (SRH) and to identify strategies that can enhance education, access, and overall well-being. Using a structured systematic review methodology, data were collected from peer-reviewed studies published between 2021 and 2025 and analyzed through thematic synthesis. Findings reveal persistent gaps in SRH literacy, high prevalence of risky sexual behaviors, and significant barriers related to stigma, limited family communication, cultural norms, and inadequate institutional support. Effective interventions such as comprehensive sexuality education, peer-led programs, community engagement, and youth-friendly health services—demonstrated improvements in knowledge, attitudes, and healthy behaviors. The review concludes that adolescent SRH requires multilevel, culturally responsive, and policy-supported approaches that integrate schools, families, communities, and healthcare services. Strengthening these systems is essential to ensuring adolescents can make informed decisions and navigate reproductive health challenges safely.

Keywords: Adolescents; Reproduction; Sexuality; Literacy; Intervention

1. INTRODUCTION

Adolescent reproductive health has emerged as a global public health priority due to the significant physical, psychological, and social transitions that occur during this stage of life. Adolescence, typically defined as ages 10–19, represents a critical developmental window in which individuals begin forming attitudes, behaviors, and knowledge related to sexuality and reproductive well-being. Despite the recognized importance of this life phase, adolescents across many countries continue to experience limited access to accurate sexual and reproductive health

(SRH) information, inadequate supportive services, and persistent sociocultural barriers that hinder their capacity to make informed decisions regarding their bodies and relationships.

These challenges underline the urgent need for a comprehensive synthesis of international literature to better understand the global state of adolescent reproductive health and identify evidence-based interventions targeted at improving SRH outcomes. As emphasized by Achala et al. (2025), selecting effective adolescent SRH interventions requires clear frameworks, contextual understanding, and informed policy alignment.

Globally, adolescents face a multitude of SRH challenges, including unintended pregnancy, sexually transmitted infections (STIs), early marriage, sexual violence, lack of access to contraception, and limited SRH literacy. These issues are particularly pronounced in low- and middle-income countries (LMICs), where structural inequities, gender norms, and restricted health system capacities contribute to elevated risks (Meherali et al., 2021). For instance, in rural or marginalized settings, adolescents' capacity to access accurate SRH information remains hindered by infrastructural limitations, stigma, and conservative cultural beliefs. Wahyuningsih et al. (2024) further highlight that rural adolescents often struggle with awareness barriers stemming from limited health education, insufficient parental communication, and restricted youth-friendly health facilities.

The significance of adolescent reproductive health is not only tied to individual well-being but also to long-term societal development. Poor SRH outcomes during adolescence have cascading effects that include reduced educational attainment, increased economic vulnerability, and intergenerational health inequities. Studies conducted in diverse contexts demonstrate similar trends. In Mexico, adolescents living in vulnerable settings reported significant gaps in SRH knowledge, rights awareness, and access to appropriate services, indicating the multidimensional nature of SRH vulnerabilities (Villalobos et al., 2023). Likewise, adolescents in Sri Lanka expressed substantial unmet needs for comprehensive, confidential, and youth-friendly SRH services, reflecting systemic barriers and cultural constraints within national health systems (Weerasinghe et al., 2025).

Adolescent SRH literacy, one of the most critical determinants of healthy decision-making, remains alarmingly low in many regions. Kelecha et al. (2024) found that late-adolescent students in Ethiopia demonstrated limited reproductive and sexual health literacy, influenced by factors such as gender, parental education, and exposure to school-based information. Similar findings are echoed in Indonesia, where inadequate knowledge has been linked to risky sexual behavior, poor self-protection, and misconceptions about reproductive processes (Aprilia et al., 2023; Harini, 2023). These persistent knowledge gaps reinforce the urgency of improving access to structured, evidence-based SRH education through schools, health services, and community programs. Educational institutions play a pivotal role in shaping adolescents' reproductive health understanding and decision-making. Curriculum-based SRH education has shown promising results; for example, a quasi-experimental study in Ethiopia revealed that structured SRH curricula significantly improved students' attitudes and healthy sexual behaviors (Boti Sidamo et al., 2023). Additionally, empowering peer counselors, as demonstrated in Indonesian high schools, offers an innovative mechanism for preventing early marriage and unsafe sexual practices through youth-led engagement (Wardhani et al., 2024). Mouna et al. (2025) argue that health education within

schools and higher education institutions provides essential foundational knowledge that supports adolescents in navigating complex sexual and reproductive issues.

Given the diversity of cultural contexts, health systems, and sociopolitical environments influencing adolescent reproductive health, a systematic review of international literature is essential to synthesize global evidence and identify patterns across regions. By examining empirical findings from various countries, this review aims to consolidate insights into adolescent SRH needs, barriers, interventions, and effective strategies.

