

Strategic Communication Design for enhanced MHHM Practices among School Girls in Tamil Nadu

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ABSTRACT

Menstrual health is more than just a hygiene issue—it's a matter of dignity and empowerment. In Tamil Nadu, adolescent girls continue to face stigma, misinformation, and a lack of basic facilities when it comes to managing their periods. This study explores how strategic communication can help close these gaps. We conducted a mixed-methods study involving 750 schoolgirls across six districts in Tamil Nadu, and implemented a communication intervention among selected students. The results showed that culturally sensitive communication, especially when delivered through trusted channels like schools, significantly improved menstrual knowledge and practices. This paper advocates for enhanced menstrual education, improved infrastructure, and robust policies to support girls during a natural and critical phase of their lives.

Keywords: Menstrual health, Strategic Communication, Schoolgirls, Tamil Nadu, Education, Stigma, Hygiene, Toolkit, MHHM.

1. INTRODUCTION

Menstruation, a natural and essential biological process, is central to women's reproductive health and wellbeing. Yet in many parts of India, including Tamil Nadu, menstruation remains shrouded in stigma, misinformation, and cultural silence. Despite progress in literacy, healthcare, and women's empowerment, a persistent gap exists in how menstruation is understood, discussed, and managed, especially among adolescent schoolgirls. This silence surrounding menstruation has significant consequences: it affects girls' self-esteem, limits their access to accurate information, impedes hygienic practices, and contributes to school absenteeism and social exclusion. This study seeks to understand how strategic communication can serve as a transformative tool in addressing these longstanding barriers.

The onset of menstruation represents a pivotal point in a girl's life, often accompanied by emotional, physical, and social changes. In ideal circumstances, this transition should be met with support, information, and dignity. However, research shows that many girls in Tamil Nadu are unaware of menstruation before their first period. Caught off guard, they often experience fear, confusion, and embarrassment. The lack of preparation is compounded by societal taboos that discourage open discussion. In many families and schools, menstruation is treated as a private matter, unfit for public or even familial conversation. This culture of silence perpetuates misinformation and leaves girls to navigate menstruation alone, often with harmful consequences.

Tamil Nadu, a state celebrated for its educational and healthcare infrastructure, is not immune to these challenges. Urban and rural disparities, coupled with socio-cultural conservatism, influence how menstrual health is approached. While government and NGO-led initiatives have made strides in distributing sanitary products and building WASH (Water, Sanitation, and Hygiene) facilities, the core issues of stigma, education, and behavioral change remain inadequately

addressed. Most menstrual health interventions focus on tangible needs—pads, toilets, incinerators—but fail to address the underlying beliefs and attitudes that govern menstrual behavior.

Strategic communication—a structured, culturally informed, and participatory approach to delivering health messages—has the potential to bridge this gap. The significance of this research lies in its holistic approach. It does not treat menstruation as an isolated issue but as one deeply interwoven with gender norms, educational structures, family dynamics, and media representations. By integrating Strategic Communication principles into menstrual health programs, this study aims to develop a culture of openness, dignity, and support. It explores how school-based interventions, peer support, teacher engagement, family dialogue can work together to create informed, confident, and empowered menstruators.

The following sections explore deeper into the existing literature on menstrual health communication and create the methodological framework needed for this study, present the findings in comprehensive manner, and discuss their implications for policy, practice, and future research. Together, they present a compelling scenario for why breaking the silence around menstruation is not just a health imperative but a social concern

2. LITERATURE REVIEW

A growing body of research has addressed the multifaceted challenges surrounding menstrual health and hygiene management (MHM), particularly among adolescent girls in low- and middle-income countries like India. These challenges are not limited to the availability of sanitary products or WASH (Water, Sanitation, and Hygiene) infrastructure, but also encompass deep-rooted cultural taboos, societal silence, and misinformation about menstruation. The literature consistently emphasizes that tackling menstrual health effectively requires a multidimensional approach—one that integrates education, infrastructure, cultural sensitivity communication.

Several scholars have documented how inadequate menstrual knowledge among adolescent girls leads to confusion, fear, and stigma. For instance, (Ghosh S, 2013) explored health communication practices in rural West Bengal. They found that girls often received fragmented or incorrect information from peers or senior women, rather than from formal educational channels. Similar findings were echoed by (Gundi M, 2019), who noted that despite national campaigns on menstrual hygiene, misinformation continues to thrive due to a lack of context-specific communication strategies.

(Ellen McCammon, 2020) proposed a socio-ecological framework for understanding menstrual health, highlighting the interconnectedness of individual, familial, institutional, and community factors. This framework suggests that menstrual practices are not merely individual choices but are shaped by multiple layers of influence, from cultural beliefs at home to the institutional norms in schools. This reinforces the importance of engaging all stakeholders—students, teachers, parents, and community leaders—in designing menstrual health programs.

Researches also underscores the pivotal role of interpersonal communication in shaping menstrual knowledge. Parent-child interactions are often the first source of information, but in many Indian households, such conversations are either limited or laced with taboos. (Kuczynski, 2003) and (Moschis G. P., 1985) emphasized that communication patterns within families—whether open or restrictive—greatly influence how children perceive health topics, including menstruation. Furthermore, studies like (Ellen Matthies, 2012) demonstrate that consistent parental modelling has a lasting effect on how adolescent girls manage their periods.

Education systems also play a critical role. Several studies have evaluated school-based menstrual health programs and found them to be inconsistently delivered. For example, (Narayan, 2020) observed that Tamil Nadu's schools lack a standardized curriculum on menstrual health. Many sessions, if conducted at all, are brief, gender-exclusive, and lack cultural relevance. This shortcoming has been corroborated by the (CAG-Report, 2022), which pointed to infrastructural deficits and poor training among educators in handling menstrual health topics.

Community-based and peer-led interventions have shown promise in bridging some of these gaps. The PRAGATI model, evaluated by (Dwivedi, 2020), leveraged peer education to develop supportive environments where girls could freely discuss menstruation. The program saw measurable improvements in awareness, attitudes, and hygienic practices. (Gupta, 2019) also stressed the value of involving local health workers and community leaders, noting that culturally sensitive outreach could significantly reduce stigma.

