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KNOWLEDGE, ATTITUDES AND PRACTICES REGARDING MENSTRUATION IN UNIVERSITY LEVEL WOMEN IN FAISALABAD, PAKISTAN: A CROSS-SECTIONAL STUDY

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Article Info

Abstract

Background:
Menstruation is a reproductive experience that affects all people irrespective of their geographical location, however, there exists a lack of awareness regarding the issue leading to inadequate management of the menstrual cycle among adolescents and women from low-and-middle income countries. In Pakistan, owing to the existence of a patriarchal society, period poverty and lack of health education, proper MHM has become challenging.

Methods:
In order to examine the knowledge, attitudes, and practices regarding menstruation, a cross-sectional study was conducted among women of university-level in the Faisalabad district of Punjab province, Pakistan. A pre-validated self-reported questionnaire adapted from Brooks-Gunn & Ruble (1982) was administered among 384 female university students who were selected using probability sampling method. Information related to demographic characteristics, menstrual knowledge, practice and attitudes as well as symptoms experienced during menstruation was obtained through questionnaire and analyzed by descriptive statistics and Pearson's chi-square test (SPSS v25.0, $p<0.005$).

Results:
The average age of the respondents was 25 years old (age range of 19 to 45 years). Menarche at age 13 years was the most common age group among the respondents (43.34%). Only 57.02% had adequate knowledge about delayed periods and its causes, while 44.04% had no knowledge about menstruation. One-time use sanitary pads were commonly used among the participants (36.65%), while 79.9% disposed of the menstrual products in the dustbins. As many as 76.82% of the respondents experienced absence from the educational institutions during their menstrual period. Eighty-one percent of the respondents reported having dysmenorrhea. Irritability (45.8%), anxiety (45.3%), depression (38.0%), and insomnia (41.1%) were common psychological symptoms among the respondents. What is alarming is that 89.75% found themselves embarrassed purchasing menstrual products, while 51.30% used.

Conclusion:
The problems associated with ignorance, hygienic behavior, and cultural myths surrounding menstrual health are widespread among girls attending universities in Faisalabad. According to the above analysis, there seems to be an urgent need for the introduction of menstrual health education programs in order to address the problem

Keywords: *Menstrual hygiene management, knowledge attitudes and practices, dysmenorrhea, university students, Pakistan, reproductive health, menstrual taboos*

1. INTRODUCTION

Menstrual process is a biological process that involves regular bleeding through the vagina monthly of the lining of the uterus of women in their reproductive age (Anthoney, 2017). Despite the existence of this process, there has been less intervention in this area since little emphasis has been given to this aspect of women's health, particularly in developing nations where there is a link between poverty, gender inequality, lack of knowledge, and poor infrastructure. Worldwide, over 500 million women and girls experience poor sanitation of menstrual hygiene (Sommer et al., 2021). In South Asian countries such as Pakistan, there are extra barriers resulting from the patriarchal nature of the society, stigma associated with menstrual process, and poor provision of resources needed for managing the process. Pakistan being the fifth most populous nation in the world is a nation where there is strong stigma associated with menstruation; discussion about it is limited, mobility during menstrual process is constrained, and availability of sanitary pads is limited (Zaman et al., 2015). Adolescence is defined as ages 10-19 years old). Menstruation is associated with many negative emotions like fear, apprehension, and anxiety as there is inadequate education regarding pre-menarcheal preparation among adolescent girls (Premila et al., 2015).

It is very common for females to experience problems related to menstruation which have severe consequences on their lives. These problems include dysmenorrhea, premenstrual syndrome (PMS), and menorrhagia which are very common in adolescent females and lead to school absenteeism, poor academic performance, social limitations, and decreased quality of life (Unsal et al., 2010; Houston et al., 2006; Singh et al., 2008). The problem of severe menstrual bleeding costs an individual around $2,000 each year due to economic loss (Cardozo et al., 2012).

