

Original Research Article

A cross-sectional study to estimate the prevalence of cloth usage as menstrual hygiene management among young female adults in an urban chawl of Mumbai

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ABSTRACT

Background: Menstrual hygiene management (MHM) is a key public health concern in India, where cultural and economic barriers restrict access to proper hygiene products. Safe hygiene practices in early adulthood are crucial for young women's immediate and long-term health. The study aimed to assess the prevalence of cloth use for menstrual hygiene among young female adults. It evaluated factors that influenced the choice and examined the association between cloth use and genitourinary infections.

Methods: A cross-sectional study was conducted among young female adults aged 18-22 years residing in a chawl area of Mumbai. The sample size was 100, selected through systematic random sampling. Data were collected using a structured questionnaire.

Results: The prevalence of cloth usage was found to be 32%. The married young female adults, the low education level of the mothers, the source of information, and the poor knowledge regarding MHM were the factors that influenced the usage of cloth. Prevalence of genitourinary infections among the participants was 53% and was found to be associated with the use of cloth.

Conclusions: The study identified that 32% of young female adults in Mumbai's chawl use cloth for menstrual hygiene, which was influenced by factors such as maternal education, marital status, source of information, and knowledge regarding MHM. To enhance reproductive health, it is crucial to improve access to affordable hygiene products and address the cultural barriers. Overcoming these obstacles will promote better menstrual hygiene practices and reproductive health.

Keywords: Chawl, Cloth usage, Menstrual hygiene management, Mumbai, Young female adults

INTRODUCTION

Menstrual hygiene management (MHM) is an essential component of women's health, dignity, and well-being, yet it remains a neglected area of public health in many low-and middle-income countries. Effective MHM requires access to clean absorbents, privacy for changing and washing, adequate water and sanitation facilities, and proper knowledge of hygienic practices. However, millions of women and girls in India continue to face cultural taboos, economic constraints, and infrastructural

barriers that prevent safe and dignified menstrual management.¹

According to the National Family Health Survey-5 (2019-21), about 64.2% of women aged 20-24 years reported using sanitary napkins, while 50% still relied on cloth.² These figures highlight that, despite improved awareness and the availability of menstrual products, inequities persist, especially among low-income urban and rural populations. The use of unclean or improperly dried cloth increases the risk of reproductive tract infections (RTIs)

and urinary tract infections (UTIs), which can have long-term consequences for reproductive health.³

While school-based interventions and government initiatives such as the Suvidha oxo-biodegradable sanitary napkin scheme and menstrual hygiene scheme (MHS) have aimed to increase access to affordable menstrual products, awareness gaps and social stigma continue to restrict uptake, particularly among women living in informal settlements or urban chawls.^{4,5}

Spatial analysis from recent national survey data reveals that the use of hygienic menstrual methods among young women in India is significantly influenced by wealth status, education level, and place of residence, underscoring the importance of socio-economic context beyond mere product access.⁶

Evidence from community-based studies indicates that maternal education, marital status, and sources of information strongly influence menstrual hygiene practices.⁷

Fortunately, there is limited research focusing on young female adults (18-22 years) residing in densely populated urban chawls, where access to hygiene products and sanitation facilities may be inadequate. Understanding their menstrual hygiene behaviour and related health outcomes is essential for designing targeted interventions that promote safer practices.

Therefore, this study was conducted to assess the prevalence of cloth use for menstrual hygiene among young female adults residing in urban chawls of Mumbai, to identify socio-demographic and knowledge-related determinants influencing this practice, and to examine its association with genitourinary infections.

METHODS

Study design

A community-based cross-sectional study was conducted to assess the prevalence and determinants of cloth use for menstrual hygiene among young female adults residing in an urban chawl of Mumbai.

Study area and setting

The study was carried out in BIT chawl, located in Agripada, Mumbai, between April and September 2023. Data collection involved house-to-house visits by female investigator during morning and evening hours to ensure participant availability and privacy.

Study population and eligibility

The study included young female adults aged 18-22 years who were permanent residents of BIT chawl.

Inclusion criteria

Females aged 18 to 22 years who had been residing in the chawl for at least six months, were willing to provide informed consent and accurate information regarding their menstrual hygiene practices, and had experienced at least one menstrual cycle within the past three months were included in the study.

