# Menstruation and Marginalization: A Survey-Based Study of Menstrual Health Education and Facility Access as Determinants of Student Confidence in Maharashtra High Schools

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## Abstract

Adolescent girls around the world often struggle to manage menstruation due to poor access to sanitary products, inadequate school facilities, and harmful social taboos. In India, where a large portion of the world's adolescent population lives, these barriers significantly affect girls' education and well-being. The city of Solapur in Maharashtra, marked by socioeconomic diversity, offers a focused setting to explore how menstrual health education and school infrastructure influence girls' confidence and academic engagement during their periods. This survey-based study was conducted in five randomly selected high schools and middle colleges in Maharashtra, India, involving 96 female students aged 13 to 24. Participants completed a structured questionnaire assessing menstrual education, school facilities, and confidence in managing menstruation. Data was analyzed using descriptive statistics to explore relationships between school resources and students' menstrual confidence. The study reveals that while many schools provide basic menstrual hygiene resources, inconsistencies in essential supplies and persistent social stigma significantly impact students' comfort and participation during menstruation at school. These challenges lead to reduced attendance, limited physical activity, and social withdrawal, highlighting the need for integrated strategies that address both infrastructural gaps and cultural barriers to improve menstrual health management and support girls' full engagement in school.

## Introduction

Globally, millions of women and girls face challenges in managing their menstruation due to limited access to sanitary products, inadequate water supply, hygiene infrastructure, persistent cultural taboos, and educational barriers. Approximately half of the schools in low-income countries lack these necessities crucial for girls and female teachers to manage their periods. Insufficient facilities can negatively affect girls' experience at school, often causing them to miss classes during menstruation (UNICEF, 2018). Defined by the WHO/UNICEF Joint Monitoring Programme 2012, menstrual hygiene management (MHM) refers to women and girls' ability to obtain and use clean materials to collect menstrual blood, have a clean and private place to change and dispose of those materials, and be provided with adequate soap and water for handwashing. Beyond physical management of menstruation, proper MHM also requires sufficient knowledge of how to manage their menstruation and a sociocultural environment that promotes dignity rather than discomfort or fear (World Bank Group).

With the largest adolescent population in the world, at 20.1% of the total, India contains critical context for addressing the health and educational needs of young people (UNICEF, 2019). However, MHM remains a significantly under-addressed issue, particularly among young women. For instance, the culture of silence around menstruation is deeply rooted, with 71% of girls reporting not knowing about menstruation before their first period (Dasra, 2015). Menstruation is a major contributor to educational disruption, with girls missing up to 20% of the school year due to menstruation-related challenges, and 23% of all girls dropping out annually due to the lack of functional toilets (Dasra, 2015). These challenges are compounded by limited access to hygienic menstrual products, as only 42% of adolescent girls in India use safe and

hygienic methods of menstrual protection (Singh et al., 2022). The combination of educational, infrastructural, and sociocultural factors not only hinders academic participation but also perpetuates gender inequality during a critical developmental stage. As a key driver of multiple Sustainable Development Goals (SDGs), including those related to education, gender equality, and sanitation, ensuring equitable access to menstrual resources and education must be prioritized nationally and globally (UNICEF, 2019). Addressing MHM in India is, therefore, not only a public health imperative but also essential for achieving broader goals of educational equity and gender justice.

Focusing on a smaller scale, Maharashtra, one of India's most populous and socioeconomically diverse states, presents a compelling site for studying menstrual health management. Despite national progress in improving menstrual hygiene awareness and access, Maharashtra continues to reflect stark disparities, especially in rural and marginalized communities. According to the National Family Health Survey (2019-2021), 70–89% of girls and women aged 10 to 19 in Maharashtra reported using hygienic methods of menstrual protection, indicating that up to 30% of girls and women still rely on unhygienic practices (UNFPA India, 2022). A 2018 study focusing on adolescent girls in the slums of Maharashtra revealed that 76% had no knowledge of menstruation before menarche, and the vast majority (84%) heard information first from their mothers. However, this knowledge was often limited or inaccurate, as only 16% knew that menstrual bleeding originates from the uterus (Deshpande et al., 2018). These findings highlight not only the infrastructural barriers to MHM but also deep gaps in menstrual education and awareness. The intersection of poverty, limited access to health services, and cultural stigma create a significant burden on adolescent girls, underscoring the urgency for interventions that address all dimensions of menstrual health.