Information, Education, and Communication (IEC) campaigns have been widely used in public health to promote behavior change. (O'Sullivan, 2003) proposed a detailed field guide for designing culturally tailored IEC strategies, advocating the use of multiple formats—print, digital, interpersonal—to ensure broad reach and retention. However, studies such as (Panda A, 2009) and (Singh, 2020) suggest that the success of these campaigns' hinges on community participation and credibility of the message source.

The influence of media representations has also been extensively analyzed. (Chrisler, 2008) and (Johnston-Robledo, 2013) argue that mainstream media often portrays menstruation as a problem, promoting silence and shame. (Kilbourne, 2021) criticized the depiction of menstrual products in advertisements, noting that the use of euphemisms and sanitized imagery

reinforces negative perceptions. These media portrayals distort young girls' understanding and contribute to the belief that menstruation is something to be concealed.

More recent studies have also explored the use of digital platforms in menstrual health education. With increasing access to mobile phones and internet connectivity, digital tools are becoming viable channels for disseminating menstrual health information. (Maitri Vayeda, 2021) observed that mobile-based educational programs improved both knowledge and practice, particularly among tribal communities in Gujarat. However, such interventions must be designed with care to avoid replicating existing biases or excluding girls with limited digital access.

Psychological and emotional dimensions of menstruation have also gained attention in the literature. (Oxley, 1998) highlighted the internalization of stigma and its effects on girls' self-image feeling ashamed or impure during menstruation reduce students' participation in school, community activities, and even family interactions. (Ballantyne, Fien, & Packer, 2001) called for intergenerational communication strategies to encourage students to act as health ambassadors within their families, thus facilitating reverse socialization.

In Tamil Nadu, specific studies such as those by (Jothy, 2012) and (Thakur, 2018) underscore the regional challenges faced by schoolgirls, ranging from inadequate access to sanitary products to gender-based restrictions during menstruation. Despite government efforts like the 'Pudhu Yugam' scheme to distribute sanitary napkins, poor product quality and inconsistent supply have been reported.

Taken together, the literature highlights a few key insights. First, menstrual health education needs to go beyond basic biology and address emotional, cultural, and social dimensions. Second, effective communication is not just about delivering facts—it's about creating safe spaces, using relatable language, and involving trusted stakeholders. Third, media and education systems must work together to normalize menstruation, challenge stigma, and empower girls.

The literature strongly supports the need for comprehensive, culturally attuned communication strategies to improve menstrual health among adolescent girls. However, there remains a gap in implementing and evaluating such strategies at scale. This study aims to fill that gap by testing a communication model specifically designed for the socio-cultural landscape of Tamil Nadu. The following methodology section outlines how this model was developed, implemented, and assessed across diverse school settings.

3. TOOLS AND TECHNIQUES

This study adopted a mixed-methods research design to comprehensively develop and explore the impact of Strategic Communication interventions on menstrual health and hygiene management (MHHM) among schoolgirls in Tamil Nadu. The mixed-methods approach integrated both quantitative and qualitative data to examine existing challenges and evaluate the effectiveness of communication strategies.

The study employed an exploratory-explanatory mixed-methods research design. The exploratory phase involved qualitative observations and discussions with students, teachers, and community stakeholders to identify key communication barriers and cultural attitudes toward menstruation. The explanatory phase used a structured questionnaire and a Strategic Communication intervention to test hypotheses and assess behavioral change. This design allowed for both an in-depth understanding of the social context and empirical validation of the intervention's effectiveness.

The study was conducted in six districts of Tamil Nadu—Coimbatore, Trichy, Thanjavur, Karur, Perambalur, and Ariyalur—chosen based on variations in literacy rates, urban-rural composition, and socio-economic diversity. Coimbatore, Trichy, and Thanjavur represented districts with relatively high literacy levels, while Karur, Perambalur, and Ariyalur represented areas with lower literacy and less developed infrastructure.

A total of 750 menstruating schoolgirls aged 12 to 16 years were selected using a multi-stage stratified random sampling technique. Thirty schools were chosen, with a distribution of 12 government, 9 aided, and 9 private institutions. Each district contributed 125 participants, ensuring equitable geographic representation. The sample also included variation in school types and grade levels to provide a holistic understanding of MHHM across educational environments.

Ethical approval for the study was obtained from the Institutional Review Board (IRB) of PSG Institute of Medical Sciences and Research. Before data collection, informed consent was obtained from all participants and their parents or legal guardians. Participants were assured of confidentiality and anonymity, and data were used solely for academic research. Special care was taken to create a comfortable environment during data collection, particularly given the sensitivity of the topic.

A structured questionnaire was developed based on an extensive literature review, expert consultations, and the results of a pilot study. The reliability of the questionnaire was assessed using Cronbach's Alpha, with all constructs showing acceptable internal consistency (ranging from 0.628 to 0.885). Face and content validity were established through expert reviews involving public health professionals, school teachers, and communication specialists. The instrument was designed to capture five key constructs: Knowledge about menstruation, Attitudes toward menstruation, Hygiene practices, sources of

Menstrual information, and Perceived Trust in communication channels. The final instrument consisted of 132 items, translated into both English and Tamil to ensure linguistic accessibility.

The source of information about menstruation was a challenging question to address. To explore this, an Exploratory Factor Analysis (EFA) was conducted on the Information-Seeking Behavior of schoolgirls to identify underlying latent factors or constructs that explain the patterns and relationships within the observed variables of how girls sought and processed menstrual health information. The adequacy of the sample for factor analysis was confirmed by a Kaiser-Meyer-Olkin (KMO) score of **0.748**, which comfortably exceeds the generally accepted threshold of 0.6, indicating that the data was suitable for factor extraction. For the rotation method, **Varimax** was chosen, which minimizes the number of variables with high loadings on each factor, thereby simplifying the interpretation of the extracted factors.

Three Factors Emerged:

1. Organizational Sources – Teachers, school counsellors, healthcare workers, and textbooks.
2. Interpersonal Sources – Mothers, sisters, peers.
3. Mass Media Sources – Television, advertisements, social media.

This categorization revealed a layered communication structure in which organizational sources were perceived as authoritative but still widely accepted., interpersonal sources as intimate yet inconsistent, and Mass Media as largely distrusted and ineffective.

The chi-square (χ^2) test of independence was used to examine associations between the type of information source and the level of menstrual knowledge. This helped determine whether access to certain communication channels significantly influenced girls’ understanding of menstruation and also performed an Influencer analysis to find Who, what, How and Why of menstrual health transformation and barriers that prevent them change.

