

Menstrual Hygiene Practices and Their Physical, Social, and Environmental Impact in Women's Lives: A Study of 2,000 Women Reporting at Pakistan Tertiary Care Hospital

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Author's Contribution

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ABSTRACT

Objective: To evaluate menstrual hygiene practices and their association with physical, social, and environmental outcomes among women attending a tertiary care hospital in Pakistan.

Methodology: This cross-sectional study was conducted at a tertiary care hospital in Islamabad, Pakistan, from July to December 2025. A total of 2,000 women aged 15–50 years were selected through stratified random sampling. Data on menstrual hygiene practices, physical health outcomes, social consequences, and menstrual waste disposal were collected using a structured questionnaire. Associations were assessed using chi-square tests, while multivariable logistic regression identified independent predictors of adverse outcomes. A p-value <0.05 was considered statistically significant.

Results: Of the 2,000 participants, 68% used sanitary pads, 25% used cloth, and 7% used other absorbents. One-quarter reported irregular absorbent changing, and 30% bathed less than once daily during menstruation. Cloth use and irregular absorbent changing were significantly associated with higher frequencies of reproductive tract infections, urinary tract infections, skin irritation, stigma, absenteeism, and unsafe menstrual waste disposal ($p < 0.05$). Multivariable analysis showed that cloth use independently increased the odds of reproductive tract infections (AOR=2.12, 95% CI:1.62–2.78), urinary tract infections (AOR=1.76, 95% CI:1.28–2.42), and absenteeism (AOR=1.92, 95% CI:1.38–2.70). Low socioeconomic status independently predicted stigma (AOR=2.33, 95% CI:1.65–3.40) and unsafe disposal practices (AOR=2.74, 95% CI:1.90–3.98).

Conclusion: Poor menstrual hygiene practices, particularly cloth use and infrequent absorbent changing, are significantly associated with adverse physical, social, and environmental outcomes. Improving access to affordable menstrual hygiene products, health education, and safe waste disposal systems may reduce these risks and improve women's reproductive health and well-being.

Keywords: Menstruation; Menstrual hygiene; Reproductive tract infections; Urinary tract infections; Menstrual waste.

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Introduction

Menstrual hygiene management (MHM) refers to the practice of using proper sanitary pads, having the right facilities to wash and change pads and safely disposing of menstrual waste during menstruation. It is a fundamental part of reproductive health, which has come to be

recognized as a key factor in women's dignity, health and social engagement.¹

Systematic reviews of the situation in LMIC settings indicate that good menstrual hygiene practices are still low (39 to 45%) with significant differences between

rural and urban populations and between different socioeconomic groups.^{3, 4}

There is always a connection between poor menstrual hygiene and adverse reproductive health consequences. A systematic review of the health outcomes of MHM indicates that most of the studies have identified reproductive tract infections (RTIs) as being associated with poor menstrual hygiene, with odds ratios ranging from 1.3 to over 20 depending on the population and exposure definitions used.⁵ Likewise, some studies in South Asia and Africa found that women using reusable and/or poorly managed cloths are much more likely to experience symptoms indicative of RTIs compared to women using sanitary pads.⁶

Other diseases frequently reported among women with poor menstrual hygiene include dermatological problems and urinary tract infections (UTIs). Bacteriological issues are linked to these problems and prolonged exposure to wetness, microbial growth and improper genital care during menstruation particularly when dealing with reusing the absorbents without washing and drying them properly.⁷

Menstrual hygiene practices have significant social ramifications in addition to effects on physical health. Research from LMICs indicates that 11–65% of teenage girls miss school when they are menstruating, frequently as a result of cultural norms, lack of privacy, stigma, and poor sanitary facilities.⁵ Gender inequality is further reinforced by menstruation-related stigma, which causes humiliation, limited mobility, and decreased involvement in education and work, according to qualitative and mixed-method research.¹

Menstrual hygiene practices in Pakistan are still influenced by socioeconomic status, cultural norms, and access to sanitation infrastructure, available data indicates that a significant portion of women continue to rely on reusable cloths, especially in low income and rural populations where access to commercial sanitary products may be limited or unaffordable.⁸ A significant amount of menstrual waste is disposed of in hazardous ways, such as burning, open dumping, or disposal in general waste systems, according to studies from LMICs, with only a small percentage of settings reporting proper disposal procedures.⁹ This draws attention to an increasing environmental burden brought on by the extensive use of non-biodegradable sanitary goods in environments with limited resources.