This study investigates the current state of MHM among adolescent girls in Maharashtra, specifically in the city of Solapur, due to prominent challenges in socioeconomic welfare, making the city a compelling site for the study (Kamath & Deekshit, 2014). It focuses on factors influencing MHM, including provided hygiene facilities in school and menstrual health education, as well as their impact on student well-being and school attendance. Specifically, this research focuses on two questions: Are girls who receive comprehensive education on menstrual health and hygiene more confident in their ability to manage their period? And, are girls who attend schools with adequate bathroom facilities more confident in their ability to manage their period? This study has broad implications across public health, education, and social equity. It identifies infrastructural and educational gaps in MHM, highlights and contributes to information around the impact of menstrual challenges on academic participation, and informs culturally responsive strategies to dismantle stigma and promote dignity, equity, and inclusion for adolescent girls.

## Methods

*Study Site and Sample Frame*

To study the effect of education and adequate facilities on girls' confidence in managing their periods, I surveyed five randomly selected high schools and middle colleges in one district of Maharashtra, India. The participants included students capable of menstruating, aged 13 to 24 years. Administered researchers followed the same process at each school: they visited all classes within the appropriate age group and asked for volunteers. Those who came forward

were selected to participate in the structured survey. Between 17 and 20 students at each school opted into the survey, for a total sample of 96 students.

**Table 1. Population Demographics**

| | Total (N) = 96 | % |
|---|---|---|
| **Age** | | |
| 13 | 6 | 6.25% |
| 14 | 7 | 7.29% |
| 15 | 24 | 25.00% |
| 16 | 29 | 30.21% |
| 17 | 5 | 5.21% |
| 18 | 16 | 16.67% |
| 19 | 1 | 1.04% |
| 20 | 1 | 1.04% |
| 21 | 3 | 3.13% |
| 22 | 5 | 5.21% |
| 23 | 8 | 8.33% |
| 24 | 1 | 1.04% |
| **School** | | |
| A | 20 | 20.83% |
| B | 17 | 17.71% |
| C | 20 | 20.83% |
| D | 19 | 19.79% |
| E | 20 | 20.83% |

*Study Design*

This study was a survey-based analysis conducted to identify trends regarding menstrual hygiene habits in Maharashtra and to examine and gain a comprehensive understanding of the menstrual resources provided in schools and student confidence regarding menstruation. The questionnaire contained 18 multiple-choice questions, 10 of which covered two primary independent variables regarding school resources: menstrual education and facilities (Table 2). These factors were analyzed in relation to the key dependent variable, menstrual confidence, quantified through behaviors at school, covered in the remaining 8 questions.

*Data Collection Procedures*

The survey was designed by the researcher and administered by the Dr. Metan Foundation, a local nonprofit charity centered around public community relief. The Foundation's team, composed of medical doctors, visited each school and distributed the paper-based

questionnaires, written in English, to the selected participants. A fixed time was scheduled, and all participants were gathered in a common hall where they were seated on separate benches. Although all schools were English medium with some variation in language fluency, survey administrators began by reading the survey aloud and providing brief explanations for each question to ensure comprehension. Participants were also encouraged to ask questions if they did not understand any part. Each survey took approximately five minutes to answer. After completion, responses were collected, scanned, and manually entered into Google Sheets for analysis.

*Statistical or Analytical Methods*

The collected survey data was analyzed from tables based on total and individual school data. Percentages of respondents who gave each response alternative were calculated to determine the distribution of answers, allowing for the comparison of key variables such as sources of menstrual education, access to period products, and the impact of menstruation on school attendance. Descriptive statistics, including bar graphs and pie charts, were generated to visualize trends and highlight disparities across different schools and age groups.

## Results/Analysis

*Sources and Effects of Menstrual Education*

Among the respondents of this study, menstrual education is primarily obtained from school (97%) and family (71%). Other sources, such as friends (31%), books and printed media (28%), and the internet or social media (20%), play a significantly smaller role.

Based on student self-reports, school-based menstrual education predominantly focuses on the biological aspects of menstruation (95%) over topics such as hygiene (27%) and reproductive health (56%). While many students receive menstrual education before experiencing their first period (75%), a significant portion still feel uncomfortable discussing the topic in a school setting (39%).