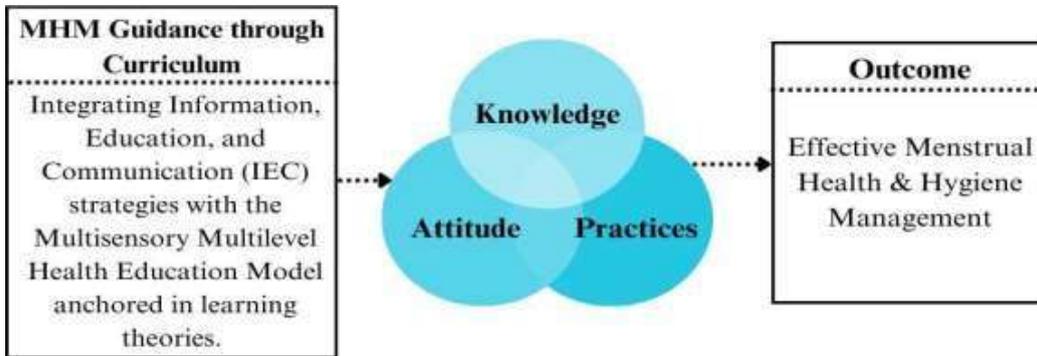
Analysis of Influencers on the Primary Audience (School Girls)

Who Influences the primary audience?	What are the most important sources of information for the influencers?	How much Influence do they have? (Strong, Moderate Weak)	What behaviour are they currently encouraging the primary audience to do or not to do?	Why would they discourage the desired behaviours?
Interpersonal (Family Friends)	Often shared personal experiences, cultural beliefs, and traditional knowledge about menstruation and related topics. These interactions were influenced by societal norms and cultural practices, which strongly impacted how menstruation was understood by girls in Tamil Nadu. (Sumit Aggarwal, 2021) & (Sharma G. , 2022)	Moderate (p-value 0.051)	The topic of menstruation was often shrouded in silence and shame.	They discouraged the desired behavior in order to uphold cultural pressures, social values, and religious norms.
Organization (Schools, Health workers)	Formal, reliable information and resources on menstrual health. (Syed Hasan Nawaz Zaidi, 2015) and (Maitri Vayeda, 2021)	Strong (p-value 0.027)	Menstrual health and hygiene were often described using technical language, making it challenging for students to relate the concepts to practical, real-life situations.	Insufficient training on how to approach these topics effectively and sensitively make educators hesitant. Lack of appropriate teaching materials or clear guidelines hinder their confidence in teaching these subjects.

Mass Media (Social Networking Sites, Government Websites)	Reflected societal conversations. (Kilbourne, 2021) and (Sharra Ustral, 2005)	Weak (p-value 0.279)	To conceal, Unhygienic and voyeuristic.	Mass media emphasized cosmetic solutions over genuine health practices, shifting the focus away from behavior that promotes well-being.
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The findings indicated that schools have the strongest influence, but improvements were needed to make their messages more relatable and practically applicable. Interpersonal sources, though moderately influential, needed to be strengthened with fact-based, stigma-free communication to counter societal taboos. Mass media, despite its wide reach, lacked credibility, requiring more responsible content creation and awareness campaigns to influence menstrual health behaviors positively.

The findings from the analysis highlighted the varying degrees of influence that different sources had on menstrual health awareness among schoolgirls. Organizational sources (schools, health workers) emerged as the most trustworthy and influential, providing structured and medically accurate information. However, the challenge lay in making this information more relatable and practical for students. Hence, it was decided to develop a strategic communication toolkit.



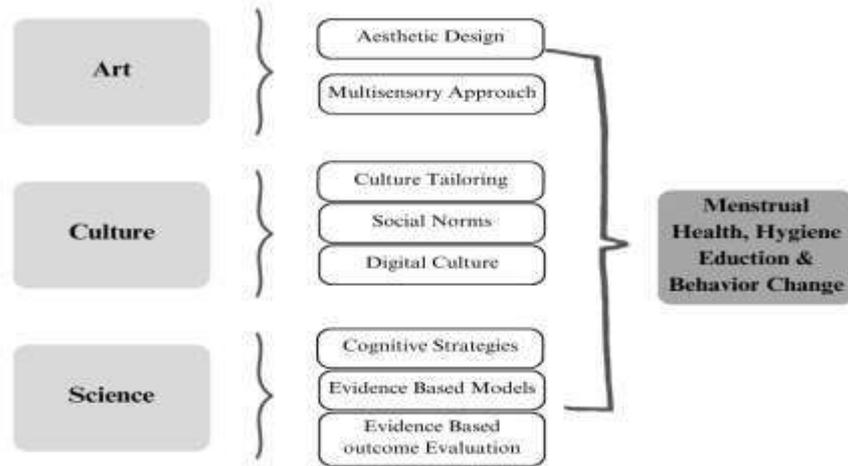
Conceptual Framework of the Strategic Communication Tool Kit

The Menstrual Education Toolkit was designed to provide a comprehensive, multisensory, and multilevel framework for menstrual health education. By integrating Information, Education, and Communication (IEC) strategies with the Multisensory Multilevel Health Education Model, this toolkit leveraged diverse learning modalities— Visual, Auditory, Kinesthetic, and Experiential—to enhance understanding, retention, and positive behavioral change.

Rooted in established learning theories such as Social Cognitive Theory, the Health Belief Model, and Experiential Learning, this toolkit offered tailored resources to girls from all walks of life. It included interactive learning tools such as story-based education, hands-on workshops, digital content, and gamified learning, ensuring accessibility and engagement across different communities.

By prompting awareness, breaking taboos, and promoting sustainable menstrual hygiene practices, this initiative aligned with global health and education goals, including the United Nations Sustainable Development Goals (SDGs 3, 4, & 5). The toolkit aimed to transform menstrual education into an empowering experience, ensuring that menstruation was understood not as a barrier but as a natural and manageable part of life.