The factors which affect menstrual hygiene management include MHM practices (choice of the products used by women during menstruation and its disposal, hygienic behavior during menstruation) (Hennegan et al., 2020). In Pakistan, some previous literature proves that the common behaviors included the use of recycled clothes, prohibition from bathing, food restriction, and social restrictions were experienced (Ali and Rizvi, 2010; Kumar and Srivastava, 2011). However, limited literature on the topic is currently available despite growing international interest in this issue. Young university females are of particular significance as potential healthcare consumers and future mothers. The current study was planned to assess the knowledge, attitude, and practice regarding menstruation among female university students of Faisalabad, Pakistan.

2. MATERIALS AND METHODS

2.1 Study Design and Setting

Cross-sectional survey research design was used. The study was carried out amongst the female university students in Faisalabad district, Punjab Province, Pakistan being the second largest city of Pakistan and textile industry hub located at longitude 73°74'E and latitude 30°31.5'N. Faisalabad district has an area of 5,856 km² and is made up of eight administrative towns.

2.2 Sample Size and Sampling

Sample size was calculated through Raosoft® Sample Size Calculator. Considering 95% confidence level, 5% margin of error and 50% response distribution, the required sample size was 384 females. The proportional probability sampling technique was employed with double design effect to reach 940 samples. Ultimately, 384 fully completed questionnaires were considered in the data analysis (response rate 93.5%).

2.3 Inclusion and Exclusion Criteria

Inclusion criteria: Female students aged between 10-45 years enrolled in the universities of Faisalabad district having reached menarche but not reached menopause.

Exclusion criteria: Females below 10 years of age, above 45 years of age, not reached menarche or have reached menopause.

2.4 Data Collection Instrument

A structured and self-administered questionnaire that was developed through an exhaustive literature review (Alherbi et al., 2018) and modifications of the Brooks-Gunn and Ruble (1982) menstrual attitude scale was used for data collection. The questionnaire comprised both open-ended and closed-ended questions on (i) sociodemographic characteristics, (ii) menstrual knowledge, (iii) attitudes and beliefs, (iv) menstrual hygiene practices, (v) use and disposal of menstrual products, (vi) psychological symptoms, and (vii) knowledge about gynecological disorders. The questionnaire was pretested on 10 participants.

2.5 Ethical Considerations

Ethical clearance was obtained from the institutional ethical committee. Written informed consent was obtained from all the participants before data collection. Principles of confidentiality and anonymity were assured at all the levels. Participants were instructed not to include any identifying information in the questionnaires.

2.6 Statistical Analysis

Data Entry and Analysis: All data entry and analysis have been done by SPSS Software 25.0. Frequencies and percentages of all variables have been calculated. Pearson Chi-Square Test has been used to find out the relationship between categorical variables at level of significance $p<0.005$. Linear Regression (R2) has been found for selected dependent variables. Odds ratio has been determined using Minitab Software. Wilson's method with continuity correction has been used for 95% confidence interval.

3. RESULTS

3.1 Sociodemographic Characteristics

Sample Size for the study has been found to be 384 female university students. Average age of the participants has been found to be 25 years. Majority of the participants (311, 59.12%) belong to age range 19-30 years while 73 (13.88%) belong to age range 31-45 years. Postgraduate, graduate and intermediate levels of education have been observed in 237 (61.7%), 137 (35.7%) and 10 (2.6%) respectively. Age of menarche is usually 13-15 years (129, 43.34%), >18 years (91, 21.57%), 16-18 years (90, 21.09%) and 1.

Table 1. Sociodemographic characteristics of the study respondents (N=384)

Variable	N	%	Chi-square	p-value
Age (years)			373.535	0.000
19–30	311	59.12		
31–45	73	13.88		
Age at menarche			1048.318	0.07
10–12 years	74	14.26		
13–15 years	129	43.34		
16–18 years	90	21.09		
>18 years	91	21.57		

Level of education			584.106	0.00
Postgraduate	237	61.7		
Graduate	137	35.7		
Intermediate	10	2.6		

3.2 Knowledge Regarding Menstruation

The problem of ignorance about menstruation prevailed for all the respondents. There were a lot of people (123, 57.02%) who had information about the delay of menstruation and the reason behind it, and 62 (28.74%) of the people who were aware of the hormones controlling the duration of menstruation. Menstrual products were known by 55 (25.49%) of the people, while there were 49 (22.71%) of the people could define menstruation. Moreover, 95 (44.04%) had no knowledge of menstruation. (Table 2, χ^2=787.535, p=0.06)