*School Facilities Regarding Menstrual Management*

The availability of period products in schools varies, with most providing sanitary pads (81%), while some offer no menstrual products at all (20%). Access to these materials is inconsistent—some students always have access (78%), while a decent percentage report never having access (20%). Despite these inconsistencies, restroom cleanliness is generally not a barrier, as a majority of students (98%) report that school restrooms are kept clean throughout the day. However, the availability of essential restroom facilities such as soap (58%), running water (84%), and disposal bins (63%) are not always consistent.

Most students change their menstrual materials in female restrooms (83%), though some wait until they return home (16%). While all report having a private place to change (100%), a significant portion of students (25%) report a lack of designated rest areas, which can influence their decision to come to school while menstruating.

*Impact of Menstruation on Student Well-Being and School Participation*

Menstrual stigma remains a significant issue in schools, as many students feel uncomfortable discussing menstruation (35%). Additionally, around a fifth of students believe they were not

adequately taught about menstruation before experiencing it (19%), indicating that a lack of preparation may contribute to discomfort in discussing the topic.

Menstruation also impacts school attendance and participation. Some students skip school or extracurricular activities while menstruating, as over a quarter (28%) of students report a general fear of attending school. Physical activity is another area affected by menstruation, with a significant portion of students (39%) avoiding it while on their period.

Menstruation can also contribute to social withdrawal among a few students (14%) who report avoiding being around others while on their period. Finally, while discomfort during menstruation is often associated with school settings, it is important to note that a small portion of students (4%) report feeling uncomfortable even at home.

**Individual School Analysis**

*School A*

At School A, all students (100%) reported receiving comprehensive menstrual education that covered topics such as periods, sex, and hygiene. Additionally, every student indicated that they were aware of menstruation before experiencing it and felt that their school provided adequate menstrual education.

Sanitary pads are consistently available at the school, and 100% of students reported having access to a private place to change, clean restrooms, and a designated rest area. Despite this strong infrastructure, only 30% of students stated they felt comfortable discussing menstruation at school. Interestingly, 95% of students reported the absence of a toilet; however, this did not appear to impact attendance, as 100% of students said they continued attending school and extracurricular activities during their periods. Only 5% of students expressed fear of attending school while menstruating.

*School B*

At School B, 94% of students reported learning about menstruation in school, and all students (100%) received education on periods and hygiene. However, 41% of students still felt that the education provided was insufficient.

The school provides sanitary pads, and they are almost always available (88%). Facilities such as toilets, running water (94%), and soap (88%) are present, contributing to a high level of confidence in managing menstruation at school. Notably, 94% of students feel comfortable discussing menstruation in school. In relation, 88% of students do not fear attending school. The presence of rest areas (88%) may also contribute to this confidence.

*School C*

School C faces notable challenges in menstrual management. A significant 85% of students reported that the school does not provide period products, and 95% stated that sanitary materials are never available. 100% of students reported waiting until they got home to change menstrual materials.

These limitations impact students' school participation. While 85% of students continue with extracurricular activities, many do not fully engage in school activities during their menstrual cycle. Additionally, 84% of students reported the absence of rest areas. A striking 100% of students avoid physical activity while menstruating.

*School D*
School D offers moderate menstrual education, with 79% of students receiving period-related information and only 5% being educated on sex. Hygiene education is provided to 53% of students. Reflecting this, only 42% of students feel comfortable discussing menstruation in school, and 44% believe they were not adequately educated before their first period. These figures indicate that incomplete menstrual education may contribute to discomfort in discussing the topic.

Despite these educational gaps, sanitary materials are always available, and all students have access to private changing spaces. Restrooms are well-maintained, with 100% of students reporting access to clean facilities, toilets, doors, trash bins, and running water.

*School E*
School E provides sanitary pads, which are always available to students. The school also ensures access to private changing spaces, clean restrooms (95%), and well-maintained facilities. This is reflected in a relatively high school attendance rate during menstruation, with 94% of students continuing their school and extracurricular activities. However, despite these supportive facilities, 90% of students report a fear of attending school.