Development of Strategic Communication Model



An overview of the Model

Source: A Multisensory Multilevel Health Education Model for Diverse Communities. (Swierad, A Multisensory Multilevel Health Education Model for Diverse Communities, 2019)

The Multisensory Multilevel Health Education Model (Swierad, A Multisensory Multilevel Health Education Model for Diverse Communities, 2019) integrates art, culture, and science to deliver impactful menstrual health education tailored to diverse communities. The model emphasized aesthetic design and multisensory engagement—incorporating visual, auditory, and tactile elements—to disseminate effective learning. To counter local norms and beliefs around menstruation it incorporated with it culturally sensitive learning materials. Rooted in multiple learning theories—Constructivism, Behaviorism, Cognitive Learning, Humanism, and Social Learning—the model supports active participation, reinforcement, emotional safety, and peer-based learning. This approach was transformed into a comprehensive toolkit to teach menstrual health and hygiene among schoolgirls in Tamil Nadu. The toolkit was aligned with the UNESCO and P&G menstrual health curriculum, ensuring evidence-based and age-appropriate education for students from Classes 1 to 10. It included interactive lessons, group discussions, and hands-on activities to boost knowledge, dispel myths, and promote positive attitudes toward menstruation. The structured, theory-driven toolkit aimed to increase understanding, encourage behavior change, and reduce stigma surrounding menstruation, accommodating diverse learning needs and cultural contexts.

This Menstrual Health Education Toolkit was designed as an integrated approach incorporating Art, Culture, and Science to teach menstrual health and hygiene effectively. The toolkit utilized multi-sensory learning, cultural relevance, and cognitive strategies to engage students interactively and inclusively.

The following table outlines the domains, sub-domains, examples of activities from the curriculum, and their intended functions.

Domains	Sub domains	Examples of Activities	Functions	Level of Influence	Learning Theories	Behaviour change
Art	Multi-sensory Approach (visual, auditory, tactile kinesthetic)	<ul style="list-style-type: none"> Label the Parts Group Craft Group Role play Board Games Group Discussions Passing the ball Poster Making Make your 	Boost attention, foster immersion Evoke emotions Motivate action Break down literacy barriers Improve learning	Intrapersonal Interpersonal	Constructivism: Knowledge construction through experience.	Increased empathy, cultural acceptance, and personal connection to menstruation.

		<p>DIY sanitary Napkins</p> <ul style="list-style-type: none"> • Debate 				
Culture	Social Norms	<ul style="list-style-type: none"> • Tick the Taboos • Experience Sharing • Let's Share • Fact or Fiction • Do all of us Look alike • Period Names • Identifying Stereotypes 	<p>Increase cultural relevance Increase personal relevance Facilitate acceptance</p>	<p>Intrapersonal Interpersonal Organizational Community</p>	<p>Social Learning Theory: Learning through observing others.</p>	<p>Increased awareness of cultural taboos; Challenged societal stereotypes about menstruation.</p>
Science	Cognitive Strategies (memory and learning)	<ul style="list-style-type: none"> • Reflection on a story • what would you do if • Guess who this is • Think and Share 	<p>Facilitate learning Facilitate retention</p>	<p>Intrapersonal Interpersonal Organizational Community.</p>	<p>Cognitive Theory: Active processing of information.</p>	<p>Reduced stigma and stereotypes surrounding Menstruation</p>

With the selected samples, this integrated model was tested. The curriculum designed had focused learning objectives and included a set of activities aimed at teaching healthy menstrual hygiene and health management (MHHM) practices, while also working to remove the stigma attached to menstruation. The curriculum was implemented for students from primary to high school (From class 1 to 10)

The toolkit was designed with learning objectives and a comprehensive list of activities to ensure a structured and effective approach to menstrual health education. It incorporated interactive methods such as role plays, group discussions, and hands-on exercises to engage learners and enhance understanding. Each activity was aligned with specific educational goals, allowing students to develop knowledge, challenge misconceptions, and to adopt healthier menstrual practices. The structured framework helped to deliver lessons in an inclusive and culturally sensitive manner, promoting awareness and behavioral change. The detailed curriculum, including its focused learning objectives, were as follows:

Learning Objectives

1. Our Bodies

Primary Class: 1 ~ 5	Upper Primary Class: 6 ~ 8	High school Class: 9 ~ 10
<ul style="list-style-type: none"> ● Initiate discussion around the human body. ● Facilitate talking about body parts, especially sex organs. ● Introduce body types, and differences across age, gender, and ability. ● Nurture sensitivity to diversity. ● Discuss aspects of body safety 	<ul style="list-style-type: none"> ● Facilitate talking about body parts, especially sex organs. ● Introduce body types, and differences across age, gender, and ability. ● Introduce and differentiate between sex and gender. ● Nurture sensitivity to diversity. 	<ul style="list-style-type: none"> ● Introduce and differentiate between sex and gender. ● Nurture sensitivity to diversity. ● Discuss aspects of the body such as body image, negative body image, and body safety.

2. Bodily Changes and Puberty

Primary Class: 1 ~ 5	Upper Primary Class: 6 ~ 8	High school Class: 9 ~ 10
<ul style="list-style-type: none"> ● Learn about physical changes in human bodies. 	<ul style="list-style-type: none"> ● Examine physical changes in human bodies. ● Introduce the idea of puberty, adolescence, and associated changes. ● Initiate talk about menstruation, the menstrual cycle and its associated components, etc. 	

3. Menstrual hygiene and care

<ul style="list-style-type: none"> ● Primary ● Class: 1 ~ 5 	<ul style="list-style-type: none"> ● Upper Primary ● Class: 6 ~ 8 	<ul style="list-style-type: none"> ● High school ● Class: 9 ~ 10
<ul style="list-style-type: none"> ● Examine the various components of menstrual hygiene. 	<ul style="list-style-type: none"> ● Understand the importance of menstrual hygiene. ● Become aware of the complications arising from poor menstrual hygiene. ● Learn how to take care of oneself during menstruation. 	

4. Society and Menstruation

Upper Primary Class: 6 ~ 8	High school Class: 9 ~ 10
<ul style="list-style-type: none"> ● Learn about societal perceptions and views around menstruation. ● Examine how these perceptions affect a person's life. 	

5. Menstruation Society and the Individual

High school Class: 9 ~ 10

- Understand how social perceptions around menstruation impact the education, health, marriage, and employment of those menstruating.
- Identify factors that come in the way of menstruators achieving their full potential.

This curriculum aimed to provide comprehensive, age-appropriate, and culturally relevant education on menstruation, addressing not just the biological aspects but also the social, emotional, and practical challenges associated with menstrual health. This curriculum covered a broad range of topics, including:

- The biological processes involved, such as the menstrual cycle and its significance.
- Practical advice on maintaining cleanliness, using sanitary products, and managing menstrual health effectively.
- Addressing taboos, myths, and societal norms around menstruation that often contribute to stigma and silence around the subject.
- The importance of providing equal opportunities for menstruators, especially in the context of school attendance and participation.
- Discussing the emotional changes associated with puberty and menstruation and promoting a positive body image. Hence the curriculum was tested and proved effective.