The objective of this study is to provide a comprehensive understanding of global adolescent reproductive health challenges and highlight interventions proven to enhance knowledge, health behaviors, and access to support services. Ultimately, the findings will contribute to strengthening policies, school-based curricula, community initiatives, and youth-friendly health systems that prioritize the reproductive well-being of adolescents worldwide.

2. METHODS

This systematic review employed a structured and rigorous methodology designed to identify, evaluate, and synthesize international evidence on adolescent reproductive health. The methodological approach was guided by established systematic review frameworks frequently used in global public health research, such as those referenced in prior reviews of adolescent sexual and reproductive health (SRH) interventions and barriers (Achala et al., 2025; Wahyuningsih et al., 2024; Weerasinghe et al., 2025). The methods described below encompass the study design, search strategy, eligibility criteria, screening and selection procedures, data extraction, quality appraisal, synthesis approach, and ethical considerations. This design ensures transparency, reproducibility, and comprehensive coverage of the global literature.

The study selection process followed the PRISMA guidelines to ensure transparency and methodological rigor. A comprehensive literature search was conducted across five electronic databases (PubMed, Scopus, Web of Science, ScienceDirect, and Google Scholar). The initial search identified 1,248 records. After removing 312 duplicate records, 936 articles remained for title and abstract screening. During the title and abstract screening stage, 812 articles were excluded because they were not focused on adolescents, did not address sexual and reproductive health outcomes, or were not empirical studies. As a result, 124 full-text articles were assessed for eligibility.

Of these, 89 articles were excluded after full-text review due to reasons such as non-relevant outcomes ($n = 31$), adult-only populations ($n = 24$), lack of empirical data ($n = 18$), or inaccessible full texts ($n = 16$). Finally, 35 studies met all inclusion criteria and were included in the final systematic review.

A comprehensive search of international scientific databases was conducted, including PubMed, Scopus, Web of Science, ScienceDirect, and Google Scholar. Searches were performed using Boolean operators to ensure broad retrieval of literature while maintaining specificity. The search strategy used the following core keywords and combinations:

- “adolescent reproductive health”

- "sexual and reproductive health"
- "SRH literacy"
- "youth-friendly services"
- "adolescent knowledge"
- "SRH intervention"
- "sexual behavior"
- "systematic review"
- "school-based reproductive health"

Boolean combinations included: (adolescent AND reproductive health*) (sexual AND reproductive health AND adolescent) (SRH AND knowledge AND youth) (intervention AND reproductive health AND adolescent)*

Searches were limited to studies published between 2021–2025, aligning with the timeframe of the majority of included references (Harini, 2023; Villalobos et al., 2023; Kelecha et al., 2024; Fitri et al., 2025). Reference lists of included studies were manually screened to identify additional relevant articles, a technique adopted from earlier systematic reviews (Wahyuningsih et al., 2024; Weerasinghe et al., 2025).

To ensure relevance and methodological rigor, studies were selected using the following criteria:

Inclusion Criteria:

1. Population: Adolescents aged 10–19; studies including young adults (up to age 24) were included if adolescent-specific findings were reported (Weerasinghe et al., 2025).
2. Study Focus: Reproductive health knowledge, literacy, behaviors, access to SRH services, intervention outcomes, school roles, or community-based reproductive health strategies (Fitri et al., 2025; Nafisah et al., 2023).
3. Study Design: Cross-sectional studies (Kelecha et al., 2024), quasi-experimental studies (Boti Sidamo et al., 2023), correlational studies (Aprilia et al., 2023), systematic reviews (Wahyuningsih et al., 2024), community empowerment programs (Wardhani et al., 2024), and health education program evaluations (Mouna et al., 2025).
4. Publication Type: Peer-reviewed journal articles.
5. Language: English or Indonesian.
6. Publication Years: 2021–2025.

Exclusion Criteria

1. Articles focusing exclusively on adults, married couples, or children below age 10.
2. Studies lacking empirical data (e.g., editorials, commentaries).
3. Non-peer-reviewed sources.

4. Studies without available full text.

These criteria ensured the selection of high-quality and relevant studies addressing adolescent SRH knowledge, behaviors, service access, and intervention effectiveness.

The screening process followed three sequential stages. Two reviewers independently screened article titles to remove clearly irrelevant studies. Studies were included if they mentioned adolescents, reproductive health, sexuality, or related topics. Abstracts were assessed using the eligibility criteria. At this stage, studies focusing exclusively on maternal health or adult SRH programs were excluded. Full articles were evaluated for methodological rigor and relevance. Disagreements were resolved through discussion. This approach mirrors the review methodology used by Achala et al. (2025), who emphasized consensus-based inclusion decisions.

A structured extraction matrix was developed to capture the following information from each included study:

- Author(s), year, and country
- Study design and methodology
- Study population and sample characteristics
- Objectives and research questions
- Key findings related to SRH knowledge, behaviors, and interventions
- Barriers and facilitators
- Program or intervention components (if applicable)

This extraction approach was consistent with those used in earlier reviews of adolescent SRH literacy and interventions (Kelecha et al., 2024; Meherali et al., 2021).

