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MENSTRUATION-RELATED SCHOOL ABSENTEEISM AMONG ADOLESCENT GIRLS IN AHMEDABAD, INDIA: PREVALENCE AND DETERMINANTS FROM A SCHOOL-BASED CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Menstruation-related school absenteeism is an important but often overlooked issue affecting the educational participation of adolescent girls. Menstrual symptoms, inadequate menstrual hygiene management, and poor sanitation facilities may contribute to school absenteeism during menstruation. The objectives is to determine the prevalence of menstruation-related school absenteeism and to identify factors associated with absenteeism among school-going adolescent girls.

Materials and Methods: A school-based cross-sectional study was conducted among 411 adolescent girls studying in classes 9 to 12 in the urban field practice area of BJ Medical College, Ahmedabad. Data were collected using a pre-tested semi-structured questionnaire covering socio-demographic characteristics, menstrual history, menstrual hygiene practices, and sanitation facilities. Associations between menstruation-related absenteeism and selected variables were assessed using the Chi-square test. Multivariable logistic regression analysis was performed to identify independent determinants of absenteeism.

Results: Overall, 45.5% of participants reported being absent from school during menstruation. Absenteeism was significantly associated with the class of study, parental education, and the presence of menstrual-related physical symptoms. Girls studying in lower classes had higher odds of absenteeism compared with those in higher classes (AOR: 2.18; 95% CI: 1.36–3.49). Lower maternal education (AOR: 1.56; 95% CI: 1.04–2.35) and lower paternal education (AOR: 1.78; 95% CI: 1.15–2.75) were also associated with increased likelihood of absenteeism. The presence of menstrual-related physical symptoms showed the strongest association with school absenteeism (AOR: 3.42; 95% CI: 1.82–6.41). Although toilet facilities were available in both homes and schools, school sanitation facilities were reported to have lower availability of clean water, privacy, and comfort.

Conclusion: Menstruation-related school absenteeism remains a significant concern among adolescent girls. Educational level, parental education, menstrual symptoms, and inadequate sanitation facilities play an important role in influencing school attendance during menstruation. Improving menstrual health awareness and strengthening school sanitation infrastructure may help reduce absenteeism and support continued education among adolescent girls.

Keywords: Menstrual hygiene, adolescent health, school absenteeism, menstrual health management.

INTRODUCTION

Menstruation is a natural physiological process experienced by adolescent girls and women of reproductive age. Despite being a normal biological phenomenon, it continues to be surrounded by stigma, misconceptions, and inadequate awareness in many societies. Poor menstrual hygiene management (MHM) and lack of supportive school environments often lead to discomfort, embarrassment, and school absenteeism among adolescent girls. Inadequate access to sanitary products, lack of privacy, and poor sanitation facilities in schools further exacerbate these challenges.[1]

Globally, millions of school-going adolescent girls face barriers in managing menstruation safely and with dignity. Reports from the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) highlight that inadequate water, sanitation, and hygiene (WASH) infrastructure in schools remains a major determinant of poor menstrual hygiene practices.[2] Access to clean water, functional toilets, and safe disposal facilities is essential to enable girls to manage menstruation comfortably during school hours.

Evidence from low- and middle-income countries, including India, suggests that menstruation can significantly affect school attendance and participation among adolescent girls. A systematic review reported that inadequate menstrual hygiene management is associated with reduced school participation and absenteeism.[3] Studies conducted in countries such as Tanzania, Nepal, Ethiopia, and India have documented menstruation-related school absenteeism ranging from approximately 20% to 50% among adolescent girls.[4,5] In India, although the use of sanitary napkins has increased in recent years, national survey data indicate persistent disparities between urban and rural areas, and many girls still face challenges managing menstruation in school settings.[6]

Menstrual symptoms such as dysmenorrhea, fatigue, and discomfort may further contribute to school absenteeism during menstruation. Additionally, sociocultural restrictions, inadequate knowledge about menstruation, and limited availability of menstrual hygiene facilities in schools may negatively influence school attendance among adolescent girls.[7]

Recent studies continue to highlight the impact of menstrual health challenges on educational outcomes among adolescent girls. A recent large-scale study reported that approximately 10–11% of adolescent girls missed at least one day of school per month due to menstruation, emphasizing the ongoing burden of menstruation-related absenteeism.[8] Inadequate access to menstrual hygiene materials, lack of water and sanitation facilities, and menstrual pain remain major contributors to absenteeism during menstruation. A recent study reported that lack of sanitary pads, inadequate water supply, and menstrual discomfort were among the most commonly cited reasons for school absenteeism among adolescent girls.[9] Recent reviews also indicate that dysmenorrhea affects nearly 50–90% of adolescent girls and may significantly interfere with daily activities, including school attendance and participation.[10] Furthermore, recent global research emphasizes that menstrual health remains a critical but often neglected determinant of educational participation among adolescent girls, particularly in low- and middle-income countries.[11]