There is a dearth of large-scale hospital-based analytical studies that concurrently assess the association between specific menstrual hygiene practices and their physical (UTIs, RTIs, skin conditions), social (stigma and absenteeism), and environmental (disposal behavior) impacts using inferential statistical methods. Accordingly, this study aims to evaluate menstrual hygiene practices among women attending a tertiary care hospital in Pakistan and to determine their association with physical, social, and environmental outcomes.³

Even though the body of research on menstrual hygiene is expanding, the majority of studies conducted in Pakistan are either single outcome measures or descriptive assessments of knowledge. Large scale hospital based analytical studies that concurrently assess the relationship between particular menstrual hygiene practices and their physical (UTIs, RTIs, skin conditions), social (absenteeism and stigma), and environmental (disposal behavior) impacts using inferential statistical methods are scarce.

Thus, the purpose of this study is to assess menstrual hygiene behaviors among Pakistani women who visit a tertiary care hospital and to ascertain how these practices relate to environmental, social, and physical outcomes.

Methodology

A cross-sectional study was carried out at a tertiary care hospital in Islamabad, Pakistan, between July, 2025 to December, 2025. Women between the ages of 15 -50 were recruited who visited the gynecology outpatient department for mild gynecological symptoms or routine consultations were deemed suitable for inclusion. The study excluded extremely ill or non-communicative patients, women who were pregnant or had given birth within six weeks, and those with established chronic gynecological illnesses unrelated to menstrual hygiene, such as cancer or structural uterine abnormalities. To provide sufficient representation of various population groupings stratified random sampling based on age and socioeconomic level was used.

2,000 participants were enrolled after obtaining informed consent. To ensure confidentiality and minimize reporting bias, a structured and pre-tested questionnaire was used to collect data through in-person interviews conducted by trained female research assistants in a private setting.

Demographic, menstrual hygiene practices, and outcome variables such as physical, social, and environmental

domains were gathered using the questionnaire. All of these were operationalized as menstrual hygiene practices, where the type of absorbent used (sanitary pad, cloth, or other absorbent) was one, the frequency of absorbent change (at least two times daily, once a day, and less than once daily or irregularly) were the second, and the third was the frequency of bathing during the period, at least once daily, less than once daily, and no bathing at all, as well as the method used to dispose of menstrual waste, safe by covered systems, unsafe practices such as burning waste or open dumping..

In order to further strengthen analytical validity and identify independent predictors of adverse outcomes, logistic regression analysis was planned for key dependent variables such as reproductive tract infections, urinary tract infections, stigma, and absenteeism, with menstrual hygiene practices and socioeconomic status included as independent variables.

A p-value of less than 0.05 was deemed statistically significant, and all statistical tests were two-tailed. Logistic regression analysis was planned for important dependent variables, such as reproductive tract infections, urinary tract infections, stigma, and absenteeism, with menstrual hygiene practices and socioeconomic status included as independent variables, in order to further strengthen analytical validity and identify independent predictors of adverse outcomes.

The Institutional Review Board of the tertiary care hospital that participated in the study granted ethical approval. Participants' anonymity and confidentiality were strictly upheld throughout the study, and participation

Results

A total of 2,000 women aged 15–50 years participated in the study. Most participants were aged 25–34 years (40%), married (55%), had secondary education (45%), and belonged to middle-income households (45%) (Table I).

Menstrual hygiene practices showed that 68% of participants used sanitary pads, 25% used cloth, and 7% used other absorbents. Overall, 40% changed absorbents 2–3 times daily, whereas 25% reported irregular changing. Daily bathing during menstruation was reported by 70% of participants (Table II).

