



Menstrual health and hygiene practices of adolescent girls attending school in rural parts of South India and its effect on school attendance in the year 2020: A Descriptive Cross-Sectional Study

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Abstract

Background: Menstruation is a normal and natural process that occurs during a female's reproductive years, misperceptions surrounding menstruation, which can negatively impact the mental, emotional, and physical health of adolescent girls, as well as their academic performance. Our objective was to describe the menstruation practises among rural school going adolescent girls and its effect on school attendance.

Materials and Methods: In the present descriptive and cross-sectional study included 495 students from government and government-aided schools a total of 7 schools.

Results: Almost 90% of the girls had regular periods, 59% of these girls' attained menarche at the age of 13 – 15 years. Out of these students 9% of them skip school frequently during menstrual period due to pain, 3% skip school due to excessive bleeding, and the rest skip school during this period either due to parent's beliefs (1%) or because they think the sanitation facility at their school is not adequate (0.2%).

Conclusion: The mean age of menarche in our study was 12.6, on an average the girls had 35 days of periods, with 5 days of menses, close to 99% of the girls used sanitary pads but most of them did not obtain it from schools, and 13% of girls had been absent often during their menstrual period.

Keywords: age of menarche, reproductive health, menstrual health, menstrual hygiene, school going adolescent girls

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Introduction

Menstruation is a normal and natural process that occurs during a female's reproductive years, usually starting during adolescence. It is a crucial time when young girls need to learn how to manage their menstrual bleeding safely and hygienically. Unfortunately, many adolescent girls lack adequate information about menstruation due to cultural taboos, which can lead to feelings of embarrassment and shame. In developing countries, there are often misperceptions surrounding menstruation, which can negatively impact the mental, emotional, and physical health of adolescent girls, as well as their academic performance and social relationships. [1, 2] The onset of menarche is universally recognized as a significant milestone, marked by celebrations in various cultures. Alongside the physical and psychological changes experienced by girls, there's also the challenge of managing menstrual hygiene, which can induce stress. Ensuring adequate menstrual hygiene management (MHM) in schools is paramount. Both the World Health Organization (WHO) and the United Nations International Children's Emergency Fund (UNICEF) recommend the provision of WASH facilities - encompassing water, sanitation, and hygiene - in educational institutions. [3] In India, the Swachh Bharat: Swachh Vidyalaya campaign has been implemented across schools to ensure the availability of WASH facilities. This includes provisions such as soap and water for sanitation, as well as designated private spaces for changing and disposing of menstrual absorbents. MHM has been seamlessly integrated into the Swachh Bharat guidelines. Initiatives are underway to install cost-effective sanitary napkin vending machines and incinerators for the proper disposal of MHM products within school premises. [4]

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The implementation of these guidelines at the grassroots level remains to be fully realized. Insufficient facilities in schools may lead to increased absenteeism and decreased academic performance. Various types of absorbents are utilized during menstruation. Reusable absorbents, typically crafted from cloth, require washing and sun-drying before reuse. Nonreusable sanitary pads, composed of cellulose and plastic, offer convenience but are costly and non-biodegradable. Biodegradable and eco-friendly alternatives such as bamboo fiber pads, banana fiber pads, and water hyacinth pads exist but are not widely accessible. Both reusable and nonreusable tampons are available, alongside menstrual cups, which require insertion into the vagina and may not be suitable for all adolescents. Reusable cloths should be washed with soap and dried in sunlight to inhibit bacterial growth. However, due to cultural beliefs, these cloths are often not adequately washed with soap and are sometimes dried away from sunlight and hidden from other family members' view. Such unhygienic practices contribute to the development of vaginitis, pelvic infections, and urinary tract infections. [5, 6] It's typical to experience minor discomforts during menstruation, such as abdominal pain, difficulty concentrating, and breast tenderness. [7]

These symptoms might necessitate assistance from teachers at school. The approachability and sensitivity of the teacher are crucial factors for girls seeking support. Teachers can play a crucial role in educating children about menstrual hygiene, and efforts should be made to include menstrual hygiene management in school curriculums to promote safe practices and mitigate the suffering of millions of girls. Research is ongoing to better understand the current practices and attitudes surrounding menstrual hygiene management among adolescent girls in order to inform future interventions and policies to improve menstrual hygiene practices and overall health and well-being. [8]