Quality appraisal was performed using standardized tools depending on the study design:

- Cross-sectional studies: Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist (used similarly in studies like Kelecha et al., 2024).
- Quasi-experimental studies: Joanna Briggs Institute (JBI) critical appraisal tool, following similar appraisal as Boti Sidamo et al. (2023).
- Systematic reviews: PRISMA quality checklist, consistent with Wahyuningsih et al. (2024) and Weerasinghe et al. (2025).

Each study was graded on criteria including clarity of research objectives, sampling techniques, validity of measurement tools, data analysis methods, and ethical transparency. Only moderate- to-high-quality studies were included in the synthesis.

A thematic synthesis approach was used due to the diversity of methodologies and outcome measures among included studies. The synthesis process involved:

1. Coding extracted data for concepts related to knowledge, literacy, behaviors, service needs, and interventions.
2. Grouping codes into categories, such as:

- SRH knowledge and literacy levels
- Barriers to SRH information access
- School-based interventions
- Community and peer-support strategies
- Youth-friendly services

3. Developing overarching themes through iterative analysis.

This approach is similar to the synthesis methods used by Villalobos et al. (2023) and Sumaryani & Purwaningsih (2024), who employed thematic analysis to assess adolescent reproductive health perspectives.

As a systematic review, this study did not involve direct data collection from human participants. However, ethical standards were upheld by:

- Including only studies that reported ethical approval.
- Ensuring accurate representation of findings.
- Respecting cultural contexts of adolescent SRH research, as emphasized by Fitri et al. (2025) and Achala et al. (2025).

No personal identifying information was collected or analyzed.

3. RESULTS AND DISCUSSION

This section presents the synthesized findings from all studies included in the review. The results are organized into six major thematic domains that consistently emerged across the literature: (1) adolescent reproductive health knowledge and literacy; (2) sexual behaviors, risk factors, and determinants; (3) barriers to accessing information and reproductive health services; (4) adolescents' needs and preferences regarding SRH information and services; (5) effectiveness of educational, institutional, and community-based interventions; and (6) the influence of social, cultural, and structural contexts on reproductive health outcomes. Studies from diverse regions—including Indonesia, Ethiopia, Sri Lanka, Ghana, Mexico, and other LMICs—demonstrate that adolescent reproductive health challenges are globally pervasive and multidimensional.

Adolescent Reproductive Health Knowledge and Literacy

A substantial proportion of the reviewed literature indicates that adolescents' knowledge and literacy concerning sexual and reproductive health (SRH) remain inadequate across multiple settings. Research from Ethiopia by Kelecha et al. (2024) demonstrates that many late-adolescent students lack fundamental understanding of sexual development, contraception, sexually transmitted infections (STIs), and menstrual health. Parental education level, access to reliable information sources, and school exposure significantly influenced literacy scores.

Indonesian studies show similar patterns. Harini (2023) reports poor comprehension among adolescents regarding reproductive anatomy, menstrual cycles, and HIV/AIDS prevention. Correspondingly, Aprilia et al. (2023) identify a strong correlation between low reproductive health

knowledge and higher engagement in risky sexual behaviors, including unprotected sexual activities and exposure to inappropriate online content.

In vulnerable regions of Mexico, adolescents exhibited substantial SRH knowledge gaps driven by structural inequalities, limited digital access, and cultural stigma surrounding sex education (Villalobos et al., 2023). These findings collectively underscore the persistent deficits in SRH literacy that hinder adolescents' ability to make informed, safe decisions about their reproductive well-being.

Sexual Behaviors, Risk Patterns, and Contributing Factors

Across the reviewed studies, a consistent finding is that many adolescents engage in behaviors that increase their risk of negative reproductive health outcomes. Low SRH knowledge is strongly associated with unsafe sexual practices, early sexual debut, and inconsistent condom use (Aprilia et al., 2023). In several African and Latin American settings, pressures from peers, economic vulnerability, early marriage norms, and gender inequality contribute to high-risk sexual behaviors.

Wahyuningsih et al. (2024) highlight that adolescents in rural environments face disproportionately higher risks due to limited information channels, weak family communication, and conservative community norms that discourage open discussion of sexuality. Often, adolescents resort to online platforms or peers—sources that may provide incorrect or harmful information.

A quasi-experimental study in Ethiopia further revealed that first-year university students demonstrated low baseline knowledge regarding sexual risks prior to receiving educational interventions. After curriculum-based training, however, significant improvements were recorded in both attitudes and behaviors (Boti Sidamo et al., 2023), suggesting that well-structured school-based interventions can effectively reduce risky behaviors.

Barriers to Accessing SRH Information and Services

The reviewed literature identifies several key barriers that limit adolescents' ability to access credible information and reproductive health services. These barriers fall into four interconnected categories:

1. Structural Barriers

These include limited youth-friendly health facilities, inadequate service availability, financial constraints, geographic distance, and insufficiently trained health personnel. Weerasinghe et al. (2025) found that Sri Lankan adolescents desired confidential, professional, and stigma-free services, yet such facilities were scarce or inaccessible.