In the Tamil Nadu state board curriculum, the topic menstruation was traditionally introduced only in Class 8 (often in a brief, biological context), the (UNESCO., 2023) curriculum offered more in-depth, holistic education starting at an earlier stage in a student's school life.

So, the UNESCO and Procter & Gamble designed curriculum was taught to the selected school girls with the help of the teaching toolkit to evaluate its effectiveness in achieving the curriculum 's goals. The testing of this toolkit helped demonstrating how structured MHHM education can effectively improve students' Knowledge, Attitudes, and Practices around menstruation, while enhancing a more supportive and less stigmatized environment for menstrual health in schools.

It was crucial to understand adolescent school girls' stage of behavior change and its known barriers before testing the toolkit.

Assessment of the target audience and the known barrier of behaviour change and the stage they are in

Audience	Demographic profile	Stage of behaviour change	Known barriers to behaviour changes
<p>Menstruating Girls at schools in Tamil Nadu</p>	<ul style="list-style-type: none"> ● Age ● Community ● Religion ● Income 	<p>Pre-Knowledgeable: (Ref Table No: 1)</p> <p>Lack of Awareness: School girls did not recognize the importance of menstrual hygiene or know about healthy menstrual practices.</p> <p>Lack of Motivation: They did not see the need to change their current practices or behavior related to menstruation because they are unaware of healthier or more hygienic alternatives.</p> <p>Limited Knowledge: The school girls at this stage likely have little to no formal education about Menstrual hygiene and they may not be open to learn about it due to</p>	<ul style="list-style-type: none"> ● Lack of access to information and knowledge about MHHM practices. ● Less access to safe menstrual absorbents. ● Limited availability of water, sanitation and hygiene infrastructure in schools. ● Not aware of safe disposal practices of menstrual absorbents.

		social taboos or cultural norms that prevent open discussion on menstruation.	<p>Knowledge barrier</p> <ul style="list-style-type: none"> Limited understanding about supportive policies, guidelines and MHHM behaviors. <p>Social Barrier</p> <ul style="list-style-type: none"> Stigma attached Hesitation to speak loud.
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The transition from a "Pre-Knowledgeable" to a "Knowledgeable" state regarding menstrual health and hygiene management (MHHM) necessitated the use of strategic communication design.

Strategic Communication Design

Stakeholder	Vision	Strategies	Desired Outcomes
School	<p>Availability, Accessibility and Affordability of MHM resources:</p> <ul style="list-style-type: none"> Water Toilet Facility Supply of Absorbents Safe Disposal 	<p>Building and maintenance of MHM facilities through Public Private Partnership. (PPP) Effective use of government policies like SBA, SBSV and SVP, and seeking the support of International Health Agencies.</p>	<p>Improved access to water, toilets, and sanitary products and safe disposal of menstrual materials in schools.</p> <p>Schools become supportive environments for menstruating students.</p>
Teachers	<p>Inform, Educate, and Communicate menstrual health education by applying Multisensory Multilevel teaching</p> <p>Strategies rooted in Learning Theories targeting both genders from classes 1 to 10.</p>	<p>Conduct regular menstrual health education sessions using visual, auditory, tactile, and kinesthetic methods to reach a wide range of learners as a separate course.</p> <p>“Health Education” Engage both boys and girls in conversations to normalize the topic of menstruation and break the stigma.</p>	<p>Improved Knowledge, Attitudes, and Practices regarding menstruation among students in classes 1 to 10.</p> <p>Active participation of both genders in MHHM discussions, fostering better understanding and acceptance.</p>
Students To Parents	<p>Open up the topic for discussion to remove stigma.</p>	<p>Reverse socialization through child-mediated communication about menstruation.</p>	<p>Enhanced community awareness about Menstrual Health, Hygiene Management (MHHM).</p> <p>Reduce stigma and create more positive attitudes toward menstruation among parents and family members.</p> <p>Encouraged open and supportive communication between students and</p>

			parents about menstrual health.
Mass Media	<p>Mass Media to raise awareness and provide education about menstruation, focusing on breaking the stigma and spreading accurate, evidence-based information.</p> <p>Avoid reinforcing existing myths and misconceptions about menstruation.</p> <p>Share scientifically accurate and culturally sensitive content to educate the public.</p> <p>Highlight expert opinions, and educational campaigns that foster positive attitudes toward menstruation.</p>	<p>Utilize Mass Media platforms to promote accurate and positive messaging about menstrual health while addressing misinformation.</p> <p>Implement censorship and regulation to prevent the dissemination of harmful stereotypes or stigmatizing content related to menstruation.</p> <p>Ensure that media campaigns adhere to culturally sensitive and inclusive guidelines, fostering awareness and breaking taboos.</p> <p>Collaborate with media outlets to create engaging and educational content that normalizes discussions around menstrual health.</p> <p>Monitor and evaluate the impact of media initiatives to ensure they align with the vision of reducing stigma and promoting menstrual health awareness.</p>	<p>Increased public awareness and understanding of menstrual health.</p> <p>Dismantling of harmful stereotypes and stigma surrounding menstruation.</p> <p>Encouraged open conversations about menstrual health across all demographics, leading to improved practices and attitudes.</p>

Government	Ensure the integration of all government MHHM policies and ensure that MHHM services are available and well-maintained across all sectors.	Train Frontline workers. Conduct frequent Audit of MHHM resources.	Widespread availability and standardization of MHHM resources across schools. Trained frontline workers equipped with the knowledge and skills to deliver menstrual health services. Improved government accountability and effective monitoring of MHHM resource distribution and use.
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To demonstrate the effectiveness of this strategic communication toolkit, it was decided to conduct tests the toolkit with selected sample groups.

Selection of Sample for the Intervention study

A total of (75)10% of the total sample (750) were analyzed, with 25 students each from the Primary, Upper Primary, and High School categories. These participants were exposed to the MHHM education curriculum, which utilized teaching methods derived from Multisensory and Multimodal Theory. Pre- and post-Knowledge assessments were conducted to evaluate the effectiveness of the strategic communication toolkit and the MHHM curriculum.