Girls in developing countries have historically had fewer opportunities for education than boys, with lower enrolment rates, fewer years of schooling, and lower literacy rates. While the gender gap in primary school enrolment is closing, girls are still less likely to advance to secondary education. Many factors contribute to girls dropping out of school early, such as financial barriers, limited job prospects, and less investment from parents in their daughters' education. Additionally, girls may face challenges related to puberty, including difficulties attending school during menstruation when they lack access to adequate sanitary products. [9]

The wellbeing and education of young girls are crucial for progress and enable them to fully engage in a country's political, economic, and cultural activities. When menstrual hygiene is not properly managed, it can lead to feelings of shame, worry, and discomfort that can cause absenteeism and poor academic performance in school. Our objective was described the menstruation practises among rural school going adolescent girls and its effect on school attendance.

Materials and Methods

Study site

Our present descriptive and cross-sectional study between the year 2020 – 2021, school children studying in schools in a village in the south of Tamil Nadu were selected and included.

Sampling size

The study included 495 students from government and government-aided schools (a total of 7 schools) who were currently studying in Tamil Nadu, India during the data collection period. Parents of the students, along with the students were requested to attend the school on a specific date and time.

Data collection

The students were interviewed and examined at school after obtaining written consent from their parents, and oral consent from the students. A pre-tested questionnaire in Open Data Kit (ODK) format was used to collect data. As a part of this study, we had collected socio-demographic information, history related to menstruation, and its effect on school attendance, where we considered being absent often as not attending school for more than or equal to 5 times a year because of menstruation.

Statistical analysis

Categorical variables were described in frequency and percentages. Continuous variables were described as mean and standard deviation. Association between sociodemographic variables and the recurrent school absence due to menstruation was analysed by using Chi-Square test. p-value less than 0.05 was considered as statistically significant.

Ethical Statement and Clearance

The ethical clearance as obtained before conducted this study the ethical clearance certificate number was IEC REF NO: 1299/CM/2018.

Results

We enrolled 495 adolescent girls who have already attained menarche, 92% of those who were enrolled were between the ages 10-14, 79% of them were from nuclear families, while 13% of them were from joint families. Almost 82% of the mothers were either daily wage labourers or home makers, and 61% of these mothers had not crossed middle school. The fathers of these children were predominantly (61%) self-employed or farmers, equal proportion of them had not crossed middle school. Out of these girls 58% of them had a sibling who was also a girl. While almost all of them stayed at home (97%), many of them walked to school (51%) from their house, a sizable proportion used public transportation to school (30%) as shown in **Table-1**.

Almost 90% of the girls had regular periods, 59% of these girls' attained menarche at the age of 13-15, on average they have 30 (± 9.4) days between the 5 (± 1.1) days of menstruation. Close to 99% of the girls used sanitary pads during their periods which they predominantly procure by themselves (52%), although a sizable proportion of them also get it from school (30%). While 62 (13%) girls have said they skip school often during their menstrual period.

Almost 4% of the girls have said they have not been consuming the iron folic acid tablets that have been provided to them in the past 30 days as shown in **Table-2**. Out of these students 9% of them skip school frequently during menstrual period due to pain, 3% skip school due to excessive bleeding, and the rest skip school during this period either due to parent’s beliefs (1%) or because they think the sanitation facility at their school is not adequate (0.2%) as shown in **Figure-1**.

Table-1 Distribution of socio-demographic characteristics of adolescent school going girls

