

Menstrual Hygiene Management and its Association with Socio-economic Inequalities: A Cross-Sectional Study at Two Tertiary Care Hospitals of Rawalpindi

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ABSTRACT

Objective: To assess the degree of awareness and affordability of menstrual products among women of various socioeconomic classes.

Study Design: Cross-sectional study.

Place and Duration of Study: Obstetrics and Gynecology Outpatient Department, Fauji Foundation Hospital, Rawalpindi and Combined Military Hospital, Rawalpindi Pakistan, from Jan to Jul 2023.

Methodology: A total of 434 females aged 15-49 years were included, out of which 217 were from Fauji Foundation Hospital, Rawalpindi and 217 from Combined Military Hospital, Rawalpindi. A validated, structured questionnaire was given to all respondents. to compare associations of socio-economic status with knowledge and affordability of menstrual products.

Results: Data showed a positive association between mothers' level of education and their daughters' early knowledge of menstruation. The source of this knowledge predominantly is mother. When use of product of choice, reasons for not using a tampon/menstrual cup, washing genitalia after each toilet visit, bathing and reasons for not bathing during menses, pain relieve during menses and indulgence in going out during menses were compared in respondents with higher education versus lower education, there was significant association seen in the higher educational group ($p < 0.01$). Higher family income was also significantly associated with better hygiene practices amongst the respondents.

Conclusion: Our research underscores the importance of cognizance of mothers through early education, to ensure that young girls are not only well-aware at the age of menarche but also enabled to track their menstrual health confidently. Education should be coupled with accessible and affordable menstrual products to empower women for making informed choices.

Keywords: Awareness, Menstrual Hygiene Products, Socioeconomic Factors, Women.

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INTRODUCTION

A women's physical, psychological, and social health are all impacted by her menstrual health and hygiene, which are essential aspects of her overall wellbeing. The United Nations Children's Emergency Fund (UNICEF) defines menstrual hygiene management (MHM) as women and adolescent girls having access to menstrual hygiene products, soap and water, and proper sanitation facilities for the course of their monthly cycles. It also involves women learning fundamental facts about the menstrual cycle and how to manage it with confidence and dignity.¹

Every month 1.8 billion women menstruate, yet a major portion of this population lacks adequate knowledge as well as basic facilities to handle their menstruation in a proper and healthy way.² Menstruation still being deemed as a taboo subject in

many parts of the world, is one of the main reasons for this.^{3,4} Literature suggests that because of social, cultural and religious restrictions as well as knowledge gaps, young girls in low and middle-income countries (LMICs) face difficulties with menstruation leading to misconceptions and unhygienic practices.^{5,6}

Practices related to menstrual hygiene carry substantial health implications, and if neglected can result in diseases such as bacterial vaginosis and other reproductive tract infections.⁷ Due to variations in economic standing, cultural customs and beliefs, and level of education these practices differ worldwide.⁸ Affordability of menstrual products is an obstacle faced in many countries, particularly by people from lower socio-economic backgrounds.⁹ Multiple studies conducted previously in developing countries including Southeast Asia, have shown a positive correlation between income and menstrual product use, revealing that women from lower-income

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backgrounds frequently face challenges in obtaining sanitary products, which contributes to their state of poverty.¹⁰⁻¹²

It is important to pay attention to the menstruation requirements of women and girls. Access to safe menstrual hygiene products can have a positive impact on their health and overall well-being. Over the last few years attention to MHM has increased with enquiries highlighting the myths and traditions surrounding menstruation in resource-limited countries like Nigeria, Nepal, Ethiopia and India.^{5,6} However, the same cannot be said about Pakistan which befalls same confined resources. With limited cross-sectional studies on this topic conducted across Pakistan, the aim of our study is to bridge this literature gap by measuring the level of knowledge and assessing the affordability of menstrual products among women from different socioeconomic backgrounds.

METHODOLOGY

The cross-sectional study was conducted at the outpatient department of two tertiary care hospitals of Rawalpindi i.e., Fauji Foundation Hospital Rawalpindi and Combined Military Hospital (CMH) Rawalpindi, Pakistan from January 2023 to July 2023, after getting the approval from ethics committee, (letter No. FF/FUMC/215-348 Phy/23). A sample size of 434 was calculated using Cochran's formula with CI 95% taking prevalence of MHM to be 50% in Pakistan.

Inclusion Criteria: All women of reproductive age (15-49 years) experiencing regular menstruation visiting OPD of Fauji Foundation Hospital and Combined Military Hospital Rawalpindi were included.

Exclusion Criteria: Pregnant women, women with irregular cycles, amenorrhea, mentally retarded, and those undergone hysterectomy were excluded.

Data was gathered through an adapted structured questionnaire in accordance with our parent study.¹³ Questionnaire was subjected to multiple peer reviews for expert opinion and was validated using CVI and content validity rates. Reliability analysis for interclass consistency was done using interclass correlation coefficient (ICC) and Cronbach's alpha. The questionnaire was administered in person by trained female interviewers to ensure comfort and openness. Participants were briefed about the study's purpose and assured of their privacy and confidentiality. Informed consent was

obtained before data collection begun. Those responded with language barriers, translators explained the questions. Data was entered on daily basis to avoid missing values.