Exclusion criteria

Women who were currently pregnant or had delivered within the past six months, those diagnosed with gynaecological conditions that could alter menstrual patterns-such as menorrhagia, endometriosis or fibroid; those receiving hormonal therapy for polycystic ovarian syndrome (PCOS); and individuals with cognitive or developmental impairments that could affect the reliability of their responses were excluded from the study.

Sample size

The sample size was calculated using the formula $n = \frac{p(1-p)}{(Z/E)^2}$, assuming a 50% prevalence of cloth use based on NFHS-5 (2019-21), with 95% confidence ($Z=1.96$) and 10% precision ($E=0.1$), yielding 96.04, which was rounded to 100 participants for operational feasibility.

Sampling technique

A systematic random sampling method was adopted. Based on the estimated 156 eligible females across 800 households (data obtained from the health post), the sampling interval (k) was calculated as 2 (calculated $k=1.56$, rounded to 2). A random start was determined using a coin flip, and every 2nd household was visited subsequently. If multiple eligible females were present in a household, the eldest was selected, assuming she would likely influence younger siblings' menstrual hygiene practices.

Data collection

After approval from the institutional ethics committee for academic research projects (ECARP/2023/236), data were collected using a semi-structured, face-validated interviewer-administered questionnaire. The questionnaire covered socio-demographic variables, menstrual hygiene variables and genitourinary symptoms. All responses were cross-checked for consistency at the end of the interview.

Statistical analysis

Data were entered in Microsoft Excel 2021 and analysed using IBM SPSS Statistics version 26.0. Descriptive statistics such as mean, standard deviation, frequencies, and percentages were used to summarise data. Chi-square test was applied to assess associations between type of

menstrual absorbent and socio-demographic or knowledge variables. A $p < 0.05$ was considered statistically significant.

RESULTS

The study was conducted among 100 young female adults in an urban chawl of Mumbai. The mean age of the participants was 19.9 ± 1.43 years and the mean age of menarche was 13.2 ± 1.1 years. The majority of them were unmarried (86 out of 100) and belonged to the Hindu religion (80 out of 100). Most of the participants were educated up to high school level (44 out of 100), while the majority of the mothers of the participants had comparatively lower education, with one-third being uneducated (33 out of 100) and another 31 educated only up to primary school. The average monthly family income of the participants was $\text{₹ } 23792.7 \pm 8440.5$.

Out of the 100 participants, 32 used cloths as their method of MHM. Among the cloth users, 10 (31.3%) used it every day, while the remaining used other disposable or reusable products occasionally. Half of the cloth users stated that the reusability of cloth, and thus its economic benefit, was the reason for choosing it. Only 7 out of 32 cloth users felt uncomfortable using the product, while 17 (53.1%) had a neutral feeling toward it.

Most cloth users (40.6%) reported changing their products very frequently, i.e., more than 4 times a day, whereas half of the sanitary product users (50.0%) changed them with the frequency of about 3 to 4 times a day. The average monthly expenditure was lower among cloth users ($\text{₹ } 14.1 \pm 11.0$) compared to sanitary product users ($\text{₹ } 45.9 \pm 9.6$). Most participants relied on family income for purchase (90.0% of cloth users and 75.0% of sanitary product users). Leakage was the most common problem encountered by the cloth users, 20 out of 32 (62.5%), whereas discomfort was reported by 62 out of 68 (91.2%) disposable or reusable product users.

A higher proportion of married women (57.1%) used cloth compared to unmarried women (27.9%). The proportion of cloth users reduced with the educational level of the mother. Participants whose mothers were uneducated (60.6%) were more likely to use cloth. The method taught by mothers had a strong influence-76.9% of those taught to use cloth continued the same practice. Participants who received menstrual hygiene information from schools (98.3%) predominantly used disposable sanitary products, whereas those informed by family (85.7%) mainly used cloth. Similarly, the majority of participants who rated themselves as "not very knowledgeable" (75%) about menstrual hygiene used cloth.

Marital status, mother's educational level, method taught by mother, source of information about menstrual hygiene, and self-rated knowledge showed statistically

significant associations with the type of menstrual hygiene product used ($p < 0.05$).

Among the participants, 29 out of 32 (90.6%) of cloth users reported experiencing symptoms suggestive of genitourinary infection, compared to 24 out of 68 (35.3%) of those using disposable or reusable sanitary products. The association between the type of menstrual hygiene product used and the presence of genitourinary infection was statistically significant ($\chi^2 = 26.7$, $p < 0.001$). The odds of having such symptoms were 17.7 times higher among cloth users compared to users of disposable or reusable sanitary products (95% CI: 4.89-64.3).