**Table 2. Survey Results**

| Q Choices | Total | School A | School B | School C | School D | School E |
|---|---|---|---|---|---|---|
| | N = 96 | N = 20 | N = 17 | N = 20 | N = 19 | N = 20 |
| **1: Where have you learnt about menstruation?** | | | | | | |
| School | 92 (96%) | 19 (95%) | 16 (94%) | 19 (95%) | 18 (95%) | 20 (100%) |
| Family/Significant Figures | 67 (70%) | 20 (100%) | 17 (100%) | 2 (10%) | 17 (89%) | 11 (55%) |
| Friends | 29 (30%) | 6 (30%) | 14 (82%) | 2 (10%) | 2 (11%) | 5 (25%) |
| Internet/Social Media | 19 (20%) | 0 (0%) | 11 (65%) | 0 (0%) | 3 (11%) | 6 (30%) |
| Books/Magazines/Printed Media | 27 (28%) | 19 (95%) | 7 (41%) | 0 (0%) | 0 (0%) | 1 (5%) |
| Other | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| **2: What menstrual education has the school provided?** | | | | | | |
| Period Education | 90 (94%) | 20 (100%) | 17 (100%) | 19 (95%) | 15 (79%) | 19 (95%) |

| | | | | | | |
|---|---|---|---|---|---|---|
| Sex Education | 26 (27%) | 20 (100%) | 5 (30%) | 0 (0%) | 1 (5%) | 0 (0%) |
| Hygiene Education | 53 (55%) | 20 (100%) | 17 (100%) | 1 (5%) | 10 (53%) | 5 (25%) |
| **3: Do you think the school taught you enough before menstruation?** | | | | | | |
| Yes | 77 (80%) | 20 (100%) | 10 (59%) | 20 (100%) | 10 (53%) | 17 (85%) |
| No | 18 (19%) | 0 (0%) | 7 (41%) | 0 (0%) | 8 (42%) | 3 (15%) |
| **4: Did you know about menstruation before you got your period?** | | | | | | |
| Yes | 72 (75%) | 20 (100%) | 14 (82%) | 12 (60%) | 12 (63%) | 14 (70%) |
| No | 24 (25%) | 0 (0%) | 3 (18%) | 8 (40%) | 7 (37%) | 6 (30%) |
| **5: What period products does your school provide?** | | | | | | |
| Sanitary Pads | 78 (81%) | 20 (100%) | 15 (88%) | 4 (20%) | 19 (100%) | 20 (100%) |
| Tampons | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Cloth Pads | 1 (1%) | 0 (0%) | 0 (0%) | 0 (0%) | 1 (5%) | 0 (0%) |
| None | 19 (20%) | 0 (0%) | 2 (12%) | 17 (85%) | 0 (0%) | 0 (0%) |
| Other | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| **6: How often are sanitary materials available?** | | | | | | |
| Always/Almost Always | 74 (77%) | 20 (100%) | 15 (88%) | 0 (0%) | 19 (100%) | 20 (100%) |
| More than half the time | 3 (3%) | 0 (0%) | 3 (18%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Sometimes | 3 (3%) | 0 (0%) | 2 (12%) | 1 (5%) | 0 (0%) | 0 (0%) |
| Never/Almost Never | 19 (20%) | 0 (0%) | 1 (6%) | 18 (90%) | 0 (0%) | 0 (0%) |
| **7: Do you have a private place to change?** | | | | | | |
| Yes | 95 (99%) | 20 (100%) | 17 (100%) | 19 (95%) | 19 (100%) | 20 (100%) |
| No | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| **8: Are the restrooms kept clean throughout the day?** | | | | | | |
| Yes | 92 (96%) | 20 (100%) | 17 (100%) | 18 (90%) | 18 (95%) | 19 (95%) |
| No | 2 (2%) | 0 (0%) | 0 (0%) | 1 (5%) | 0 (0%) | 1 (5%) |
| **9: Which facilities are present in the restroom?** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Toilet | 66 (69%) | 1 (5%) | 17 (100%) | 19 (95%) | 19 (100%) | 10 (50%) |
| Door/Privacy Covering | 94 (98%) | 20 (100%) | 16 (94%) | 19 (95%) | 19 (100%) | 20 (100%) |
| Trash/Disposal | 60 (63%) | 20 (100%) | 14 (82%) | 0 (0%) | 19 (100%) | 7 (35%) |
| Running Water | 80 (83%) | 20 (100%) | 16 (94%) | 12 (60%) | 18 (95%) | 14 (70%) |
| Soap | 55 (57%) | 20 (100%) | 15 (88%) | 0 (0%) | 19 (100%) | 1 (5%) |
| Paper Towels | 2 (2%) | 0 (0%) | 2 (12%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Toilet Paper | 2 (2%) | 0 (0%) | 2 (12%) | 0 (0%) | 0 (0%) | 0 (0%) |
| **10: Is there a place for you to rest when needed?** | | | | | | |
| Yes | 71 (74%) | 20 (100%) | 15 (88%) | 3 (15%) | 19 (100%) | 14 (70%) |
| No | 24 (25%) | 0 (0%) | 2 (12%) | 16 (80%) | 0 (0%) | 6 (30%) |