Table 2. Knowledge of respondents regarding menstruation (N=384)

Knowledge Domain	N	%	Chi-square	p-value
Knowledge of menstrual products	55	25.49	787.535	0.06
Knowledge of menstrual delays and causes	123	57.02		
Knowledge of menstrual duration (hormonal)	62	28.74		
Knowledge of what menstruation is	49	22.71		
No knowledge of menstruation	95	44.04		

3.3 Pain Management Practices

Of those who experienced pain during menses, 197 (51.30%) used herbal remedies to ease the discomfort, whereas 138 (35.94%) individuals used non-prescription pain relievers such as ibuprofen and paracetamol. Of the participants in the study, only 11 (2.86%) had taken the use of hormonal contraceptives in alleviating menstrual pain, while 38 (10.50%) participants claimed that they had experienced no menstrual pain (Table 3, χ^2=799.379, p=0.00).

Table 3. Medication used by respondents for menstrual pain relief (N=384)

Pain Management Method	N	%	Chi-square	p-value
Natural remedies	197	51.30	799.379	0.00
OTC analgesics (ibuprofen/paracetamol)	138	35.94		
No menstrual pain	38	10.50		
Hormonal contraceptives	11	2.86		

3.4 Menstrual Practices and Impact on Daily Activities

A considerable number (295, 76.82%) had been absentees from school during menstruation period. Regarding sanitary habits, 241 (89.75%) were ashamed when purchasing the menstrual products while 157 (40.9%) have never spoken about menstrual symptoms. The majority (279, 76.29%) reported not abstaining from washing of the groin region while 201 (52.34%) were not restraining themselves from eating food during the menstruation period. Nevertheless, 190 (94.01%) reported that there was no effect on physical activity and exercise. Almost half (189, 49.2%) of the respondents stated that they use menstrual products after expiry of time due to unavailability. Inquisition regarding menstruation at health facilities was conducted by 287 (74.74%) of the respondents. Table 4 presents full findings.

Table 4. Impact of menstruation on routine activities (N=384)

Variable	Yes N (%)	No N (%)	Chi-square	p-value
Embarrassed buying menstrual products	241 (89.75)	143 (53.25)	507.048	0.000
Avoid food during menstruation	201 (52.34)	183 (47.66)	531.493	0.000
Regular menstrual periods	317 (54.63)	66 (11.37)	352.017	0.000
Experience menstrual pain	311 (59.12)	72 (13.88)	373.535	0.000
Avoid washing groin area	105 (28.71)	279 (76.29)	450.546	0.000
Stop exercising during menstruation	190 (94.01)	194 (95.99)	532.295	0.000
Stop attending school/university	295 (76.82)	89 (23.18)	415.801	0.000
Asked about menstruation at health centre	287 (74.74)	97 (25.26)	434.057	0.000
Used menstrual products beyond recommendation	189 (49.2)	195 (50.8)	532.243	0.000
Spoken about symptoms with anyone	227 (59.1)	157 (40.9)	519.505	0.000

3.5 Menstrual Product Use and Waste Disposal

Single-use disposable sanitary pads were the most used products (306, 36.65%), followed by tampons (22, 17.53%), cloth menstrual pads (46, 5.51%), and menstrual cups (10, 7.97%) (Table 5). On the day of heaviest flow of period, 152 (60.16%) used three pads, 106 (41.95%) used two pads, 114 (33.38%) used four pads, and 12 (3.56%) used five pads. In regard to the disposal of the used products, 307 (79.9%) disposed of used products into dustbins, 44 (11.45%) disposed of them in toilets, and 33 (8.66%) buried the used products (Table 5).

Table 5. Menstrual product use and disposal practices (N=384)

Variable	N	%	Chi-square	p-value
Menstrual products used			32.967	0.004
Single-use pads	306	36.66		
Cloth menstrual pads	46	5.51		
Tampons	22	17.53		
Menstrual cup	10	7.97		
Product disposal method			490.031	0.02
Throw in dustbin	307	79.90		
Flush into toilet	44	11.45		
Bury	33	8.66		
Pads used on heaviest menstrual day			914.694	0.003
2 pads	106	41.95		
3 pads	152	60.16		
4 pads	114	33.38		
5 pads	12	3.56		

3.6 Gynecological Disorder Awareness

In terms of gynecological knowledge, 67.50% mentioned suffering from excessive body hair growth, and 85.33% reported having acne while menstruating. Utensils about uterine fibroids were found to be lacking in 92.43% of the respondents, and 92.04% did not have knowledge on how to practice contraception. Only 5.75% reported treatment for eating disorders (Table 6).