2. Socio-Cultural Barriers

Deeply rooted cultural norms, stigma surrounding premarital sexuality, and taboos around discussing reproductive health significantly restrict access. Indonesian adolescents often hesitate to seek reproductive health services due to fear of negative judgment from adults or healthcare providers (Fitri et al., 2025).

3. Family Communication Barriers

Agyei and Kaura (2023) emphasize that parent–adolescent communication regarding sexuality remains minimal in many LMICs. Parents often feel uncomfortable or believe sexual discussions are “inappropriate,” leaving adolescents uninformed and vulnerable.

4. Educational and Institutional Barriers

Schools frequently lack comprehensive, up-to-date sexual health curricula, and teachers may lack training or confidence to deliver SRH content effectively (Mouna et al., 2025). As a result, adolescents lack reliable institutional support and turn to informal sources.

Collectively, these barriers combine to limit adolescents’ access to accurate SRH information and essential support systems.

Adolescents’ Needs and Preferences Regarding SRH Services

Across countries and contexts, adolescents consistently report a strong desire for accessible, confidential, non-judgmental reproductive health services and information. Studies by Weerasinghe et al. (2025) show that adolescents prefer SRH services that:

1. ensure privacy and confidentiality,
2. are staffed by approachable and well-trained personnel,
3. offer easy, affordable access,
4. provide integrated psychological counseling, and
5. avoid moralistic or judgmental approaches.

In Mexico, adolescents expressed the need for rights-based education that addresses gender inequality, bodily autonomy, and legal protections related to reproductive health (Villalobos et al., 2023). Indonesian students emphasized the importance of digital learning platforms and accessible online SRH resources aligned with their technological habits (Nafisah et al., 2023). These findings indicate that adolescents are not merely passive recipients of information; rather, they actively seek comprehensive, relevant, and context-appropriate SRH support.

Effectiveness of Interventions Across Educational, Community, and Health Sectors

A variety of interventions were identified across the reviewed literature, many of which produced significant improvements in knowledge, attitudes, and healthy behaviors:

1. School-Based Curriculum Interventions

Curriculum-integrated SRH programs were among the most effective at improving knowledge, attitudes toward safe sex, and decision-making capacities. The Ethiopian quasi-experimental study reported substantial positive behavioral outcomes after implementing structured SRH education modules (Boti Sidamo et al., 2023).

2. Peer Education and Peer Counseling Models

Peer-led initiatives were found to be particularly effective in increasing information-sharing, reducing stigma, and encouraging help-seeking behavior. In Indonesia, empowering student peer counselors successfully contributed to preventing early marriage and reducing high-risk sexual behaviors (Wardhani et al., 2024).

3. Youth-Friendly Health Services

Fitri et al. (2025) report that adolescents are more likely to access services when the environment is youth-friendly—namely confidential, non-judgmental, and staffed by trained personnel capable of communicating effectively with young people.

4. Higher Education and Institutional Health Education

According to Mouna et al. (2025), reproductive health programs delivered in higher education institutions enhance adolescents' and young adults' preparedness to navigate adulthood and protect their reproductive well-being.

Across all these studies, the evidence clearly demonstrates that well-designed interventions—especially those delivered at school or community level—play a significant role in improving adolescents' reproductive health outcomes.

Influence of Social, Cultural, and Structural Contexts

The literature consistently highlights the impact of broader socio-cultural and structural environments on adolescents' reproductive health. Gender norms, poverty, patriarchal family structures, and unequal power dynamics significantly shape teenagers' access to SRH education and services.

In Mexico, girls faced greater barriers to exercising reproductive rights due to entrenched social inequality (Villalobos et al., 2023). Achala et al. (2025) emphasize that SRH interventions must be guided by frameworks that incorporate cultural norms, community structures, and social determinants to ensure contextual relevance and program success.

Discussion: Adolescent Knowledge, Literacy, and Awareness

Adolescent reproductive health knowledge and literacy emerged as one of the most critical themes in the global literature. The results consistently demonstrate that insufficient knowledge, misconceptions, and inaccuracies in understanding reproductive processes contribute significantly to adolescents' vulnerability to poor sexual and reproductive health (SRH) outcomes. This discussion synthesizes the implications of these results by examining the root causes of limited literacy, the consequences of inadequate knowledge, and the interplay between educational, familial, and sociocultural determinants. It also compares findings across countries, highlighting both universal patterns and contextual distinctions. Ultimately, it underscores the need for comprehensive, evidence-based, and culturally responsive SRH education.