Poor menstrual hygiene practices were significantly associated with adverse physical outcomes. Women using

cloth and those changing absorbents irregularly had significantly higher frequencies of urinary tract infections, reproductive tract infections, and skin irritation than sanitary pad users (Table III, $p<0.01$).

Similarly, cloth use and irregular hygiene practices were significantly associated with increased menstrual stigma and absenteeism from work or school (Table IV, $p<0.05$).

Unsafe menstrual waste disposal was more common among cloth users and women from lower socioeconomic groups, with burning and open dumping reported more frequently than safe disposal methods (Table V, $p<0.05$).

Multivariable logistic regression confirmed that cloth use independently predicted reproductive tract infections (AOR=2.12), urinary tract infections (AOR=1.76), and absenteeism (AOR=1.92), while low socioeconomic status independently predicted stigma (AOR=2.33) and unsafe disposal practices (AOR=2.74) (Table IV).

Table I: Participants Demographic Factors (n = 2000)

Variable	Category	n (%)
Age	15–24	500 (25)
	25–34	800 (40)
	35–50	700 (35)
Marital status	Married	1100 (55)
	Unmarried	800 (40)
	Divorced/Widowed	100 (5)
Education	No formal education	600 (30)
	Secondary	900 (45)
	Higher	500 (25)
Socioeconomic status	Low	800 (40)
	Middle	900 (45)
	High	300 (15)

Table II: Menstrual Hygiene Practices. (n = 2000)

Practice	Category	n (%)
Absorbent type	Pads	1360 (68)
	Cloth	500 (25)
	Other	140 (7)
Frequency of change	2–3 times/day	800 (40)
	Once/day	700 (35)
	Irregular	500 (25)
Bathing	≥Once/day	1400 (70)
	<Once/day	600 (30)

Table III: Relationship between Physical Results and Menstrual Hygiene Practices.

Practice	UTI (%)	RTI (%)	Skin Irritation (%)	χ^2	p-value
Pads	19	18	12		
Cloth	32	34	24	18.6	<0.01
Other	25	22	18		
Irregular change	Higher in all outcomes	Higher	Higher	21.4	<0.01

Table IV: Relationship between Menstrual Hygiene Practices and Social Results.

Practice	Stigma (%)	Absenteeism (%)	χ^2	p-value
Pads	55	24		
Cloth	68	38	12.9	<0.05
Other	60	30		
Irregular change	Higher	Higher	10.6	<0.05

Table V: Correlation between Environmental Outcomes and Menstrual Hygiene Practices.

Practice	Safe Disposal (%)	Unsafe Disposal (%)	χ^2	p-value
Pads	42	58		
Cloth	25	75	16.8	<0.05
Low SES	30	70	14.2	<0.05

Table IV: Multivariable Logistic Regression Study of Menstrual Health Outcome-Related Factors.

Outcome	Predictor	Adjusted OR	95% CI	p-value
RTI	Cloth use (vs pads)	2.12	1.62–2.78	<0.001
UTI	Cloth use	1.76	1.28–2.42	0.001
Skin irritation	Irregular change	1.68	1.15–2.39	0.012
Absenteeism	Cloth use	1.92	1.38–2.70	0.001
Stigma	Low SES	2.33	1.65–3.40	<0.001
Unsafe disposal	Low SES	2.74	1.90–3.98	<0.001

Discussion

Among 2,000 women visiting a tertiary care hospital in Pakistan, the current study showed a strong and consistent correlation between poor menstrual hygiene habits and negative physical, social, and environmental effects. Urinary tract infections, reproductive tract infections, skin irritation, stigma, absenteeism, and hazardous disposal were more common among women who used cloth-based absorbents and those who reported irregular changing habits than among those who used sanitary pads across all outcome domains.