Sample Selection and Rejection Criteria:

The sample Selection Criteria Included menstruating school girls who were willing to participate and the rejection criteria was non-menstruation school girls and girls who were not willing to participate.

Selection	Rejection
Menstruating Girls	Non-Menstruating Girls
Willing to participate	Not Willing to participate

Ethical Considerations:

Informed consent was obtained from both the parents and the students prior to data collection. Written approval was secured from participants and their guardians to ensure full consent.

Demographic Profile of the respondents from Upper primary and High School

Age of the respondent	Percentage
12	8.0%
13	14.0%
14	48.0%
15	26.0%

16	4.0%
Community	Percentage
BC	36.0%
MBC	30.0%
SC	32.0%
OC	2.0%
Religion	Percentage
Hindu	78.0%
Christian	16.0%
Muslim	3.0%
Income	Percentage
Below 1 lakh	50.0%
1 to 2 lakhs	50.0%

Demographic Profile of the respondents from Upper primary and High School

Menstruation and related aspects of respondents from Upper primary and High School

Age	Percentage
11	8.0%
12	14.0%
13	36.0%
14	26.0%
15	8.0%
16	8.0%
Place of First Periods	Percentage

At home	98.0%
Others	2.0%
Regularity of Menstrual Cycle	Percentage
No	56.0%
Yes	44.0%
If no, since when	Percentage
Nil	44.0%
Since puberty	24.0%
Last 3 months	24.0%
More than 6 months	8.0%
Sometimes your menstrual period gets delayed because of	Percentage
Improper food	68.0%
Improper Sleeping habit	28.0%
Health issues	4.0%
Nature of bleeding	Percentage
Heavy	44.0%
Varies	54.0%
Light	2.0%
Type of menstrual absorbents Used	Percentage
Sanitary napkin	100.0%
Type of material used to clean the perineum	Percentage
Cold water	46.0%
Hot water	12.0%

Soap and cold / hot water	42.0%
Procedure of cleaning perineum.	Percentage
Wash from front to back	22.0%
Wash from back to front	6.0%
Both sides	72.0%

For the selected samples, the menstrual curriculum was delivered using the MHM toolkit, and their baseline Menstrual Health and Hygiene Knowledge was recorded before the intervention. After the intervention, their Menstrual Health and Hygiene Knowledge was assessed again to evaluate the impact of the curriculum. The study aimed to measure changes in menstrual Knowledge, Attitudes, and Practices. Comparative analysis was conducted using Mc Nemar test to identify improvements in understanding and to determine the effectiveness of the teaching methodology. The findings provided insights into how well the toolkit facilitated learning and addressed existing gaps in menstrual health education.

Difference between baseline and post-intervention

	Factors Associated	Pre-test Frequency	Post-test Frequency	Difference in %	McNemar's
		Correct knowledge	Correct knowledge		Test P
Knowledge about Mensuration	Generally, after how many days, each menstrual cycle occurs?	30 (60%)	49 (98%)	38	0.000*
	Is it okay to have irregular menstrual cycles?	38 (76%)	46 (92%)	16	0.008*
	What is the average blood flow (in days) during menstruation?	30 (60%)	41 (82%)	22	0.001*
	How many hours should you use the sanitary napkins?	11 (22%)	38 (76%)	54	0.000*
	What is the correct way to dispose of the used sanitary napkins?	34 (68%)	47 (94%)	26	0.000*
	How frequently should you clean your perineum during menstruation?	30 (60%)	48 (96%)	36	0.000*
Attitude	Factors Associated	Pre-test Frequency	Post-test Frequency	Difference %	McNemar's Test P
		Agree	Agree		
	I feel comfortable at school during menstruation	11 (22%)	49 (98%)	76	0.000*
	I feel uncomfortable sitting next to male students during menses	37 (74%)	5 (10%)	64	0.000*

Practice		Pre-test Frequency	Post-test Frequency	Difference	McNemar's Test <i>P</i>
		Yes	Yes	%	
	I wash and reuse the cloth on my menstruation	23 (46%)	2 (4%)	42	0.000*
	I dispose the used napkins/cloths daily	30 (60%)	49 (98%)	38	0.000*
	I wash my hands before changing menstrual materials	26 (52%)	49 (98%)	46	0.000*
	I wash my hands after changing menstrual materials	27 (54%)	47 (94%)	40	0.000*
	I store my menstrual materials in the toilet/latrine room	14 (28%)	49 (98%)	70	0.000*

Table no 1: Difference between baseline and post-intervention

The Mc Nemar test demonstrated an improvement in the Knowledge, Attitudes, and Practices related to Menstrual Health and Hygiene Management (MHHM) among schoolgirls in Tamil Nadu after intervention. The study results for upper primary (Classes VI-VIII) and higher secondary (Classes IX-XII) girls showed significant improvements in their Knowledge, Attitudes, and Practices related to menstrual hygiene after the intervention

Knowledge:

For both upper primary and higher secondary students, there was a substantial increase in Knowledge regarding key aspects of menstruation, including the frequency of menstrual cycles, irregular cycles, average blood flow during menstruation, and the Proper method of disposal of sanitary products. The post-test frequency for menstrual Knowledge was significantly higher than the pre-test, indicating a marked improvement in understanding menstrual health.

For example, Knowledge about the proper disposal of sanitary napkins and the Knowledge about the frequency of menstrual cycles showed significant improvement in both groups, with post-test values reaching 90–98%. The increased awareness of perineal hygiene and the recommended duration for using sanitary products also showed significant improvements, with *p*-values consistently below 0.05, underscoring the effectiveness of the intervention in educating students.

Attitudes:

Upper primary and higher secondary students demonstrated a shift in Attitudes, particularly around comfort at school during menstruation and sitting next to male students during periods. The percentage of students who felt comfortable at school during menstruation increased significantly. post-intervention, reaching 98% in both groups, while those who felt uncomfortable sitting next to male students decreased dramatically (from 74% pre-test to 10% post-test for both groups), reflecting a reduction in menstrual stigma and a more open, supportive environment.

Practices:

Menstrual hygiene practices also showed marked improvements across both groups, particularly in behaviors such as handwashing before and after changing menstrual materials, and disposal of used napkins. Handwashing practices increased from around 54% to 94% in both upper primary and higher secondary girls (pre-test to post-test), highlighting a key behavioral change towards maintaining hygiene. The frequency of disposing of used napkins/cloths daily improved from 60% to 98%, suggesting that students became more consistent in disposing of menstrual materials correctly. Additionally, the practice of washing and reusing cloth during menstruation significantly decreased, especially among older students, indicating a shift towards using more hygienic sanitary products like pads or tampons.