Table 6. Gynecological knowledge and experiences (N=384)

Variable	Yes N (%)	No N (%)	Chi-square	p-value
Excessive body hair growth	161 (67.50)	223 (93.50)	522.283	0.001
Knowledge of uterine fibroids	155 (62.57)	137 (92.43)	517.987	0.009
Treated for eating disorder	47 (5.75)	337 (41.25)	285.444	0.000
Acne during menstruation	256 (85.33)	128 (42.67)	488.843	0.000
Knowledge of contraceptives	153 (60.96)	231 (92.04)	516.382	0.069

3.7 Psychological Symptoms During Menstruation

Prevalence rates of psychological symptoms were very high. Moderate irritability was recorded in 45.8%, moderate anxiety in 45.3%, moderate depression in 38.0%, and mild sleep problems in 41.1% of subjects. Abdominal pain was moderate in 37.5% and severe in 35.9% of respondents. Itching was the most frequently reported genital complaint in the last six months (121, 31.5%), followed by vaginal irritation (111, 28.0%), genital rash/irritation (66, 17.2%), abnormal vaginal discharge (51, 13.3%), and PCOS (35, 9.1%) (Tables 7–8).

Table 7. Psychological symptoms experienced during menstruation (N=384)

Symptom	Mild N (%)	Moderate N (%)	Severe N (%)	Chi-square	p-value
Anger/Irritability	116 (30.2)	176 (45.8)	92 (24.0)	819.145	0.003
Anxiety/Tension	112 (29.2)	174 (45.3)	98 (25.5)	815.241	0.05
Depressed mood	114 (29.7)	146 (38.0)	124 (32.3)	839.597	0.007
Sleep difficulty	158 (41.1)	144 (37.5)	82 (21.4)	816.305	0.005
Abdominal pain	102 (26.6)	144 (37.5)	138 (35.9)	835.371	0.000

Table 8. Genital/reproductive symptoms in the preceding 6 months (N=384)

Symptom	N	%
Itching	121	31.5
Vaginal irritation	111	28.0
Genital rash/redness/inflammation	66	17.2
Unusual vaginal discharge (color/odor)	51	13.3
Polycystic ovary syndrome (PCOS)	35	9.1

4. DISCUSSION

The results of the present study are some of the most detailed studies on menstrual KAP of university women in Faisalabad, Pakistan. This assessment shows that there are significant knowledge deficits, poor hygiene habits and symptoms of menstrual disorders among the respondents. The results of the study are in line with the emerging research literature from the South Asian region.

4.1 Age at Menarche

The mean age at menarche in our population is 13 years, which is in line with the findings of Sun and Wang (2015) in Karachi (12-14 years) and early adolescence onset as explained by Berk and Meyers (1996). Another related study carried out by Deo and Ghattargi (2005) reported that menarcheal ages were between 12 and 17 years with an average of 13 to 15 years.

4.2 Menstrual Knowledge

Awareness regarding the concept of menstruation was poor among our participants. Though 57.02% had a bit of knowledge about menstrual delay, 44.04% had absolutely no idea, which is similar to other studies conducted in Bangladesh, India, Saudi Arabia, Nigeria, and Egypt, which

together point toward poor baseline menstrual literacy among adolescent females (Mathews, 1995; Khanna et al., 2005; Moawed, 2001; El-Shazly et al., 1990). In line with Fingerson (2012), Nigerians also exhibited poor knowledge regarding hormones. It is heartening to note that 73.3% of participants of our study were aware of the source of menstrual bleeding being vagina, while in Khanna et al. (2005), where 97.5% were unaware.