Understanding the magnitude of menstruation-related school absenteeism and the factors associated with it is essential for designing effective school health and menstrual hygiene interventions. However, limited data are available regarding the determinants of menstrual absenteeism among adolescent girls in Gujarat, particularly in urban field practice areas. Therefore, the present study was conducted to assess menstruation-related school absenteeism and identify associated factors among adolescent schoolgirls in the field practice area of a tertiary care teaching hospital in Ahmedabad, Western India.

MATERIALS AND METHODS

Study Design: A school-based cross-sectional study was conducted to determine the prevalence and determinants of menstruation-related school absenteeism among adolescent girls.

Study Setting and Duration: The study was carried out in the urban field practice area of BJ Medical College, Ahmedabad, Gujarat, India, which includes several government and private secondary schools catering to predominantly urban and peri-urban populations. The data collection was conducted over a period of three months.

Study Population: The study population consisted of adolescent girls studying in standards 9 to 12 in the selected secondary schools within the study area. Only girls who had attained menarche were considered eligible for participation in the study, as the objective was to evaluate menstruation-related absenteeism and associated factors among menstruating adolescents.

Inclusion and Exclusion Criteria: Adolescent girls studying in classes 9th to 12th who had attained menarche and were present on the day of data collection were included in the study. Students who had not yet attained menarche, those who were absent during the survey, and those who declined to participate were excluded from the study.

Sample Size Calculation: The sample size was calculated using the standard formula for estimation of prevalence in cross-sectional studies, $n = Z^2pq/d^2$. Assuming an expected prevalence of menstruation-related absenteeism of approximately 45% based on previous studies, with a 95% confidence level (Z = 1.96) and an allowable error of 5%, the minimum required sample size was estimated

to be approximately 380 participants. Considering the possibility of non-response and incomplete data, the sample size was increased to 411 participants.

Sampling Technique: A multistage sampling technique was used for selecting study participants. Initially, secondary schools located within the urban field practice area of BJ Medical College were identified, and four schools were selected for the study. Within the selected schools, all eligible adolescent girls who had attained menarche and were present on the day of the survey were invited to participate. A total of 411 girls were approached, and after applying the eligibility criteria and excluding incomplete responses, 392 participants were included in the final analysis.

Data Collection Tool: Data were collected using a pre-tested semi-structured questionnaire that was developed after reviewing relevant literature related to menstrual hygiene management and menstruation-related school absenteeism. The questionnaire included information on socio-demographic characteristics, menstrual history, menstrual symptoms, menstrual hygiene practices, availability and utilization of school sanitation facilities, and occurrence of menstruation-related school absenteeism.

Pretesting of the Tool: The questionnaire was pretested among approximately 30 adolescent girls studying in a nearby school that was not included in the final study sample. Based on the responses obtained during the pretest, necessary modifications were made to improve clarity, comprehension, and relevance of the questions before conducting the final survey.

Operational Definition: Menstruation-related school absenteeism was defined as absence from school for at least one day during menstruation in the previous three menstrual cycles due to menstrual symptoms, discomfort, lack of adequate sanitation facilities, or other menstruation-related reasons.

Data Collection Procedure: Permission to conduct the study was obtained from the respective school authorities before initiating data collection. The purpose of the study was explained to the participants, and confidentiality of the information was assured. Participation in the study was voluntary. The questionnaires were administered to the students in their classrooms under the supervision of the investigators, and clarifications were provided whenever necessary to ensure accurate responses.

Ethical Considerations: Ethical approval for the study was obtained from the Institutional Ethics Committee of BJ Medical College, Ahmedabad. Written informed consent was obtained from the parents or guardians of the participants, and assent was obtained from the students prior to participation in the study. Confidentiality and anonymity of the participants were strictly maintained throughout the study.

Statistical Analysis: The collected data were entered into Microsoft Excel and subsequently analyzed using Statistical Package for the Social Sciences (SPSS) version 25.0. Descriptive statistics were used to summarize socio-demographic characteristics, menstrual history, and hygiene practices. Categorical variables were expressed as frequencies and percentages, while continuous variables were summarized using mean and standard deviation. The association between menstruation-related absenteeism and various independent variables was assessed using the Chi-square test. Variables with a p-value less than 0.20 in bivariate analysis were included in multivariable logistic regression analysis to identify independent determinants of menstruation-related absenteeism. Adjusted odds ratios (AOR) with 95% confidence intervals were calculated, and a p-value of less than 0.05 was considered statistically significant.