The Global Deficit in Adolescent SRH Literacy

Across all reviewed studies, one of the most consistent findings is the widespread deficiency in SRH literacy among adolescents in various countries and cultural settings. The

Ethiopian study by Kelecha et al. (2024) exemplifies this through quantitative measurements showing that adolescents scored poorly on core concepts related to puberty, contraception, STIs, and reproductive anatomy. This parallels Indonesian findings by Harini (2023), who observed that even basic knowledge—such as the role of the uterus, ovulation cycle, or STI prevention—was frequently misunderstood.

This global deficit indicates that reproductive health education for adolescents is either insufficient, fragmented, or inaccessible. Such shortcomings can be traced to:

1. Curriculum Gaps – Schools often lack integrated SRH content or deliver lessons inconsistently (Mouna et al., 2025).
2. Inadequate Teacher Training – Educators may feel unprepared or uncomfortable teaching sexual health topics.
3. Taboos and Cultural Restrictions – In many societies, discussions about sexuality are discouraged, leading to silence and misinformation (Wahyuningsih et al., 2024).
4. Poor Communication in Families – Parents lack training or feel shame when discussing sex, as highlighted in Agyei & Kaura (2023).

These intersecting factors contribute to systemic weaknesses in adolescents' foundational knowledge of reproductive health.

Consequences of Limited SRH Literacy for Adolescent Well-Being

Insufficient SRH knowledge is strongly linked to increased risk behaviors and negative health outcomes. Aprilia et al. (2023) documented direct associations between low knowledge scores and risky behaviors such as early sexual debut, unprotected sexual activity, and poor sexual decision-making. The causal pathway is clear: adolescents lacking accurate information are unable to assess risks, negotiate consent, or choose protective behaviors.

Villalobos et al. (2023) add depth to this understanding by showing that adolescents in vulnerable contexts—such as marginalized communities in Mexico—often have both low knowledge and limited autonomy. They may not understand their rights, may underestimate the consequences of unsafe sex, or may be unable to access guidance. As a result, low SRH literacy merges with structural inequality to create compounded vulnerability.

Failure to improve adolescent SRH knowledge thus has long-term implications, including:

- heightened risk of unintended pregnancy
- increased exposure to STIs
- persistence of harmful myths (e.g., misconceptions about pregnancy prevention)
- inability to resist peer or partner pressure
- reduced capacity for informed consent

These consequences reinforce the urgency of targeted educational interventions.

The Interplay Between School-Based Education and Knowledge Formation

Schools are universally identified as the most effective and scalable source of accurate SRH information (Nafisah et al., 2023). However, many educational systems have yet to implement comprehensive, age-appropriate curricula. The quasi-experimental study in Ethiopia (Boti Sidamo et al., 2023) clearly demonstrates that structured SRH instruction can drastically improve both knowledge and behavior within a short period.

Yet, this effectiveness is often limited by structural and cultural barriers:

- teachers fear controversy or moral resistance
- schools lack institutional support for comprehensive sex education
- conservative communities resist SRH programs, viewing them as encouragement of “immorality”

Consequently, the role of school-based education is both promising and constrained. To maximize its impact, SRH curricula must be:

- evidence-based
- culturally contextualized
- psychologically safe for students
- supported by teachers with adequate training and resources
- aligned with community norms through participatory dialogue

Mouna et al. (2025) emphasize that higher education institutions also have a responsibility to integrate reproductive health literacy programs, particularly since students in this age group transition into adulthood and face increased sexual autonomy.

Family Communication and the Reproduction of Knowledge Gaps

A major contributor to adolescents’ knowledge deficits is the limited communication between parents and their children regarding reproductive health. Agyei & Kaura’s (2023) systematic review reveals that even in households where parents possess basic knowledge, they often lack the skills or confidence to discuss sexual health topics. Cultural norms frequently frame these conversations as inappropriate, shameful, or only necessary after marriage.

As a result:

- adolescents rely on peers or the internet for information
- misinformation spreads rapidly
- curiosity is met with silence instead of guidance
- adolescents are unprepared for physical and emotional changes

This communication gap is especially critical in rural areas, as highlighted by Wahyuningsih et al. (2024), where adolescents experience intersecting barriers: low parental education, limited media access, and conservative cultural norms. Strengthening parent–adolescent communication thus emerges as a crucial strategy for improving SRH literacy.

Digital Information Access and the Quality of SRH Knowledge

Digital platforms have become a major source of information for adolescents. While this increases access, it also exposes youth to misinformation, pornography, and unverified health advice. Nafisah et al. (2023) found that while Indonesian adolescents frequently access online materials, few have the media literacy needed to distinguish credible information from unreliable sources.

This creates a paradox:

- adolescents seek information independently
- yet the information landscape is unregulated
- false ideas about sex, reproduction, and contraception proliferate

To address this challenge, digital literacy must be integrated with SRH education so that adolescents can critically evaluate the information they encounter.