A cohort study was conducted by Peter M. Chilipweli et al. to determine the connection between unsanitary menstrual management practices and occurrence of lower reproductive tract infections (RTIs) within rural communities in Tanzania in Kilolo District. Out of the 207 women recruited, 37.2% had lower RTIs; the analysis found that after adjusting on possible confounders, women who used reusable absorbent materials had a significantly higher risk of having RTIs ($p < 0.001$) and those who changed absorbents once a day and were unmarried were also significantly related to

having higher rate of infection ($p = 0.004$). These findings show the paramount importance of frequent change of the absorbents and proper menstrual hygiene in safeguarding the rural women against reproductive tract infections.¹⁰

Amina Aziz et al. carried out a cross-sectional comparative design study that examined menstrual hygiene behaviors and menstrual knowledge among teenage girls in rural and urban Sindh in Pakistan. These findings indicated significant differences between the two groups. About two out of every three interviewees indicated that their schools were inadequate in facilities such as toilets. This was more of a problem in the rural areas (76 per cent) compared to the urban areas (62%).

In either case, mothers were identified to be the primary source of menstrual information. It was only found that 38 out of rural schoolgirls were well informed of menstrual hygiene as opposed to 81 out of urban schoolgirls who were well informed on the use of sanitary pads. On the same note, the rural people had a low proportion of 12% participants who practiced good menstrual hygiene as opposed to the 71% in urban areas. The research focuses on the necessity of specific educational and infrastructure-related interventions to improve menstrual hygiene management within rural populations by demonstrating an apparent urban-rural divide in the awareness and practice of the issue.¹¹

Eva Åkerman et al. looked at young people's menstrual experiences and related social norms. Participants' perception of menstruation as a natural sign of health and womanhood encouraged a sense of sisterhood. However, menstrual symptoms negatively affected daily life, social interactions, and mental health. Stigma and restrictive standards led to shame, social disengagement, and delays in seeking therapy. The study emphasized the necessity to lessen the stigma, encourage open dialogue, and enhance timely access to menstrual health services.¹²

Silvia Castro et al. studied how misinformation and cultural taboos affected menstruation health care in the rural areas of Bangladesh. The study revealed that deeply entrenched culture norms and negative attitudes towards menstruation significantly hinder good menstrual hygiene practices, thereby affecting the productivity, health and education of women. Even though some fallacies were corrected and hygienic maintenance and washing procedures of menstrual absorbents were relaxed due to an educational intervention, the results show that a comprehensive approach that is culturally sensitive is

required to shift menstrual health practices and overcome deeply rooted taboos.¹³

Ahmed et al. (2025) found that despite having knowledge about menstrual hygiene, teenage girls in rural Bangladesh had been practicing it, but not necessarily in a satisfactory manner, because of logistical and cultural limitations. In our study, socioeconomic factors and strong cultural taboos sometimes made it difficult to maintain the use of safe hygiene in women who knew about it and who knew they were using a safe method at the beginning of the study.¹⁴

Another important topic that arose was the environment. The disposal of menstrual materials by flushing or open dumping was reported by many participants, causing environmental issues. Alam A also pointed out the lack of proper disposal methods for menstrual waste in Pakistan as shown by this study, but getting a slight boost in the access to the disposable sanitary pad.¹⁵

Hirani further emphasized that vulnerable group, such as displaced women, have additional challenges due to inadequate infrastructure and restricted product availability. These findings demonstrate the urgent need for sustainable menstrual products, safe disposal techniques, and public awareness campaigns to encourage good hygiene and reduce environmental harm.¹⁶

Iman Suhail et al. investigated the relationship between menstrual hygiene management (MHM) and socioeconomic disparities in a cross-sectional study at two tertiary care hospitals in Rawalpindi. The mother is the main information source, and the study found a strong positive association between the mother's educational attainment and the daughter's early knowledge and comprehension of menstruation. Period hygiene practices, such as utilizing preferred period products, frequent genital washing, bathing during menstruation, and suitable pain management techniques, were significantly better among women with higher educational and financial backgrounds ($p < 0.01$). On the other hand, those from lower socioeconomic backgrounds had poorer comprehension and poorer hygiene practices. These results demonstrate the critical role that education and economic empowerment play in encouraging efficient management of menstrual hygiene and lowering disparities in female health.¹⁷