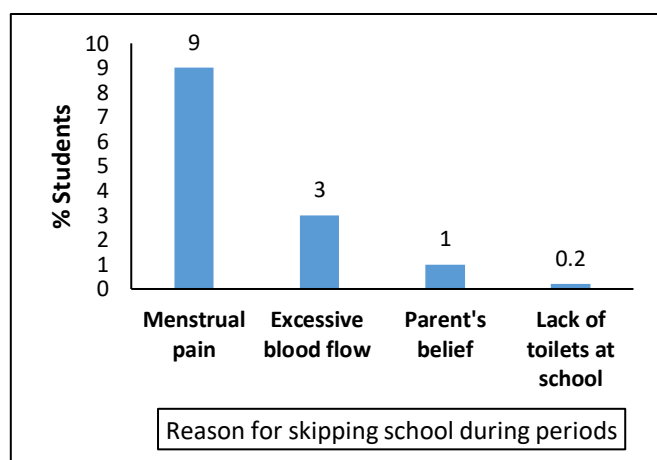
Variables	Classifications	Frequency (%)
Age (in years)	10 – 14	452 (92%)
	15 – 19	41 (8%)
Type of Family	Nuclear family	392 (79%)
	Joint family	66 (13%)
	Single parent	27 (3%)
	Guardian custody	8 (2%)
	Others	0 (0)
	No. of members in the family	Range (min, max)
	Mean	4.68
	SD	1.16
Type of house	Concrete	358 (75%)
	Asbestos	51 (11%)
	Tiled	44 (9%)
	Thatched	26 (5%)
	Others	0
Mother's occupation	Home maker	145 (30%)
	Labourer	250 (52%)
	Self employed	45 (9%)
	Farmer	21 (4%)
	Clerical	6 (1%)
	Shop keeper	5 (1%)
	Semi-professional (teacher, lecturer)	1 (0.2%)

Father's occupation	Unemployed	25 (5%)
	Labourer	75 (16%)
	Self employed	151 (33%)
	Farmer	127 (28%)
	Clerical	31 (7%)
	Shop keeper	19 (4%)
	Semi-professional (teacher, lecturer)	1 (0.2%)
Father's Education	Illiterate	57 (12%)
	Primary school	75 (16%)
	Middle school	151 (33%)
	High school	127 (28%)
	Higher secondary school	31 (7%)
	Diploma/Degree holder	19 (4%)
	Post graduate	1 (0.2%)
	Professional	0 (0)
Presence of female siblings	Yes	284 (58%)
	No	209 (42%)
Average distance to school from current residence	< 1 km	210 (43%)
	1 – 5 kms	226 (46%)
	6 – 10 kms	47 (10%)
	> 10 kms	10 (2%)
	Residential Status	Hostel
	Home	479 (97%)
Type of transportation used	Public transport	147 (30%)
	Bicycle	14 (3%)
	Walk	249 (51%)
	Parent/care taker drop	26 (5%)
	Private transport	50 (17%)
	others	7 (2%)

Table-2 Distribution of menstrual health and hygiene practices among adolescent school going girls

Variables	Classifications	Frequency (%)
Menstrual cycle	Regular	446 (90%)
	Irregular	49 (10%)
Age at menarche	10-12	203 (41.0%)
	13-15	290 (58.6%)
	16	2 (0.4%)
Blood flow	Low	36 (7%)
	Moderate	411 (83%)
	Heavy	48 (10%)
Type of material currently used during menstruation	Sanitary pad	489 (99%)
	Cloth	3 (0.6%)
	Both	3 (0.6%)
Where do you get the pads from?	School	161 (33%)
	Own purchase	258 (52%)
	Both	76 (15%)
Do you skip school often during menstrual period?	Yes	62 (13%)
	No	433 (88%)
Iron folic acid consumption among those who received*	Yes	289 (96%)
	No	13 (4%)
Number of days of menstrual cycle	Range (min, max)	2, 10
	SD	3.60
	Mean	5.1
Duration between menstruation	Range (min, max)	65 (10, 75)
	SD	9.4
	Mean	30.3
On an average, how many pads/cloths do you use per day?	Range (min, max)	8 (2, 10)
	SD	1.1
	Mean	3.3

Figure 1: Distribution of reasons for skipping school during periods time



Larger proportion (19%) of people belonging to ages 15-19, have skipped school often compared to those with ages 10-14. People who belonged to joint families have skipped schools in larger proportions compared to other types of families. The Girls whose mothers were either farmers (16%) or labourers (13%) and whose fathers are either self-employed (17%) or labourers (13%) skipped school in larger proportions compared to other girls whose parents do different jobs. Girls whose mothers have studies up to higher secondary school (17%), and middle school (14%) have skipped school in larger proportion than those with mothers from other educational background. Those students who had to travel 1-5 kilometers to get to school, had skipped schools in larger proportions during their periods (14%) compared to those who had to travel lesser or greater distance. Students who were dropped at school directly by their parents (19%) had skipped school in larger proportions compared to those who travelled through other means, and girls who did not have a female sibling had skipped schools in larger proportions (14%) compared to those who did not. None of these were found to be strongly significant with the outcome ($p < 0.05$) as shown in **Table – 3**.