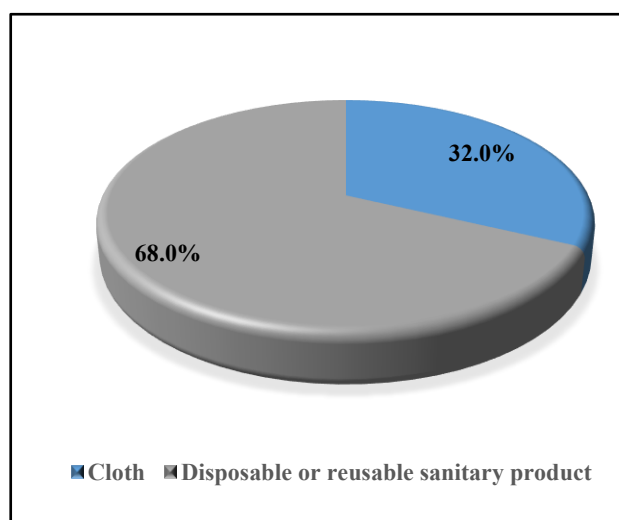


Figure 1: Distribution of participants by the type of menstrual hygiene product used, (n=100).

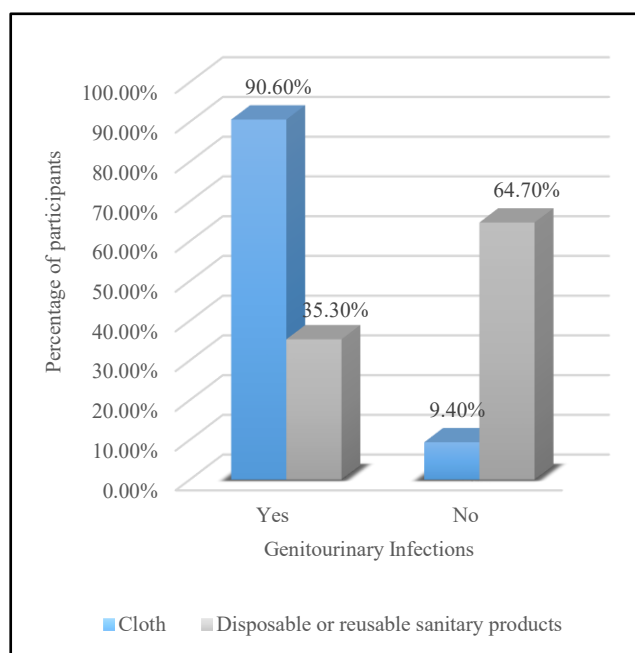


Figure 2: Distribution of participants by presence of genitourinary infections according to the type of menstrual hygiene product used, (n=100).

Table 1: Sociodemographic characteristics of the participants, (n=100).

Socio-demographic characteristics	N	Percentages (%)
Age (in years)		
18	22	22.0
19	14	14.0
20	24	24.0
21	22	22.0
22	18	18.0
Marital status		
Married	14	14.0
Unmarried	86	86.0
Religion		
Hindu	80	80.0
Muslim	14	14.0
Others	06	06.0
Educational level		
Uneducated	3	3.0
Primary school	11	11.0
Secondary school	36	36.0
High school	44	44.0
Graduation	6	6.0
Educational level of mother		
Uneducated	33	33.0
Primary school	31	31.0
Secondary school	10	10.0
High school	26	26.0

Table 2: Determinants of menstrual hygiene product used, (n=100).

Variables	Cloth, (n=32)		Disposable or reusable sanitary product users, (n=68)		P value
	N	%	N	%	
Marital status					
Married	8	57.1	6	42.9	0.030*
Unmarried	24	27.9	62	72.1	
Religion					
Hindu	26	32.1	55	67.9	0.919^
Muslim	4	28.6	10	71.4	
Others	2	40.0	3	60.0	
Educational level					
Uneducated	2	66.7	1	33.3	0.091^
Primary school	7	63.6	4	36.4	
Secondary school	10	27.8	26	72.2	
High school	12	27.3	32	72.7	
Graduation	1	16.7	5	83.3	
Educational level of mother					
Uneducated	20	60.6	13	39.4	0.001*
Primary school	8	25.8	23	74.2	
Secondary school	2	20.0	8	80.0	
High school	2	7.7	24	92.3	
Comfort in discussing menstruation with mother					
Comfortable	13	39.4	20	60.6	0.119*
Uncomfortable	09	45.0	11	55.0	
Neutral	09	25.0	27	75.0	
Embarrassed	01	09.1	10	90.9	
Method taught by mother					
Cloth	30	76.9	09	23.1	<0.001*
Disposable	02	3.3	59	96.7	

Continued.