The questionnaire included sections on demographic information, socioeconomic status, menstrual product awareness, current product usage, and affordability. A range of questions were designed to assess participants' knowledge of various menstrual products, the challenges they face in accessing them, and how they perceive the cost in relation to their monthly income. Responses were recorded immediately by the interviewer to minimize bias and errors in data transcription. Efforts were made to maintain a respectful and non-judgmental approach throughout the interviews to create an environment that encourages honest and detailed responses. The confidentiality of the patients was maintained using coding.

For analysis of data, Statistical Package for Social Sciences (SPSS) version 29.0 was used. Two categories each, for education (low and high) and monthly income (<70,000 and ≥70,000) were made for assessment. Descriptive variables were expressed in frequencies and percentages. For inferential statistics, Chi-square test was used and a *p*-value lower than or equal to 0.05 was regarded as statistically significant.

RESULTS

The current study was conducted recruiting 434 females, amongst which 217 were from Fauji Foundation Hospital, Rawalpindi and 217 from CMH, Rawalpindi. The mean age of the respondents was 28.11±7.98 years, with the age range being 15-49 years. Our findings indicate a significant association between the educational level of mothers and their daughters' early knowledge of menstruation as shown below in Table-I. It was found that most women regardless of their mother's low or high educational status knew about menstruation before menarche. The source of this knowledge were predominantly mothers in both the categories.

Respondents with higher education significantly preferred more hygienic menstrual products such as disposable pads (84.8% vs. 67.5%, *p*<0.001) and were less likely to use cloth (16.5% vs. 33.5%, *p*<0.001) as shown in Table-II. The reasons for women not using tampons/menstrual cups were also questioned. Lack of awareness was a major reason amongst them, particularly in the lower education group (66.5% vs. 42.0%, *p*<0.001).

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Moreover, higher family income was associated with a greater use of disposable pads (90.4% vs. 58.2%, $p < 0.001$) and a higher likelihood of always having sufficient products available for change during menstruation (93.6% vs. 73.9%, $p < 0.001$), as depicted by Table-III. This suggests that economic constraints significantly impact menstrual hygiene management.

Table-I: Association Between Education of Mother and Knowledge of Respondents Regarding Menstruation

	Education of Mother		p-value
	Low (n=219)	High (n=215)	
Prior knowledge of menstruation before menarche	125(57.0%)	154(71.6%)	0.008
Source of information			
Mother	143(65.3%)	137(63.7%)	0.025
Grandmother	14(6.4%)	5(2.3%)	
Teacher	13(5.9%)	11(5.1%)	
Siblings /relatives	29(13.2%)	49(22.8%)	
Self-knowledge	20(9.1%)	13(6.0%)	

Table-II: Association Between Education of Respondents and Preference of Menstrual Product

	Education of Respondents		p-value
	Low (n=203)	High (n=231)	
Knowledge about the different sanitary products in market	143(70.4%)	171(74.0%)	0.426
Product of Choice			
Cloth	68(33.5%)	38(16.5%)	<0.001
Disposable pads	137(67.5%)	196(84.8%)	
Tampons	4(2.0%)	5(2.2%)	
Menstrual cup	1(0.5%)	3(1.3%)	
Cotton/tissue paper	7(3.4%)	9(3.9%)	
Reasons for not Using Tampons/Menstrual Cup			
Unaware	135(66.5%)	97(42.0%)	<0.001
Unaffordable	11(5.4%)	12(5.2%)	
Uncomfortable	35(17.2%)	86(37.2%)	
Unavailability	11(5.4%)	15(6.5%)	
Affects virginity	6(3.0%)	13(5.6%)	

Furthermore, educational status was significantly linked with better hygiene practices as depicted by Table-IV. Higher education respondents were more likely to maintain cleanliness, including bathing during menstruation (64.5% vs. 36.9%, $p = 0.001$), and were more proactive in managing menstrual pain, often opting for self-medication (32.0%) as opposed to lower education respondents who found home remedies to be effective (36.5%).

This analysis highlights a strong association between socioeconomic factors, especially education and income, with menstrual hygiene practices and product usage, underscoring the critical need for

educational interventions and economic support to improve menstrual health management.