A multi-country analysis was carried out by Laura Rossouw and associates. The study comes to the conclusion that menstrual hygiene management (MHM)

is necessary to improve reproductive health, gender equality, and dignity. The authors showed significant wealth-related disparities in access to sanitary products and the availability of safe, private hygiene spaces in Kinshasa (DRC), Ethiopia, Ghana, Kenya, Rajasthan (India), Indonesia, Nigeria, and Uganda using concentration indices and decomposition techniques. Numerous important characteristics, such as family infrastructure limitations, rural-urban location, income level, and education, had an impact on these differences' menstruation health and dignity.¹⁸

A cross national study in Bangladesh in 2019, for example, using data from the Multiple Indicator Cluster Survey, found that only about one in four women of reproductive age (WPRAs) used sanitary napkins, and that WPRA's level of use was strongly pro-rich (Erreygers Index EI = 0.41208, Wagstaff Index WI = 0.53251, $p < 0.001$). This gap was largely explained by the educational level of the household head, access to the media and household assets. The findings suggest that mere provision of goods cannot succeed if there are deficiencies in the socioeconomic, educational and infrastructure conditions. In your study, the adoption of improved practices in menstrual hygiene will involve interventions aimed at improving school infrastructure, affluence, maternal education, access to improved goods, and exposure to media/knowledge.¹⁹

Recent large-scale studies show that socioeconomic factors have a significant impact on outcomes related to menstrual hygiene management (MHM). For example, the proportion of adolescent girls (aged 11-15) was using sanitary pads or other sanitary products of good hygiene rose from 37% to 50% in India during 2015-16 to 2019-21. Although the Erreygers Concentration Index (ECI) fell marginally from 0.48 to 0.43, the authors found that socioeconomic inequality persisted, indicating that there was still a pro-rich access bias. When the inequality is broken down, the factors of residence, media exposure and educational attainment were shown to be important factors.²⁰

In conclusion, the findings of this research confirm the idea that with regard to the existing evidence, menstrual hygiene is a multidimensional factor that affects women's health. Consistent data from supporting studies support the observed connection between poor hygiene and negative physical, social and environmental outcomes. Hence, the provision of sanitary products alone is insufficient for the improvement of menstrual health outcomes, infrastructural development, culturally

responsive education and sustainable waste management systems need to be provided.

Conclusion

In this study, there were significant correlations between menstrual hygiene practices and the three outcome domains. The use of sanitary napkins was linked to an increased risk of RTI, UTI, and skin irritation, while using cloth and changing them less often were associated with increased risk for RTI, UTI, and skin irritation. Further, women from low SES groups had greater stigma and absenteeism and riskier disposal practices compared to those in higher SES groups. The results showed that poor menstrual hygiene practices were independently associated with negative environmental, social and physical consequences in this population.