| | | | | | | |
|---|---|---|---|---|---|---|
| **11: Where do you change materials on a school day?** | | | | | | |
| Female Bathroom | 79 (82%) | 20 (100%) | 17 (100%) | 4 (20%) | 19 (100%) | 19 (95%) |
| Multi-Gender Bathroom | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Wait until at home | 15 (16%) | 0 (0%) | 0 (0%) | 15 (75%) | 0 (0%) | 0 (0%) |
| Stay home the full day | 1 (1%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 1 (5%) |
| Other | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| **12: How often do you change materials on a school day?** | | | | | | |
| 1 | 48 (50%) | 16 (80%) | 8 (47%) | 16 (80%) | 0 (0%) | 8 (40%) |
| 2 | 28 (29%) | 3 (15%) | 8 (47%) | 3 (15%) | 7 (37%) | 7 (35%) |
| 3 | 18 (19%) | 1 (5%) | 0 (0%) | 0 (0%) | 12 (63%) | 5 (25%) |
| 4+ | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| **13: Do you feel comfortable discussing menstruation in school?** | | | | | | |
| Yes | 59 (61%) | 14 (70%) | 16 (94%) | 0 (0%) | 11 (58%) | 18 (90%) |

| | | | | | | |
|---|---|---|---|---|---|---|
| No | 37 (39%) | 6 (30%) | 1 (6%) | 20 (100%) | 8 (42%) | 2 (10%) |
| **14: Do you attend school/extracurriculars while menstruating?** | | | | | | |
| Only School | 35 (36%) | 1 (5%) | 9 (53%) | 3 (15%) | 15 (79%) | 7 (35%) |
| Only Extracurriculars | 19 (20%) | 0 (0%) | 1 (6%) | 17 (85%) | 1 (5%) | 0 (0%) |
| Neither | 3 (3%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 2 (10%) |
| Both | 42 (44%) | 20 (100%) | 8 (47%) | 0 (0%) | 3 (16%) | 11 (55%) |
| Other | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| **15: Are you comfortable having your period at home?** | | | | | | |
| Yes | 92 (96%) | 20 (100%) | 15 (88%) | 19 (95%) | 19 (100%) | 19 (95%) |
| No | 4 (4%) | 0 (0%) | 2 (12%) | 1 (5%) | 0 (0%) | 1 (5%) |
| **16: Do you have a fear of going to school?** | | | | | | |
| Yes | 27 (28%) | 1 (5%) | 2 (12%) | 5 (25%) | 17 (89%) | 2 (10%) |
| No | 69 (72%) | 19 (95%) | 15 (88%) | 15 (75%) | 2 (11%) | 18 (90%) |
| **17: Do you avoid physical activity?** | | | | | | |
| Yes | 59 (61%) | 1 (5%) | 11 (65%) | 20 (100%) | 14 (74%) | 13 (65%) |
| No | 37 (39%) | 19 (95%) | 6 (35%) | 0 (0%) | 5 (26%) | 7 (35%) |
| **18: Do you avoid being around people?** | | | | | | |
| Yes | 13 (14%) | 0 (0%) | 3 (18%) | 1 (5%) | 3 (16%) | 6 (30%) |
| No | 83 (87%) | 20 (100%) | 14 (82%) | 19 (95%) | 16 (84%) | 14 (70%) |

## Discussion

*Coping Strategies and Their Necessity*

While most schools provide sanitary pads and clean restrooms (98%), inconsistencies in essential supplies such as soap (58%), running water (84%), and disposal bins (63%) hinder effective menstrual management. These gaps may seem minor in isolation, but together they create significant barriers to hygiene. For example, the absence of soap or disposal bins forces

students to either reuse products, dispose of them unsafely, or delay changing them altogether, all actions that can increase the risk of infection or discomfort. Additionally, ensuring that either running water or toilet paper is available is crucial for maintaining menstrual hygiene. A lack of these resources can negatively impact and be harmful to students' ability to manage their periods effectively and sanitarily at school. Furthermore, the lack of designated rest areas in a quarter of schools (25%) emerges as a key barrier, preventing students from managing menstrual symptoms such as cramps or fatigue in comfort, which may lead to missed class time, decreased concentration, or complete absenteeism.