Table – 3 Association between sociodemographic characteristics and those who skip school often during menstrual periods

Variables	Classifications	Skip School Often during Menstrual Periods		p-value
		Yes	No	
Age	10-14	54 (12%)	399 (88%)	0.180
	15-19	8 (19%)	34 (81%)	
Type of Family	Nuclear family	47 (12%)	347 (88%)	0.440
	Joint family	12 (18%)	54 (82%)	
	Single parent	2 (7%)	25 (93%)	
	Guardian custody	1 (12%)	7 (88%)	
No. of members in the family	Mean	4.5	4.7	0.830
	SD	1	1.1	
Type of house	Concrete	45 (13%)	313 (87%)	0.790
	Asbestos	6 (12%)	46 (88%)	
	Tiled	7 (16%)	38 (84%)	
	Thatched	2 (8%)	24 (92%)	

Contd...

Mother's occupation	Home maker	18 (12%)	127 (88%)	0.920
	Labourer	32 (13%)	218 (87%)	
	Self employed	6 (13%)	39 (87%)	
	Farmer	4 (19%)	17 (81%)	
	Clerical	0 (0%)	6 (100%)	
	Shop keeper	0 (0%)	5 (100%)	
	Semi-professional (teacher, lecturer)	1 (11%)	8 (89%)	
	Professional	0 (0%)	1 (100%)	
Mother's Education	Illiterate	6 (10%)	55 (91%)	0.670
	Primary school	7 (9%)	67 (91%)	
	Middle school	23 (14%)	140 (86%)	
	High school	16 (12%)	114 (88%)	
	Higher secondary school	7 (17%)	35 (83%)	
	Diploma/Degree holder	1 (10%)	9 (90%)	
	Post graduate	1 (50%)	1 (50%)	
	Professional	0 (0%)	2 (100%)	
Father's occupation	Unemployed	3 (12%)	22 (88%)	0.880
	Labourer	32 (12%)	235 (88%)	
	Self-employed	13 (17%)	65 (83%)	
	Farmer	8 (13%)	52 (87%)	
	Clerical	1 (13%)	7 (87%)	
	Shop keeper	0 (%)	10 (100%)	
	Semi-professional (teacher, lecturer)	2 (15%)	11 (85%)	
	Professional	0 (0%)	2 (100%)	

Contd...

Father's occupation	Unemployed	3 (12%)	22 (88%)	0.880
	Labourer	32 (12%)	235 (88%)	
	Self-employed	13 (17%)	65 (83%)	
	Farmer	8 (13%)	52 (87%)	
	Clerical	1 (13%)	7 (87%)	
	Shop keeper	0 (%)	10 (100%)	
	Semi-professional (teacher, lecturer)	2 (15%)	11 (85%)	
	Professional	0 (0%)	2 (100%)	
Father's Education	Illiterate	9 (16%)	48 (84 %)	0.610
	Primary school	8 (11%)	68 (89%)	
	Middle school	15 (10%)	137 (90%)	
	High school	20 (16%)	107 (84%)	
	Higher secondary school	3 (10%)	28 (90%)	
	Diploma/Degree holder	4 (21%)	15 (79%)	
	Post graduate	0 (0%)	1 (100%)	
	Professional	0 (0%)	0 (0%)	
Presence of female siblings	Yes	35 (11%)	249 (89%)	0.660
	No	26 (14%)	164 (86%)	
Average distance to school from current residence	< 1 km	26 (12%)	185 (88%)	0.520
	1-5 kms	32 (14%)	195 (85%)	
	6-10 kms	3 (6%)	44 (94%)	
	> 10 kms	1 (10%)	9 (90%)	
Residential Status	Hostel	2 (14%)	12 (86%)	0.840
	Home	60 (12%)	421 (88%)	
Type of transportation used	Public transport	18 (12%)	129 (88%)	0.680
	Bicycle	0 (0%)	14 (100%)	
	Walk	32 (13%)	218 (87%)	
	Parent/care taker drop	5 (19%)	21 (81%)	
	Private transport (auto/car/van)	6 (12%)	44 (88%)	
	Others	1 (14%)	7 (88%)	