Table-III: Association Between Family Income Per Month and Product of Choice

	Family Income Per Month		p-value
	<70,000 (n=184)	≥70,000 (n=250)	
Product of choice			
Cloth	83(45.1%)	23(9.2%)	< 0.001
Disposable pads	107(58.2%)	226(90.4%)	
Tampons	2(1.1%)	7(2.8%)	
Menstrual cup	0(0.0%)	4(1.6%)	
Cotton/tissue paper	6(3.3%)	10(4.0%)	
Always have sufficient products to change	136(73.9%)	234(93.6%)	<0.001

Table-IV: Association Between Education of Respondents and Menstrual Practices

	Education of Respondents		p-value
	Low (n=203)	High (n=231)	
Clean genitalia after every toilet visit	169(83.3%)	216(93.5%)	0.001
Bathe during menses?	75(36.9%)	149(64.5%)	0.001
Reasons for not Bathing During Menses			
Causes cramps	24(11.8%)	22(9.5%)	<0.001
Causes irregular flow	8(3.9%)	12(5.2%)	
Causes water to fill in stomach	10(4.9%)	4(1.7%)	
Advised by elders	88(43.3%)	45(19.5%)	
What do you do to Relieve the Pain During Menses?			
Self-medication	38(18.7%)	74(32.0%)	0.015
Consulting a gynaecologist	8(3.9%)	16(6.9%)	
Herbs/homeopathic medicines	18(8.9%)	12(5.2%)	
Home remedies	74(36.5%)	69(29.9%)	
Sleep	17(8.4%)	13(6.5%)	
Do nothing	48(23.6%)	45(19.5%)	
Why do you Avoid Going out During Periods?			
Experience pain	41(20.3%)	58(25.1%)	0.012
Scared of evil spirits	13(6.4%)	2(0.9%)	
Scared of staining clothes	24(11.8%)	25(10.8%)	
Don't avoid going out	125(61.6%)	146(63.2%)	
How do you Dispose of the Product?			
Bury it	4(20.0%)	7(3.0%)	0.456
Burn it	38(18.7%)	32(13.9%)	
Flush it in toilet	8(3.9%)	5(2.2%)	
Throw it in the waste	150(73.9%)	183(79.2%)	

DISCUSSION

Our study reveals that over 50% of respondents had prior knowledge of menstruation before menarche, regardless of their mother's education level. Mothers were the most often cited source of this information for the respondents which is consistent

with studies done in Quetta, India, and Ethiopia.¹⁴⁻¹⁶ This finding underscores the critical role mothers play as primary sources of menstrual health information. Additionally, Upashe *et al.*, also found that mothers' educational status was positively correlated with respondents' good understanding of menstruation and menstrual hygiene compared to their counterparts.¹⁷

In our study education of the respondents was also significantly associated with their knowledge and preference of menstrual product. Prior research also outlines a direct relationship between formal education and better hygienic practices, with women of a higher education status preferring disposable pads over cloth.^{18,19} To our surprise when questioned about their reasons for not using tampons/menstrual cups, the primary response given by majority of the respondents was their lack of awareness of the said products. This highlights the need of educating girls about menstrual hygiene at a young age urging the government to implement comprehensive menstrual health programs into the curriculum of schools and colleges, including workshops led by healthcare professionals and peer educators to provide practical demonstrations on product use and to normalize discussions about menstruation.

Period poverty has been a crucial yet overlooked issue when it comes to the reproductive health of women of reproductive age. Poor affordability and access to menstrual products, lack of privacy and disposal facilities, unawareness, and inadequate infrastructure pose challenges to menstrual hygiene management.²⁰ Literature also demonstrates clear wealth-based inequality in the aspects of menstrual health management across developing countries.²¹ This is also supported by our study's findings, which showed a positive association between higher family income and both the use of safe, disposable pads and the advantage of always having sufficient materials on hand to change throughout menstruation.

Association between education and menstrual practices was also found to be significant with women of lower educational status saying that they avoid bathing during menses as advised by their elders. These findings are in alignment with studies conducted in Quetta and Karachi where similar reasons were reported for not bathing. However, it was surprising to find that even 35% of the higher education lot did not bathe during menses. The myth that women should not take a bath while menstruating can have an adverse impact on hygiene

and should be negated by better awareness and education on the matter. It was also observed that low education respondents preferred home remedies over self-medication to relieve pain during menses as compared to higher education respondents. It is worth mentioning that regardless of their educational status majority respondents did not avoid going out during menstruation and observed good disposal technique of throwing the used product in waste.

LIMITATION OF THE STUDY

Our study focuses on a particular geographic area, Rawalpindi, and has a small sample size which means that menstrual practices and access to them might vary in different areas. Hence more precise results can be obtained by collecting data from a wide range of healthcare facilities in different cities with a larger sample size. The data collected relies on self-reported responses from participants. This introduces the potential for social desirability bias, where participants may provide answers, they believe are socially acceptable rather than their true practices or beliefs.

CONCLUSION

Menstrual hygiene is a critical aspect of women's health that often goes overlooked. Our research underscores the importance of early education, particularly of mothers, to ensure that young girls are well-prepared for menarche, allowing them to track their menstrual health confidently. However, there is a need for, widespread awareness campaigns, to fight period poverty and to acknowledge the possibility of raising women's understanding of sustainable period alternatives as successful menstrual health management techniques. Education should be coupled with accessible and affordable menstrual products to empower women to make informed choices.

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Authors' Contribution

The following authors have made substantial contributions to the manuscript as under:

IS & IS: Study design, drafting the manuscript, data interpretation, critical review, approval of the final version to be published.

SZ & AK: Data acquisition, data analysis, approval of the final version to be published.

MS: Critical review, concept, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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