Variables	Cloth, (n=32)		Disposable or reusable sanitary product users, (n=68)		P value
	N	%	N	%	
Source of information about menstrual hygiene					
Family	24	85.7	04	14.3	<0.001*
Friends	07	53.8	06	46.2	
School	01	01.7	58	98.3	
Self-rated knowledge about MHM					
Not very knowledgeable	27	75.0	9	25.0	<0.001*
Somewhat knowledgeable	5	8.6	53	91.4	
Very knowledgeable	0	0.0	6	100.0	

*Chi-square test, ^fisher exact test

DISCUSSION

A community-based cross-sectional study among 100 young female adults residing in an urban chawl of Mumbai found that one-third (32%) of participants used cloth as their menstrual hygiene material. The use of cloth was significantly associated with marital status, mother's education, method taught by the mother, source of information about menstrual hygiene, and self-rated menstrual hygiene knowledge ($p < 0.05$).

The present findings reinforce and extend recent evidence on menstrual hygiene practices and health outcomes among young women in India. According to a large national study of women aged 15-24 years using data from NFHS-5 (2019-21), 76.15% reported exclusive use of hygienic menstrual products, with urban usage (89.37%) substantially higher than rural (72.32%), and stark socio-economic differences observed by education and wealth. In that study, women with no education reported only 43% exclusive use compared with 92% among the highest educated.⁸ In our urban sample, even though the setting was ostensibly more advantaged, almost one-third still used cloth, highlighting persistent gaps in hygienic menstrual material use within urban poor settings.

The findings of the present study are mirrored by several previous studies that have documented socio-demographic predictors of hygienic product use. A 2023 study by Babbar et al found that in India, over half of menstruating girls and women still used cloth and that higher household wealth and education levels favoured the use of disposable or commercially manufactured products.⁹

A large repeated-cross-sectional analysis by Singh et al found that among Indian women aged 15-24 years, the likelihood of using non-disposable cloth during menstruation was significantly higher among those from lower wealth quintiles, with no schooling and poorer sanitation-highlighting the intersection of socio-economic disadvantage and menstrual hygiene gaps.¹⁰

The current study also found a strong association between the type of menstrual product used and genitourinary

infections. The odds of having such symptoms were 17.7 times higher among cloth users. A study by Samantaray et al from eastern India demonstrated a significant association between the use of cloth as absorbents and the occurrence of bacterial vaginosis among women.¹¹

Several implications can be drawn from these findings. First, the strong influence of the mother's education, the method taught by the mother, and the source of information about menstrual hygiene indicate that interventions engaging family networks and parental education are essential. In urban slum settings such as ours, school-based programmes appear to have a positive effect, as school-based information was associated with sanitary product use. Second, the high prevalence of genitourinary infections among cloth users indicates that attention must also be paid to proper cleaning, drying, changing frequency, and disposal. Third, the lower monthly expenditure among cloth users suggests that cost is a barrier; the supply of low-cost hygienic materials and subsidies may be warranted. Finally, the setting (urban chawl) suggests that even within urban communities, pockets of menstrual inequity persist and may be less visible than in rural areas.

Limitations

The cross-sectional design of this study limits causal inference between menstrual hygiene practices and genitourinary symptoms. Data were self-reported and thus subject to recall and reporting bias, particularly regarding sensitive topics such as menstrual behaviour and genital symptoms. The sample was drawn from a single urban chawl in Mumbai, which may limit representativeness. Moreover, microbiological confirmation of reported infections was not performed, which might have led to either overestimation or underestimation of the true prevalence of genitourinary conditions.

CONCLUSION

This study underscores that menstrual hygiene practices among young women are shaped by a complex interaction of education, family influence, and awareness. The results highlight the continued need for menstrual health education interventions targeting both adolescent

girls and mothers, alongside initiatives to promote affordable hygienic menstrual products. By identifying key determinants-especially the role of maternal education and formal information sources-this study adds to the growing evidence supporting comprehensive, community- and school-based menstrual health promotion to be continued as an essential component of women's reproductive health programmes in India.

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Conflict of interest: None declared

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