The data suggested that the intervention successfully enhanced menstrual health Knowledge, Attitudes, and Practices among upper primary and higher secondary girls, as indicated by the significant improvements in the pre- and post-test results. The intervention helped in overcoming stigma, promoting better hygiene practices, and educating students on the correct use and disposal of sanitary products. It also fostered more positive attitudes toward menstruation, especially in relation to comfort in school and interactions with male peers. The consistent improvement across both groups highlighted the intervention's effectiveness in addressing menstrual health and hygiene management (MHHM) issues in schools.

The results indicated a positive shift in their perceptions and behaviors regarding MHHM. Therefore, it was suggested to integrate MHHM education into the curriculum as a strategic communication tool. (Dwivedi, 2020) also supported this

finding. Their research emphasized the need to incorporate MHHM education to improve positive behavioral changes among students.

The study also aimed to assess menstrual health and hygiene management (MHHM) KAP among primary school students (from Class I to V) Strategic intervention was also extended to primary school girls and evaluated the effectiveness of an intervention in improving menstrual hygiene practices and reducing stigma among young learners.

Difference between baseline and post-intervention of Good and Bad Menstrual practices from study participants - Primary School (Class I- V)

Menstrual Hygiene Practices	Pre-test Frequency Correct knowledge	Post-test Frequency Correct knowledge	Difference in %	McNemar's Test P
Bathing at least once daily	9 (36%)	21 (84%)	48	0.002*
Wearing damp clothes	9 (36%)	20 (80%)	44	0.003*
Changing undergarments regularly	10 (40%)	21 (84%)	44	0.003*
Using one pad daily	8 (32%)	22 (88%)	56	0.000*
Not washing after urinating/ changing sanitary product	6 (24%)	22 (88%)	64	0.000*
Wearing cotton panties	8 (32%)	20 (80%)	48	0.002*
Wearing synthetic panties	3 (12%)	23 (92%)	80	0.000*
Wearing tight uncomfortable pants	6 (24%)	20 (80%)	56	0.001*
Changing sanitary products frequently during the day	7 (28%)	20 (80%)	52	0.002*
Reusing cotton cloth without cleaning properly	2 (8.0%)	22 (88%)	72	0.000*
Keeping the area between legs clean and Dry	8 (32%)	23 (92%)	60	0.000*
Reusing spoiled underwear	8 (32%)	20 (80%)	48	0.004*
Washing hands regularly	6 (24%)	19 (76%)	52	0.004*
Continuing to use wet cloth/ sanitary napkin	4 (16%)	20 (80%)	64	0.000*

Table no 2: Difference between baseline and post-intervention

The data showed a significant improvement in menstrual hygiene practices among primary school students, as indicated by the pre-test and post-test frequencies. For example, the percentage of students who bathed at least once daily increased (from 36% to 84%), a 48% improvement (p = 0.002). Similarly, there was a notable improvement in practices like wearing damp clothes (from 36% to 80%), changing undergarments regularly (from 40% to 84%), The post-test also showed a significant reduction in negative practices, such as not washing after urinating (from 24% to 88%), wearing synthetic panties (from 12%

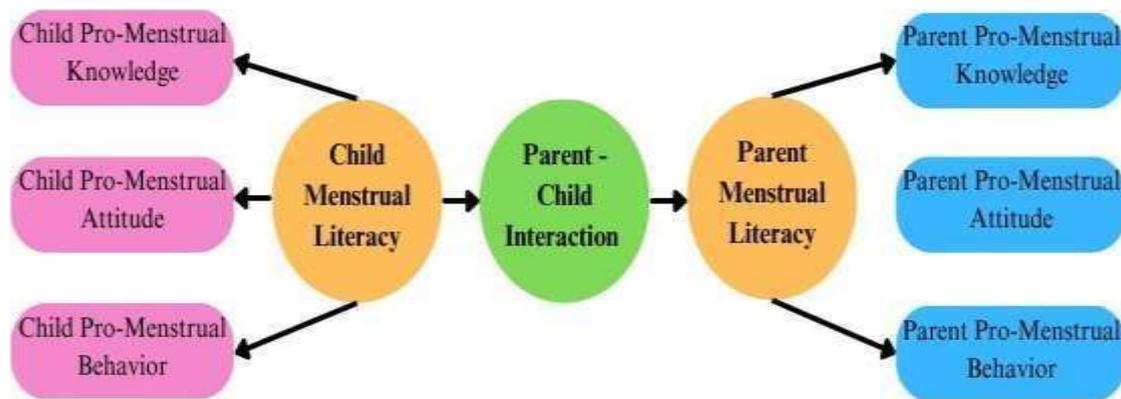
to 92%). Furthermore, positive practices like keeping the area between legs clean and dry (from 32% to 92%) and washing hands regularly (from 24% to 76%) also showed significant improvements.

The Mc Nemar 's test results for all practices indicated highly significant differences, with p-values consistently below 0.05, suggesting that the intervention effectively improved menstrual hygiene practices among the students. The overall findings highlighted the success of the intervention in enhancing Knowledge and Practices related to Menstrual Health and Hygiene Management.

In order to remove the stigma and encourage open discussions, a conducive environment was created Girls were educated with accurate information that empowered them to discuss menstrual health openly with their families. This was achieved when schools provided comprehensive education on the topic, and —*Reverse Socialization*” helped normalize conversations around menstruation within communities.

The menstrual curriculum was designed and delivered in a manner that facilitated *Reverse Socialization*, allowing students to challenge traditional norms and foster open discussions. Through this approach, students gained the confidence to talk about menstruation freely with their friends and family members. The curriculum taught with the exclusively designed tool kit played a crucial role in breaking the silence surrounding the topic, and helped them dismantle the stigma and misconceptions associated with it. Students who had secured menstrual health information in the school engaged in *Reverse Socialization* by initiating conversations with their families and friends about menstruation and the taboos attached to it, thereby challenging traditional beliefs and fostering a more open and informed discourse across generations.