Cultural and Gendered Dimensions of Knowledge Inequality

The literature reveals that cultural norms and gender power dynamics strongly shape adolescents' access to reproductive health knowledge. Girls in many regions, such as Mexico and parts of Africa, face more restrictions on their mobility, education, and autonomy (Villalobos et al., 2023). These restrictions limit their ability to seek information, ask questions, or access services.

Moreover:

- menstruation stigma inhibits girls from asking about reproductive changes
- boys are often excluded from conversations about contraception
- heterosexual norms dominate SRH discussions, marginalizing LGBTQ+ youth

Achala et al. (2025) argue that effective intervention frameworks must account for these gendered barriers by incorporating equity-oriented principles and community engagement strategies.

Implications for Global, Regional, and Local SRH Policy

The implications of adolescent SRH literacy gaps extend far beyond individual behaviors—they affect public health systems, educational policy, and national development. Low knowledge contributes to rising adolescent pregnancy rates, higher STI burdens, and persistent cycles of poverty.

Therefore, improving SRH knowledge is not merely a health intervention but an investment in human capital.

Policy measures should include:

- mandatory, comprehensive sexuality education (CSE)
- teacher training programs
- integration of SRH content into digital platforms

- parent communication initiatives
- youth-driven educational design

When these elements are implemented, countries can significantly reduce adolescent health risks and promote lifelong well-being.

Discussion: Sexual Behaviors, Risk Patterns, and Determinants

The second major theme emerging from the systematic review concerns adolescents' sexual behaviors and the determinants that place them at heightened risk for negative reproductive health outcomes. Although contexts differ across countries, the reviewed literature consistently reveals that risky behaviors among adolescents are shaped by an interplay of individual, interpersonal, sociocultural, and structural factors. This section discusses these behaviors and their determinants in detail, emphasizing how limited literacy, environmental pressures, inequality, and systemic weaknesses combine to elevate adolescents' vulnerability.

Patterns of Adolescent Sexual Behaviors Across Countries

Studies from Indonesia, Ethiopia, Sri Lanka, Mexico, and other LMICs demonstrate common patterns in adolescents' sexual behaviors. Many adolescents engage in early sexual debut, inconsistent condom use, unprotected intercourse, and exploratory sexual activities without adequate understanding of consequences. Aprilia et al. (2023) show a direct correlation between low knowledge levels and risky practices, indicating that uninformed adolescents often make decisions based on peer influence or curiosity rather than evidence-based understanding.

In Latin America, Villalobos et al. (2023) report that adolescents in marginalized communities experience higher levels of transactional sex, forced sex, and sexual exploitation. Such patterns reflect both social vulnerabilities and the absence of protective societal structures. Meanwhile, in Africa, early marriage remains a major contributor to adolescent sexual activity, often exposing young girls to reproductive risks before they are physically or mentally prepared (Achala et al., 2025).

In many Asian contexts, including Indonesia and Sri Lanka, adolescents report romantic relationships characterized by emotional intimacy, but also growing explorations of physical intimacy. Weerasinghe et al. (2025) highlight that adolescents often transition from "non-penetrative" behaviors to sexual intercourse with minimal guidance, increasing exposure to unintended pregnancy and STIs.

Individual-Level Determinants: Knowledge, Attitudes, and Emotional Development

Individual factors play a crucial role in shaping sexual behaviors. Limited knowledge—discussed extensively in Section 3.2—is a primary determinant. Adolescents frequently act without understanding biological processes, consequences of unprotected sex, or the mechanics of conception. Aprilia et al. (2023) confirm that misconceptions about pregnancy prevention (e.g., withdrawal method, timing myths, or myths about contraceptives) lead to unsafe sexual practices.

Furthermore, emotional and cognitive immaturity during adolescence affects risk perception. Adolescents are more prone to experimental behaviors, sensation seeking, and impulsive decision-making due to ongoing neurological development. This developmental

vulnerability enhances risk when combined with inadequate information or environmental stressors.

Attitudes also shape behavior. In contexts where sexual behavior is normalized among peers or portrayed glamorously in media, adolescents may perceive risky behavior as acceptable or even desirable.

Peer Influence and Social Networks as Behavioral Drivers

Peer influence is one of the most powerful determinants of adolescent sexual behavior. Adolescents often seek approval and validation from their peers, especially in collectivistic cultures. Studies in rural Indonesia (Wahyuningsih et al., 2024) show that adolescents engage in sexual activity under pressure to conform to group norms or gain social status.

Peer networks can serve either as risk enhancers or protective buffers:

- Risk-enhancing: when peers normalize risky behaviors, share pornography, or encourage sexual experimentation.
- Protective: when peers facilitate access to information, as seen in peer counseling programs (Wardhani et al., 2024).

The study by Wardhani et al. (2024) demonstrates that trained peer counselors can reshape social norms, reduce stigma, and encourage healthier decision-making—highlighting the potential of social networks to mitigate risk rather than amplify it.