Discussion

The present study was conducted in 7 government and government aided schools situated in a village of South India. In our study, age of the adolescent school girls ranged between 10 and 19 years. The mean age of menarche in our study was 12.6. It is also comparable to the study conducted by Patavegar et al. (12.7 years) [10], Kumar *et al.* (13 years) [11] and Thakre et al. (12.8 years). [12] Almost 58% of the girls had attained menarche between 13-15 years of age, on an average the girls had 35 days of periods, with 5 days of menses. Close to 99% of the girls used sanitary pads, only 32% of the girls obtain these pads from school the rest procure it by themselves from a local vendor, 9% of the girls had heavy bleeding. In a study conducted by Omidvar et al., Mean age of menarche was 13 ± 1.1 years with wide variations, i.e., 10–17 years. 73.1% had cycle duration of 21–35 days. More than half of them reported 5–6 days' duration of menstrual blood flow and 12% of the participants had >7 days of flow and 30.1% reported abundant blood loss. Only 88% of the students in this study used sanitary pads. [2]

In our study, close to 13% of girls had been absent often (3 times or more in a year) during their menstrual period. Bodat et al [13] reported that 43.2% girls who attained menarche would remain absent from school during menstruation. In another study by Lee et al., girls were less likely to attend school on the days they had their periods as compared with other days. [14] In our study, most of the girls did not come to school because of reasons like pain during menstruation, excessive bleeding and their parents' belief systems. Similar reasons were reported by Tegegne and Sisay. [15] Other reasons for school absenteeism during menstruation days were fear of sudden leakage of menstrual blood, lack of adequate toilet facility at school. Similarly, Verma *et al.* also reported that 50.6% and 34% of girls suffered from dysmenorrhea. [16]

A study reports that significant rates of school absenteeism were noted during menstruation, with 9% of urban girls and 8.2% of rural girls reporting complete absence during their periods. Additionally, it was observed that 52.1% of urban girls and 54.7% of rural girls experienced difficulty concentrating in school, while 10.1% of urban girls and 12.6% of rural girls reported staining their clothes during menstruation. [17] While school absenteeism was significantly associated and higher among those who did not use disposable sanitary napkins for their menstrual flow in other studies [10], in our present study the number of people who do not use sanitary pads were negligible hence this relationship could not be established. Mother's education was significantly associated with school absenteeism in the studies conducted by Tegegne and Sisay [15], but in our study neither mother's education or father's education was significantly associated with school absenteeism.

Every woman is entitled to a secure social and cultural environment conducive to practicing adequate menstrual hygiene. Unfortunately, this crucial aspect is often overlooked within communities, as menstrual hygiene management is not adequately addressed even in broader health agendas. Despite menstruation being a natural physiological process, girls should not feel constrained in their daily activities during their periods. It is the responsibility of parents and

teachers to educate them about menstrual changes well before menstruation begins, ensuring they are well-prepared for this transition.

Another study's results indicated that around 79% of the subjects exhibited good knowledge in the post-test. Furthermore, there was a significant disparity observed between the pre-test and post-test levels of knowledge and attitude concerning menstrual hygiene, with statistical significance at the 0.05 level. This suggests that the health education provided effectively improved adolescent girls' understanding of menstruation and hygiene. [18]

Conclusion

The mean age of menarche in our study was 12.6 years, on an average the girls had 35 days of periods, with 5 days of menses, almost all the girls used sanitary pads but most of them did not obtain it from schools, while a sizable proportion of girls had been absent often during their menstrual period, the proportion of the students whose class attendance has been affected in this part of the country has been lower than those reported by studies from other parts.

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Authors' Contributions: **SV, AR** played a significant role in conceptualizing the study, and supervising the overall process. **SV, AR** supervised the data collection and analysis. **SV, AR** contributed to conceptualization and manuscript writing. **SV, AR** conducted the data analysis. **SV, AR** participated in conceptualization and application development. All authors have reviewed and approved the final manuscript.

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