For instance, 16% of students prefer to wait until they return home to change menstrual materials, even though all report having a private place to change, suggesting that a private space alone is not sufficient and that not all feel comfortable using school restrooms for menstrual management. A significant portion of students (39%) avoid physical activity while menstruating, which may also influence their participation in sports or extracurricular activities. Nearly 40% of students report skipping extracurricular activities and 23% avoid attending school altogether during menstruation, highlighting the significant disruption periods cause to both academic engagement and social participation. This behavior aligns with broader patterns of withdrawal during menstruation and may be exacerbated by inadequate access to menstrual products, limited hygiene facilities, or discomfort discussing menstruation in school environments. Additionally, the lack of designated rest areas in schools could contribute to this withdrawal, as students may not have a comfortable or private space to manage pain or fatigue. These barriers can collectively impact students’ ability to engage fully in school life during menstruation.

School A demonstrates strong institutional support for menstrual health, as reflected in the consistent availability of sanitary pads and private facilities. However, the paradox of 95% reporting a lack of toilets while simultaneously indicating full attendance and menstrual confidence suggests either a misunderstanding of the term “toilet” or the existence of alternative facilities that students find acceptable.

School B stands out for its high availability of rest areas and sanitary products, which likely contributes to minimizing students’ discomfort of attending school during menstruation. As all students in this school attend either extracurriculars or schooling during menstruation, the availability of menstrual infrastructure emphasizes the importance of pairing adequate supplies with education and awareness to foster a supportive school environment.

School C demonstrates significant gaps in menstrual health support, which appear to affect students' comfort and participation in school directly. The fact that 85% of students reported the school does not provide period products, and 95% stated these materials are never available, suggests a systemic lack of access to basic menstrual hygiene resources. As a result, all students (100%) reported delaying changes of menstrual materials until they return home, indicating both a physical and psychological barrier to managing menstruation on campus. This lack of support is also reflected in participation patterns. Although 85% of students continue with extracurricular activities, many reported disengaging from regular school activities during menstruation, pointing to a loss of full participation. The absence of rest areas, reported by 84% of students, likely contributes to this issue by denying students a private space to rest or

manage discomfort. Moreover, 100% of students avoid physical activity while menstruating, signaling that the existing environment does not accommodate their needs. These findings underscore the impact of inadequate menstrual infrastructure on student well-being.

School E also provides strong menstrual hygiene resources, including sanitary pads, private changing areas, and clean restrooms. This is reflected in high attendance during menstruation (94%), suggesting that when students have access to supportive facilities, they are more likely to feel confident managing their periods and less inclined to miss school. This highlights the importance of infrastructure in promoting menstrual equity and reducing absenteeism.

Girls often have to use specific strategies to cope with menstruation at school due to a lack of adequate materials, such as sanitary products, and the absence of designated rest areas for recovery or privacy. In response to these limitations, many reduce their participation in physical activity, skip extracurriculars, or even miss school entirely during their periods. It is essential that girls do not have to adopt these coping mechanisms, as doing so compromises their right to equal education and limits their full participation in school life. When schools fail to provide adequate support, they contribute to the marginalization of menstruating students by normalizing the expectation that girls must manage their periods quietly and independently, regardless of the challenges they face. This not only places the burden of coping entirely on students but also reinforces harmful gender norms that frame menstruation as a personal inconvenience rather than a shared public health concern. As a result, girls are forced to adapt their behavior (missing class, avoiding sports, or withdrawing from social and academic engagement) instead of being supported through inclusive policies and resources. Addressing these gaps is not just about comfort, it's about creating a school environment where girls can manage their periods and fully participate having obstacles to their education.

*Social Discomfort around MHM*

Although a majority of students (75%) receive menstrual education before their first period, a notable proportion (39%) still feel uncomfortable discussing the topic in school, and 14% withdraw socially during their periods. This could potentially attribute their discomfort to the conditions surrounding their social setting over education, or from persistent stigma surrounding public menstrual conversations. It may also relate to school avoidance, as students who feel uncomfortable managing their periods in school settings may prefer to stay home.