4.3 Sanitary Product Use and Disposal

The use of single-use pads was common (36.65%), as seen in South Asia (El-Gilany et al., 2005). The use of cloth pads (5.51%) indicates the dependence of traditional methods, as reported especially in developing countries (Kuhlmann et al., 2017). The use of menstrual cups was negligible (7.97%), but global data indicate that their usage is practical and cost-effective when there is no proper sanitation system in place (North and Oldham, 2011; Oster and Thornton, 2012). Dustbins (79.9%), which is the most common mode of disposal, indicate good practices compared to flushing (11.45%) that could result in obstruction in the sanitation systems (Crofts and Fisher, 2012).

4.4 Bathing and Hygiene Behaviors

Unfortunately, a disturbing 76.29% of subjects did not bathe during menstruation, which has been corroborated in Iran (52%), Afghanistan (70%) and rural India (Akpenpuun and Azende, 2014; El-Shazly et al., 1990). The practice of non-bathing is caused by many beliefs such as that bathing increases the flow of blood or may cause problems (Garg and Anand, 2015; Kumar and Srivastava, 2011) and it increases the risk of infections such as bacterial vaginosis and candidiasis (Hennegan et al., 2019).

4.5 Absenteeism from School/University

The finding that 76.82% of subjects suffered absenteeism due to their menstrual periods is alarming and consistent with worldwide evidence. Montgomery et al. (2012) found that 41% of Bangladeshi schoolgirls missed school because of menstruation while research in Ghana and Kenya found similar results (House et al., 2013). Data collected by UNICEF found that one out of ten African school-age girls miss classes due to inadequate sanitation facilities (Bartram et al., 2005). In our study, absenteeism was most likely caused by a combination of pain, lack of products, WASH facilities and embarrassment.

4.6 Menstrual Pain and Self-Medication

A prevalence rate of dysmenorrhea of 81% among the participants is greater than the range of 54 to 73% reported internationally (Poureslami and Osati-Ashtiani, 2002; Pitangui et al., 2013). Over one-third (35.94%) of the participants took pain killers without prescriptions, and over half of the participants resorted to home remedy treatments. This could be attributed to poor access to healthcare facilities as well as the effect of health beliefs on the culture. Self-treatment with antibiotics was noted by Sapkota et al. (2010) in Nigerian university women for menstrual problems, emphasizing dangers of antimicrobial resistance on a broader scale.

4.7 Psychological Symptoms

The presence of high percentages of irritability (45.8%), anxiety (45.3%), depression (38.0%) and sleep disturbances (41.1%) in our respondents indicates the huge psychosocial burden associated with menstruation. Poor sleep quality as a result of heavy and irregular menstrual bleeding has been shown by Kennedy et al. (2022) to lead to the cycle of menstrual and sleep disorders through their community-based study. The worse subjective sleep quality of women at pre-menstrual stages has also been proven by Romans et al. (2015). Our findings correlate well with those from Schoep

et al. (2019), where 38% could not conduct themselves normally and 77% had psychological issues.

4.8 Cultural Misconceptions and Taboos

Taboo myths that are common amongst our study population include food taboo, bathing taboo, and exercise taboo, which are quite common in Pakistani and South Asian literature (Puri & Kapoor, 2006; Mumtaz & Ansari, 2016; Chaturvedi et al., 2017). Such taboos have been passed on from generation to generation by way of their mothers and peers and may even take precedence over formal health education. According to Michael et al. (2020), "only 60.2% of Pakistani adolescents knew where the period flow comes from in the vagina" whereas "77.7% of them had never participated in any school talk on menstruation.".

5. CONCLUSION

From the findings of the current cross-sectional research, it is evident that females of the universities in Faisalabad, Pakistan experience various problems in relation to their menstrual health due to the fact that they do not have enough knowledge, practice unhygienic habits and harbor various misconceptions regarding their menstrual problems in society. Problems such as dysmenorrhea, psychological problems, absenteeism from schools and scarcity of menstrual products are common amongst them. In this context, in view of the above findings, it is essential for public health professionals to pay attention to: (i) the inclusion of scientific menstrual health information into the curriculum; (ii) providing hygienic menstrual products through subsidies provided by the government; (iii) building and validating WASH facilities that are culturally appropriate in educational institutions; (iv) training healthcare providers to identify menstrual problems in patients; and (v) conducting community-based interventions to eliminate social taboos.

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