RESULTS

A total of 411 school-going adolescent girls participated in the study. Overall, 45.5% of the participants reported being absent from school during menstruation.

Table 1: Sociodemographic Characteristics of School-going Adolescent Girls (n = 411)

Variable / Category	Frequency (n)	Percentage (%)
Age group		
• 13–15 years (early adolescence)	223	54.2
• 16–18 years (late adolescence)	188	45.8
Class of study		
• 9th	157	38.2
• 10th	120	29.2
• 11th	91	22.1
• 12th	43	10.5
Age at menarche		
• 8–11 years	11	2.7
• 12–15 years	390	94.9
• >16 years	10	2.4
Mother's education		
• Illiterate	97	23.6
• Primary	154	37.5
• Secondary	136	33.1
• Graduate and above	24	5.8
Father's education		

• Illiterate	20	4.8
• Primary	126	30.6
• Secondary	201	48.9
• Graduate and above	64	15.7
Socioeconomic status*		
• Class I	16	3.9
• Class II	39	9.5
• Class III	125	30.4
• Class IV	164	39.9
• Class V	67	16.3

Socioeconomic status classified according to BG Prasad classification.

The socio-demographic profile of the participants is presented in [Table 1]. The mean age of the participants was 15.35 ± 1.15 years, with slightly more than half belonging to early adolescence. The mean age at menarche was 13.46 ± 1.07 years, indicating that most girls attained menarche during early adolescence. Parental education levels varied across participants, although a considerable proportion of mothers and fathers had completed primary or secondary education. According to the BG Prasad socioeconomic classification, the majority of the participants belonged to the middle socio-economic strata.

Table 2: Factors Associated with Menstruation-Related School Absenteeism (Bivariate Analysis) (n = 411)

Variable / Category	Absent n (%)	Present n (%)	Total	χ^2	p-value
Class of study					
• 10th and below	132 (47.5)	146 (52.5)	278	10.79	0.001
• 11th and above	92 (69.2)	41 (30.8)	133		
Mother's education					
• Primary and below	126 (50.2)	125 (49.8)	251	4.81	0.028
• Secondary and above	98 (61.3)	62 (38.7)	160		
Father's education					
• Primary and below	67 (45.6)	80 (54.4)	147	7.35	0.007
• Secondary and above	157 (59.5)	107 (40.5)	264		
Socioeconomic status					
• Class I–III	73 (40.1)	109 (59.9)	182	6.46	0.167
• Class IV–V	151 (66.0)	78 (34.0)	229		
Physical symptoms during menstruation					
• Present	184 (51.5)	173 (48.5)	357	10.79	0.001
• Absent	40 (74.1)	14 (25.9)	54		

χ^2 = Chi-square test

The association between selected socio-demographic and menstrual-related factors with school absenteeism is shown in [Table 2]. Absenteeism during menstruation was significantly associated with the class of study, parental education status, and the presence of menstrual-related physical symptoms. Girls studying in lower classes were more likely to miss school during menstruation compared with those in higher classes. Similarly, lower maternal and paternal education levels were significantly associated with higher absenteeism. The presence of menstrual-related physical symptoms also showed a significant relationship with school absenteeism.

Table 3: Comparison of Menstrual Hygiene-Related Sanitation Facilities at Home and School (n = 411)

Facility	Home n (%)	School n (%)	p-value
Toilet availability	411 (100)	411 (100)	–
Clean water availability	408 (99.2)	282 (68.6)	<0.05
Privacy availability	398 (96.8)	267 (64.9)	<0.05
Comfortable to use	353 (85.8)	219 (53.2)	<0.05

A comparison of menstrual hygiene-related sanitation facilities at home and at school is presented in Table 3. Although toilet facilities were available in both settings, school sanitation conditions were relatively less adequate than those at home. In particular, the availability of clean water, privacy, and comfort while using toilets was reported to be lower in schools, and these differences were statistically significant.