Reverse Socialization



Reverse Socialization

The household, as a primary unit of consumption, played a crucial role in shaping Knowledge, Attitudes, and Behaviors related to menstruation. Traditional socio-cultural research suggested that families served as key sites of intergenerational socialization, where parents actively influenced their children's values, behaviors, and skills. In this context, scholars argued that household socialization can be bi-directional, with children actively attempting to transmit their attitudes and behaviors based on the knowledge they acquire in school (Kuczynski, 2003). This process, in which children socialize with their parents, was referred to as *Reverse Socialization*” (Moschis G. P., 1985).

To address Menstrual Myths, reverse socialization emerged as a key solution. To combat menstrual myths, *Reverse Socialization* played a key role by allowing children, particularly school-aged girls, to challenge and correct misconceptions within the household. As children gain accurate knowledge about menstruation through education, they shared this information with their parents and other family members, effectively influencing their attitudes and behaviors.

A focus group with parents of girls who received education on MHHM confirmed similar findings. One mother shared that the girls were able to break the ice and talk openly about menstruation, even with male family members. Parents also observed that the girls now have the confidence to question myths and challenge taboos surrounding menstruation

To better understand the overall impact and areas for improvement, a SWOT analysis was conducted to evaluate the strategic communication developed. This assessment identifies its internal strengths and weaknesses, as well as external opportunities and threats influencing its effectiveness.

SWOT analysis for the developed Strategy

Strength	Weakness
<p>Cost-Effective Implementation:</p> <p>Integrating MHHM education into the existing curriculum requires less financial investment compared to establishing separate programs or facilities.</p> <p>Once integrated, the curriculum can be scaled across different grades and schools without significant additional costs.</p>	<p>Teacher Resistance:</p> <ul style="list-style-type: none"> ● Inhibition among teachers to teach topics related to menstruation. ● It is difficult to change peoples' behaviors and slow behaviour change
Opportunity	Threat
<p>Raising Awareness through Dedicated MHHM Education:</p> <p>Menstrual health education could be introduced as a separate course, for students studying under Tamil Nadu state board curriculum similar to "Health and Physical Education" course offered in in the NCERT syllabus.</p> <p>This approach could create a platform for raising awareness and promoting open discussions about menstrual health in schools.</p>	<p>Gender Bias in Curriculum Design:</p> <p>There is a gender imbalance in the curriculum design committee, (The latest Tamil Nadu State curriculum design committee chaired by retired High Court judge D. Murugesan has only 2 Women among its 12 members).</p> <p>Amale-dominated curriculum committee may overlook the needs and preferences of female students.</p>

Evaluation Timeline

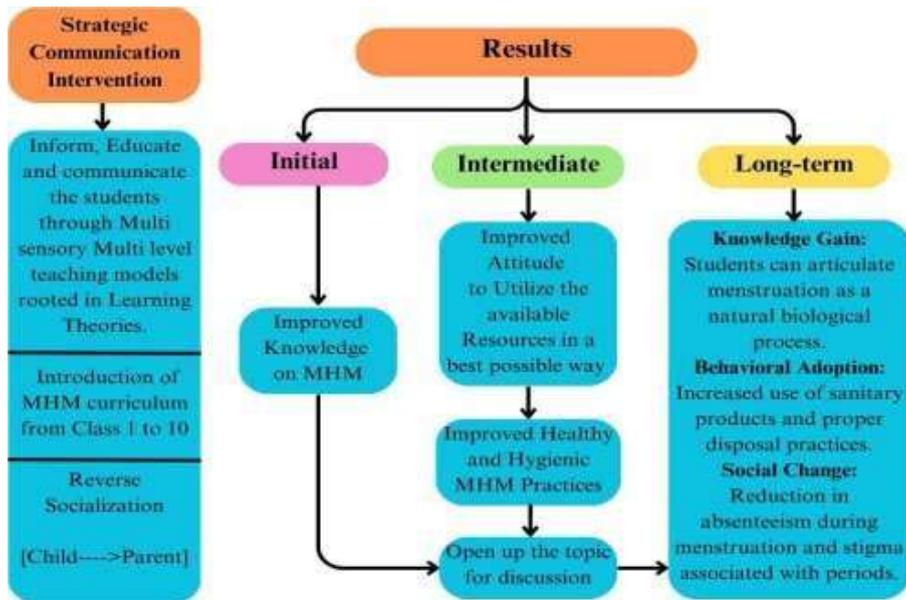


Figure no 8: Evaluation Timeline

To achieve these goals, it is essential to frequently assess the Knowledge, Attitudes, and Practices (KAP) of the students. Regular testing and evaluation of their understanding and behaviors will help identify areas of improvement, track

progress, and ensure that the desired changes in health-seeking behavior, stigma reduction, and MHHM practices are being effectively implemented

4. CONCLUSION

Strategic Communication Design for enhanced MHHM Practices among School Girls in Tamil Nadu

In conclusion, the Strategic Communication designed for MHHM practices among schoolgirls in Tamil Nadu has the potential to create a supportive environment that promotes informed and healthy menstrual hygiene management, if effectively implemented. By incorporating multisensory, multilevel teaching methods and grounding the program in relevant learning theories, the initiative will lead to positive behavior change and promote gender equality in menstrual health. This was proved in this study with the selected samples,

In the context of menstrual health and hygiene management (MHHM) in Tamil Nadu, existing educational interventions often fail to achieve sustainable behavioral change due to fragmented communication, cultural insensitivity, and one-dimensional delivery formats. Traditional methods—typically limited to classroom lectures or pamphlet distributions—lack inclusivity, fail to engage learners meaningfully, and often overlook the socio-cultural complexity of menstruation as a public health issue.

The complex challenges surrounding menstrual health and hygiene management in Tamil Nadu, necessitates interventions that should be not only comprehensive but also deeply rooted in robust theoretical frameworks. Moving beyond superficial solutions and through understanding of how individual behaviors are shaped by a multitude of factors – social, psychological, and environmental is needed. It is this theoretical grounding that will allow interventions to be designed with precision, targeting the level of change and can lead to sustainable improvements in menstrual Knowledge, Attitudes, and Practices.

Limitations of the Study

Though the study was well-designed, tested, and proven authentic, there were still a few limitations. They were:

- Students' inhibition to discuss menstrual-related matters
- Difficulty in obtaining permission from government authorities to visit schools
- Limited access to reliable data on menstrual hygiene management in schools
- Potential bias in self-reported data from students and school authorities

Challenges in accurately measuring the outcomes of government policies related to menstruation due to inconsistent data.

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