References

1. Appiah-Agyekum NN, Nyamekye MA, Agbenu IA, Otoo DD. Menstrual hygiene knowledge and practices among female senior high school students in the New Juaben North Municipality of Ghana: a cross-sectional study. *BMC Public Health*. 2025;25(1):1563. <https://doi.org/10.1186/s12889-025-22836-8>
2. World Bank. Menstrual health and hygiene [Internet]. Washington (DC): World Bank; [cited 2026 Jul 13]. Available from: <https://www.worldbank.org/en/topic/water/brief/menstrual-health-and-hygiene>
3. Janjua M, Wajid R, Haider S, Sehgal S, Amir N, Malik KK. Factors affecting menstrual hygiene management practices among women visiting a university hospital of Lahore: a cross-sectional study. *Pak J Health Sci*. 2025;6(7):96-101. <https://doi.org/10.54393/pihs.v6i7.2763>
4. Alam A. Feminine hygiene products disposal and its implications for climate change. *Pak J Gender Stud*. 2024;24(1):1-7.
5. Manzoor T, Azam N, Pervaiz F. Assessment of knowledge and practices of menstrual hygiene management among adolescent school girls. *Pak Armed Forces Med J*. 2019;69(Suppl 2):S247.
6. Wasan Y, Baxter JA, Rizvi A, Shaheen F, Junejo Q, Abro MA, et al. Practices and predictors of menstrual hygiene management material use among adolescent and young women in rural Pakistan: a cross-sectional assessment. *J Glob Health*. 2022;12:04059. <https://doi.org/10.7189/jogh.12.04059>
7. Fayyaz S, Rahat R, Sadaf F. Exploring menstrual hygiene management in slums of Pakistan: a qualitative study on knowledge, behaviors, and obstacles. *J Dev Soc Sci*. 2022;3(1):251-63. [https://doi.org/10.47205/jdss.2022\(3-1\)20](https://doi.org/10.47205/jdss.2022(3-1)20)
8. Chilipweli PM, Idi F, Madelemo VT, Sabuni PA, Mwambope G. Association between unhygienic menstrual management practices and prevalence of lower reproductive tract infections in rural community of Kilolo District, Tanzania.
9. Van Lonkhuijzen RM, Garcia FK, Wagemakers A. The stigma surrounding menstruation: attitudes and practices regarding menstruation and sexual activity during menstruation. *Womens Reprod Health*. 2023;10(3):364-84. <https://doi.org/10.1080/23293691.2022.2124041>
10. Chilipweli PM, Idi F, Madelemo VT, Sabuni PA, Mwambope G. Association between unhygienic menstrual management practices and prevalence of lower reproductive tract infections in rural community of Kilolo District, Tanzania.
11. Aziz A, Memon S, Aziz F, Memon F, Khawaja BM, Naeem Zafar S. A comparative study of the knowledge and practices related to menstrual hygiene among adolescent girls in urban and rural areas of Sindh, Pakistan: a cross-sectional study. *Womens Health (Lond)*. 2024;20: <https://doi.org/10.1177/17455057241231420>
12. Åkerman E, Wångborg A, Persson M, Sörensdotter R, Klingberg-Allvin M. Navigating menstrual stigma and norms: a qualitative study on young people's menstrual experiences and strategies for improving menstrual health. *BMC Public Health*. 2024;24(1):3401. <https://doi.org/10.1186/s12889-024-20936-5>
13. Castro S, Czura K. Cultural taboos and misinformation about menstrual health management in rural Bangladesh. *World Dev*. 2025;188:106871. <https://doi.org/10.1016/j.worlddev.2024.106871>
14. Ahmed T, Hasan MK, Aunto TK, Ahmed T, Zahid D. Menstrual hygiene knowledge and practices among adolescent schoolgirls in flood-affected rural Bangladesh. *Reprod Health*. 2025;22(1):87. <https://doi.org/10.1186/s12978-025-02041-x>
15. Alam A. Feminine hygiene products disposal and its implications for climate change. *Pak J Gender Stud*. 2024;24(1):1-7.
16. Hirani SA. Barriers to women's menstrual hygiene practices during recurrent disasters and displacement: a qualitative study. *Int J Environ Res Public Health*. 2024;21(2):153. <https://doi.org/10.3390/ijerph21020153>
17. Suhail I, Sajid I, Zulfiqar S, Akhtar A, Suhail M. Menstrual hygiene management and its association with socio-economic inequalities: a cross-sectional study at two tertiary care hospitals of Rawalpindi. *Pak Armed Forces Med J*. 2024;74(6):1665. <https://doi.org/10.51253/pafmj.v74i6.12848>
18. Rossouw L, Ross H. Understanding period poverty: socio-economic inequalities in menstrual hygiene management in eight low- and middle-income countries. *Int J Environ Res Public Health*. 2021;18(5):2571. <https://doi.org/10.3390/ijerph18052571>
19. Hasan E, Chakma S, Khanam M, Hajizadeh M. Socioeconomic inequalities and its spatial pattern in sanitary napkin use in Bangladesh: evidence from the 2019 Multiple Indicator Cluster Survey. *Popul Health Metr*. 2025;23(1):1-7. <https://doi.org/10.1186/s12963-025-00401-0>
20. Chakrabarty M, Singh A, Singh S, Tripathi P. Spatiotemporal change in socioeconomic inequality in hygienic menstrual product use among adolescent girls in India during 2015-2019. *Int J Equity Health*. 2023;22(1):202. <https://doi.org/10.1186/s12939-023-02020-3>