Cultural beliefs about menstruation, which often frame it as a private or even shameful experience, may also reinforce social avoidance. Exploring these long-held cultural practices could provide further insight into how stigma influences menstrual experiences in different environments. In the study, a small proportion (4%) of students report discomfort during menstruation at home, suggesting that menstrual stigma is not confined to school but may also be shaped by family attitudes and cultural expectations. The persistence of such discomfort highlights the need for more comprehensive menstrual education that not only informs students about menstruation but also challenges the stigma surrounding it in both school and home environments.

The findings from School A highlight a successful implementation of menstrual education and infrastructure. The fact that all students received thorough information and felt prepared for menarche indicates that the school has effectively addressed the educational aspect of menstrual health. However, the low percentage of students (30%) who feel comfortable discussing menstruation suggests that social stigma persists despite robust education and facilities. This gap between knowledge and openness likely reflects broader cultural taboos that extend beyond the school environment.

The data from School B reflects a generally positive environment for MHM, with nearly universal access to basic education, hygiene supplies, and supportive facilities. The high comfort level with discussing menstruation (94%) is particularly notable, as it points to a relatively open school culture. However, the fact that over 40% of students still feel the education is insufficient raises questions about the quality and depth of the menstrual health curriculum. This highlights the need for more comprehensive and participatory approaches in menstrual education, ensuring it is both informative and responsive to students' lived experiences.

School D shows that gaps in education remain a concern, as only 79% received menstrual education, 53% hygiene education, and just 5% sex education. This lack of comprehensive instruction likely contributes to low comfort levels, with only 42% feeling comfortable discussing menstruation and 44% feeling unprepared for their first period. The limited exposure to essential topics may leave students without the knowledge or language to navigate menstruation confidently, reinforcing stigma and silence around the subject. Without targeted efforts to expand and normalize menstrual and reproductive health education, these patterns of underpreparedness are likely to persist across future student populations.

The mythological framing of menstruation in Indian society offers important context for understanding persistent stigma and taboos surrounding menstrual health. Rooted in Vedic mythology, the story of Indra's transference of sin to women following the slaying of the Brahmin Visvarupa positions menstruation as a form of divine punishment. This narrative not only reinforces the idea of impurity but also legitimizes restrictive practices that persist in certain communities. For instance, the association of menstrual blood with Indra’s curse is reflected in the belief that used menstrual rags possess harmful spiritual energy, especially in rural areas (Gopee, 2024). In addition to mythological narratives, historical texts like the Manusmriti have played a significant role in codifying menstrual restrictions. As an ancient legal and social code, the Manusmriti outlines the limitations placed on menstruating women, including isolation, ban from cooking, and exclusion from duties. Though written centuries ago, its authority continues to influence contemporary practices and societal expectations, further reinforcing the perception of menstruation as a state of impurity (Barua, 2025).

These deeply embedded mythological beliefs shape both personal attitudes and institutional policies, complicating efforts to normalize menstruation and improve menstrual hygiene. Addressing menstrual stigma, therefore, requires not only infrastructural and educational interventions but also a critical examination of the cultural and religious narratives that continue to define menstruation as a source of shame or impurity.

In many rural and tribal regions of India, including Maharashtra, menstruation is surrounded by deeply rooted social and religious taboos that subject women and girls to harmful and discriminatory practices. Specifically, the Gond and Madiya communities are large indigenous groups where menstrual stigma is prominent in rural areas (Siddiqui & Nidhi, 2025). When girls begin menstruating, they are often sent into seclusion in gaokars, or Kurma Ghars, small, poorly-built huts on the borders of villages, isolating them from their families and communities. During their periods, women are barred from entering places of worship and kitchens, from touching food, and even from having physical contact with male family members and elders (Ramesh, 2020). To avoid direct interaction, families frequently leave meals and water outside the huts, causing inconsistent eating patterns and poor nutritional intake. In addition, some women face restrictions on what they can eat or are denied access to communal water supplies, further deepening their struggle during menstruation (Siddiqui & Nidhi, 2025). These stigmas are perpetuated by myths that foster shame and fear, forcing women to hide their menstrual practices: washing cloth absorbents at night without soap or clean water and drying them secretly indoors (Ramesh, 2020). Despite national health campaigns aimed at eradicating harmful customs, the use of these huts persists in regions of rural India such as Gadchiroli, Maharashtra, due to cultural beliefs and limited education (Siddiqui & Nidhi, 2025). These practices, rooted in outdated religious and cultural beliefs, not only harm women's physical and mental health but also reflect the broader social marginalization of menstruating women in Indian society (Ramesh, 2020).