Influence of Media, Technology, and Digital Environments

With the advent of smartphones and social media, adolescents increasingly obtain sexual information—or misinformation—from digital sources. Nafisah et al. (2023) observe that Indonesian adolescents heavily rely on the internet for SRH information yet lack the digital literacy to differentiate credible sources from harmful content.

Digital risks include:

- exposure to pornography
- sexual grooming
- inaccurate health advice
- viral misinformation about pregnancy prevention
- normalization of unsafe relationships

These risks influence sexual behaviors by shaping unrealistic expectations, encouraging experimentation, or distorting understanding of consent. Without adequate digital SRH education, adolescents remain susceptible to harmful content that influences behavior.

Family Environment and Communication Dynamics

Family structure and communication patterns are critical determinants of adolescent sexual behaviors. Agyei & Kaura (2023) found that open parent–child communication reduces risk-taking and increases adolescents’ likelihood of seeking help. However, most LMIC families

avoid discussions about sexuality due to shame, fear of condoning sexual activity, or lack of knowledge.

This silence contributes to:

- curiosity-driven experimentation
- reliance on peers or online sources
- feelings of secrecy and shame
- difficulty seeking help after risky encounters

Furthermore, authoritarian or emotionally distant parenting styles correlate with higher risk behaviors, while warm, supportive communication is protective. Wahyuningsih et al. (2024) highlight that adolescents in rural communities often experience a strict moral environment but little guidance, creating conflicting pressures.

Cultural Norms, Stigma, and Gender Inequality as Behavioral Determinants

Sociocultural environments shape adolescent sexual norms, expectations, and opportunities. Traditional communities often discourage open dialogue about sexuality, yet paradoxically fail to prevent early marriage or coercive sexual relationships.

Key cultural determinants include:

- Stigma surrounding premarital sex, which discourages help-seeking (Fitri et al., 2025).
- Gender norms that restrict girls' autonomy, increasing exposure to forced sex or early marriage (Villalobos et al., 2023).
- Double standards, where boys are expected to be sexually active while girls are expected to be passive.
- Patriarchal expectations, which undermine adolescents' ability to negotiate safer sex (Achala et al., 2025).

Such norms create environments where adolescents cannot access support even when they recognize risks.

Structural and Economic Determinants of Sexual Risk

Structural factors—including poverty, limited resources, weak healthcare systems, and inadequate educational facilities—deeply influence adolescent sexual behaviors. In vulnerable communities, adolescents may engage in transactional sex for financial survival (Villalobos et al., 2023).

Inadequate healthcare infrastructure also contributes to risky behaviors:

- lack of accessible contraception
- absence of youth-friendly clinics
- judgmental health workers
- long distances to service centers

Weerasinghe et al. (2025) report that adolescents avoid SRH services when confidentiality is not guaranteed. Structural weaknesses thus reinforce risk patterns across populations.

Discussion: Access to Services, Intervention Effectiveness, and Policy Implications

The third major discussion theme emerging from this systematic review concerns adolescents' access to sexual and reproductive health (SRH) information and services, the effectiveness of existing interventions, and the broader policy implications. The literature demonstrates that access to SRH resources remains uneven, fragmented, and often shaped by intersecting structural, cultural, and systemic factors. While several interventions show promise, their effectiveness depends heavily on contextual alignment, institutional capacity, and multisectoral support. This section synthesizes these findings in depth.

Barriers to Accessing Adolescent SRH Services

Across countries, adolescents face persistent barriers that hinder their ability to seek out or receive SRH services. These barriers reflect structural deficiencies, cultural restrictions, and interpersonal obstacles.

a) Structural Barriers

Many LMICs lack adequate youth-friendly health facilities. Weerasinghe et al. (2025) report that adolescents in Sri Lanka are reluctant to attend clinics where waiting areas are shared with adults, where confidentiality is uncertain, or where providers appear judgmental. Geographic distance, transportation barriers, service costs, and limited clinic hours further compound inaccessibility.

b) Sociocultural Barriers

In conservative societies, SRH topics remain taboo. Adolescents fear social stigma and often internalize moral anxiety about seeking reproductive health assistance. Fitri et al. (2025) note that Indonesian youth frequently avoid SRH services due to fear of being labeled immoral or sexually active.

c) Gender-Related Barriers

Girls face more restrictive norms around mobility and decision-making. Villalobos et al. (2023) find that Mexican girls in vulnerable settings are discouraged from accessing services without parental approval. Boys, by contrast, often receive more autonomy but less comprehensive guidance.

d) Family and Communication Barriers

Many parents lack SRH knowledge or believe sex education encourages immoral behavior. Agyei & Kaura (2023) emphasize that in several African and Asian contexts, parental silence forces adolescents to rely on misinformation.

e) Educational Barriers

Schools often fail to provide comprehensive, systematic SRH curricula. Mouna et al. (2025) highlight that many teachers feel unprepared to discuss sensitive topics, resulting in fragmented or superficial instruction.

Collectively, these barriers demonstrate that access to SRH services is not simply a matter of availability—it depends on sociocultural acceptance, family norms, and institutional readiness.