Table 4: Multivariable Logistic Regression Analysis of Factors Associated with Menstruation-Related School Absenteeism (n = 411)

Variable / Category	AOR	95% CI	p-value
Class of study			
• 10th and below	2.18	1.36 – 3.49	0.001
• 11th and above (Reference)	–	–	–

Mother's education			
• Primary and below	1.56	1.04 – 2.35	0.031
• Secondary and above (Reference)	–	–	–
Father's education			
• Primary and below	1.78	1.15 – 2.75	0.009
• Secondary and above (Reference)	–	–	–
Socioeconomic status			
• Class I–III	1.14	0.76 – 1.72	0.526
• Class IV–V (Reference)	–	–	–
Physical symptoms during menstruation			
• Present	3.42	1.82 – 6.41	<0.001
• Absent (Reference)	–	–	–

AOR = Adjusted Odds Ratio; CI = Confidence Interval

The results of the multivariable logistic regression analysis are presented in Table 4. After adjusting for potential confounders, several factors remained independently associated with menstruation-related school absenteeism. Girls studying in lower classes had significantly higher odds of absenteeism compared with those in higher classes. Lower maternal and paternal education were also independently associated with increased likelihood of missing school during menstruation. Among all factors examined, the presence of menstrual-related physical symptoms showed the strongest association with school absenteeism.

DISCUSSION

The present study assessed menstruation-related school absenteeism and its associated factors among adolescent girls in an urban field practice area of Ahmedabad. In this study, 45.5% of participants reported missing school during menstruation, indicating that menstruation continues to be an important barrier to regular school attendance. Similar findings have been reported in several studies conducted in low- and middle-income countries, where menstruation-related absenteeism among schoolgirls ranges between 20% and 50%. Studies conducted in Tanzania and Nepal have highlighted that menstrual challenges such as lack of menstrual hygiene materials, inadequate sanitation facilities, and fear of staining clothes often lead to school absenteeism among adolescent girls.[4,5] Furthermore, systematic reviews have reported that poor menstrual hygiene management and unsupportive school environments significantly contribute to reduced school participation and absenteeism among adolescent girls.[3,7] These findings emphasize that menstruation remains an important but often neglected public health issue affecting girls' educational participation in many developing countries.

In the present study, absenteeism was significantly higher among students studying in 10th standard and below compared to those studying in 11th standard and above. Younger adolescents may have limited knowledge and preparedness regarding menstruation, which can increase feelings of embarrassment, anxiety, and fear of menstrual leakage while attending school. Similar observations were reported in qualitative research by Sommer et al., which highlighted that younger adolescent girls often feel uncomfortable managing menstruation in school due to lack of information, privacy, and adequate sanitation facilities.[4] Parental education also emerged as an important determinant of absenteeism in this study. Girls whose mothers had lower educational levels were more likely to miss school during menstruation. Maternal education plays a crucial role in shaping menstrual knowledge, attitudes, and hygiene practices among adolescent girls. Studies conducted in Nepal and other low- and middle-income countries have similarly reported that girls whose mothers had higher educational levels were more likely to practice appropriate menstrual hygiene and possess better knowledge regarding menstruation.[5,7] These findings indicate that parental awareness and educational background play a vital role in supporting adolescent girls during menstruation.

Another important finding of the present study was the strong association between menstrual-related physical symptoms and school absenteeism. Girls experiencing symptoms such as dysmenorrhea, abdominal pain, or fatigue were significantly more likely to miss school during menstruation. Dysmenorrhea has been widely recognized as one of the most common causes of school absenteeism among adolescent girls. A systematic review by Hennegan et al. reported that menstrual pain significantly interferes with daily activities, including school participation and attendance among adolescent girls.[7] Recent studies have also reported that menstrual discomfort and lack of adequate menstrual hygiene materials are major contributors to school absenteeism.[8,9] Additionally, the present study identified notable differences in sanitation facilities between home and school environments. Although toilets were available in both settings, the availability of clean water, privacy, and comfort was considerably lower in school toilets. Reports by WHO and UNICEF emphasize that access to adequate water, sanitation, and hygiene (WASH) infrastructure in schools is essential for enabling girls to manage menstruation safely and with dignity.[2] Similar findings have been reported in studies from India, including a study conducted in West Bengal where 40–50% of adolescent girls reported missing

school during menstruation, mainly due to menstrual pain and inadequate sanitation facilities in schools.[12]

CONCLUSION

The present study highlights that menstruation-related school absenteeism is a common concern among adolescent girls. Several factors were found to influence absenteeism during menstruation, including the class of study, parental education levels, and the presence of menstrual-related physical symptoms. In addition, limitations in school sanitation facilities, particularly with regard to water availability, privacy, and comfort, may further contribute to difficulties in managing menstruation during school hours. These findings emphasize the importance of improving menstrual health awareness, strengthening menstrual hygiene management practices, and ensuring adequate sanitation facilities in schools. Addressing these factors through school-based health education and improved water, sanitation, and hygiene infrastructure may help reduce menstruation-related absenteeism and support uninterrupted education among adolescent girls.

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