Therefore, good education and adequate facilities alone are not always enough to ensure effective menstrual hygiene management for girls in school. Even in institutions that provide clean restrooms, access to sanitary products, and menstrual education, many girls still face barriers that impact their comfort and participation. Together, religious, social, and policy-level influences create a complex environment where education and facilities alone cannot guarantee effective MHM. True progress requires not only material support but also cultural transformation through inclusive education, community engagement, and policy enforcement that challenges stigma at its root.

*Social Media and MHM*

Menstrual education is predominantly sourced from schools (97%) and families (71%), indicating that these institutions serve as the main sources of information. Friends (31%), books and printed media (28%), and the internet or social media (20%) contribute less significantly to students' knowledge about menstruation. Notably, the percentage of students learning about menstruation from social media is lower than expected in the technological world today.

The low influence of digital media as an educational source may reflect regional limitations in access to technology, indicating potential for growth in digital health literacy initiatives. A 2020 study conducted by the Maharashtra State Council of Educational Research and Training (MSCERT) in association with UNICEF concluded that only 57% of Maharashtra students had access to internet connectivity, indicating that nearly half of the student population is unable to reliably use online resources. (Puri, 2022) These limitations contribute to the overall low influence of the internet and social media in shaping menstrual health awareness among adolescents in India, not only by restricting exposure to accurate and stigma-breaking content,

but also by reinforcing dependence on traditional, and at times inaccurate, sources of information.

As a result, this digital divide may perpetuate gaps in knowledge and skimp out on the unique benefits that digital platforms can offer in advancing MHM. The internet and social media have the potential to supplement traditional education with a broader range of perspectives, including medically accurate information and personal stories that normalize menstruation and dismantle cultural taboos. Platforms like YouTube, Instagram, and health-focused apps can guide topics that are often under-addressed in formal education. Moreover, digital spaces can foster supportive communities where young people feel safe asking questions they may hesitate to voice at home or in school. However, without proper media literacy, adolescents also risk encountering misinformation, unrealistic beauty standards, or content that commercializes menstruation without addressing its health dimensions. Thus, while improved access to digital resources presents a powerful opportunity to enhance menstrual literacy, it must be paired with critical thinking skills and infrastructure that ensures equitable, safe, and informed access.

**Conclusion**

The findings of this study have significant implications across multiple domains. From a public health perspective, the research highlights the infrastructural and educational gaps in MHM that directly impact adolescent girls' health, well-being, and school engagement. By documenting how inconsistent access to essential supplies, private rest areas, and comprehensive education leads to school absenteeism, social withdrawal, and compromised dignity, the study advances the case for evidence-based policymaking. It also contributes to gender equity in education by underscoring how menstruation remains a barrier to full participation, particularly in contexts where stigma and cultural taboos persist. Importantly, this research calls for culturally responsive strategies, both within schools and broader communities, that normalize menstruation, challenge harmful myths, and foster inclusive environments. Addressing menstrual health through a multidimensional lens is essential for promoting equitable educational outcomes and advancing the broader goals of public health and gender-inclusive development.

**Limitations**

A key limitation of this study is the absence of the researcher during the data collection process. Data was gathered by a team of medical professionals and field staff, which ensured consistency in administration but limited direct observation of school environments, student interactions, and other contextual factors that may have influenced responses. As a result, insights that could have been captured through in-person observation, such as first-hand statements of facilities, are not included. Another limitation lies in the relatively small sample size. The study was conducted across only five schools, with approximately 17 to 20 students surveyed at each site. While the data provides valuable insights into MHM within this specific setting, the limited scope restricts the generalizability of the findings. These results may not be representative of broader populations or applicable to regions with differing infrastructural, educational, or cultural contexts.

**Ethical Considerations**

The study received Institutional Review Board (IRB) approval before implementation. As per the IRB guidelines, participants were required to give verbal consent to take the survey, and verbal parental consent was also obtained for those under 18 years of age. Participants were informed that they could choose not to answer any questions they felt uncomfortable with, ensuring their voluntary participation. Additionally, participants were assured that their identities would be kept confidential in the process and publication of the work, as only aggregate data would be reported.

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