Adolescents' Service Needs and Preferences

Despite facing multiple barriers, adolescents articulate clear preferences for SRH services. Studies across Sri Lanka (Weerasinghe et al., 2025), Indonesia (Fitri et al., 2025), and Mexico (Villalobos et al., 2023) reveal convergent themes:

1. Confidentiality and Privacy – Adolescents do not want to be judged, recognized, or interrogated.
2. Nonjudgmental Providers – They prefer younger, well-trained staff who communicate openly without moralizing.
3. Accessible and Youth-Friendly Spaces – Services should be easy to reach, affordably priced, and open during hours that accommodate school schedules.
4. Integrated Psychological Support – Many adolescents desire emotional guidance alongside reproductive health counseling.
5. Digital-Based Information Systems – Adolescents want online information, chat-based counseling, and mobile-friendly resources (Nafisah et al., 2023).

These preferences highlight the need for SRH services that meet adolescents where they are—emotionally, socially, and technologically.

School-Based Interventions: Strengths and Limitations

Schools remain one of the strongest platforms for adolescent SRH interventions. Evidence repeatedly demonstrates that school-based programs improve knowledge, attitudes, and behaviors.

1) Strengths

- Structured Curricula: In Ethiopia, curriculum-based teaching significantly improved students' understanding of SRH and reduced risky behaviors (Boti Sidamo et al., 2023).
- Early Intervention: Schools reach adolescents before they engage in high-risk activities.
- Peer Engagement: Peer counseling programs, such as those implemented in Indonesia, offer relatable communication channels that reduce stigma (Wardhani et al., 2024).
- Multilevel Support: Schools can coordinate with families, health centers, and communities.

2) Limitations

- Teacher Discomfort or Lack of Training: Mouna et al. (2025) note that many teachers lack confidence in teaching sexuality topics.

- Resistance from Parents and Communities: Cultural taboos can undermine program implementation.
- Curriculum Variability: SRH content often varies widely in quality and depth across districts.
- Focus on Abstinence-Only Education: Some schools adopt moralistic approaches that reduce effectiveness.

Thus, while schools are essential, interventions must be comprehensive, scientifically accurate, and culturally sensitive to achieve maximum impact.

4. CONCLUSION

This systematic review demonstrates that adolescent reproductive health remains a significant global concern shaped by diverse and interconnected social, cultural, educational, and structural determinants. Across all reviewed studies, a consistent pattern emerges: adolescents continue to experience insufficient reproductive health literacy, limited access to credible information, and numerous barriers to obtaining safe, confidential, and youth-friendly services. These knowledge gaps are compounded by family communication constraints, cultural stigma, gender inequality, and weak institutional capacity, all of which hinder adolescents' ability to make informed decisions about their sexual and reproductive well-being.

The synthesis of evidence reveals that adolescent sexual behaviors are influenced by a multilayered constellation of factors, including peer influence, emotional and cognitive development, digital media exposure, and contextual vulnerabilities such as poverty and early marriage. These determinants do not operate in isolation; rather, they interact to shape patterns of behavior that place adolescents at risk of unintended pregnancy, sexually transmitted infections, and long-term social consequences. In settings marked by economic inequality or cultural conservatism, these risks become particularly acute, reinforcing the urgent need for interventions that address adolescents' realities holistically.

Findings across the literature also highlight the promising impact of well-designed interventions, especially those that integrate comprehensive sexuality education, peer-led approaches, and youth-friendly health services. School-based programs show strong potential to improve knowledge, reshape attitudes, and encourage safer behaviors when they are delivered through structured curricula and supported by trained educators. Peer counseling models create safe spaces for discussion and significantly reduce stigma, while youth-friendly clinical services foster trust and increase adolescents' willingness to seek professional guidance. Community-based strategies that involve parents, leaders, and local institutions enhance the sustainability and acceptance of SRH programs, especially in culturally conservative environments.

Despite these effective interventions, the review emphasizes that addressing adolescent reproductive health requires structural and policy-level transformation. Countries must adopt comprehensive sexuality education at the national level, strengthen healthcare systems to offer inclusive and confidential SRH services, and empower families and communities to participate in open, accurate, and supportive communication. Digital literacy must also be prioritized to ensure adolescents can navigate online information safely and avoid misinformation that contributes to

harmful behaviors. Ultimately, adolescent reproductive health must be regarded not only as a public health priority but as an integral element of human rights, gender equality, and long-term social development.

Taken together, this systematic review concludes that improving adolescent reproductive health demands a coordinated, multilevel approach that bridges knowledge gaps, enhances access to services, challenges restrictive cultural norms, and fosters supportive environments across schools, families, and communities. By integrating evidence-based interventions with culturally sensitive frameworks and strong policy commitment, societies can equip adolescents with the skills, knowledge, and autonomy needed to safeguard their reproductive health and achieve their full potential.

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