

Original Research Article

Prevalence and factors associated with school absenteeism during menstruation among higher secondary female students in Kannur district: a school based cross-sectional study

Rafeeda Pothangode*, Jayasree Anandabhavan Kumaran

Department of Community Medicine, Government Medical College, Kannur, Kerala, India

Received: 24 February 2026

Revised: 18 May 2026

Accepted: 20 May 2026

*Correspondence:

Dr. Rafeeda Pothangode,

E-mail: rafeedatirurangady@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Adolescence marks transition from childhood to adulthood involving physical, cognitive, psycho-social and emotional changes. School absenteeism is a significant issue that affects academic performance and overall well-being of students. In recent years, there has been growing concern about the prevalence of school absenteeism among adolescent girls, particularly in developing countries. Menstrual disorders have been identified as the leading cause of school absenteeism, which seriously impacted their academic achievement. But, in India there are only limited studies on the topic, especially in Kerala. So, this study aims to estimate the prevalence and factors associated with school absenteeism during menstruation.

Methods: School based cross-sectional study conducted among 624 higher secondary female students in Kannur district. Stratified random sampling was done among all higher secondary schools based on their location and management type. Data was collected using a self-administered pretested semi structured questionnaire and analyzed using SPSS 21. Results were expressed in terms of frequencies, percentages, mean, standard deviation. Chi-square test, Fisher's exact tests were used to test association.

Results: The median age of the population was 17 (± 1) years. Median age at menarche was 13 (± 1) years. Among the 624 participants prevalence of school absenteeism during menstruation was 59.8%. Most common reason was pain, followed by tiredness, discomfort etc. Significant factors associated were academic stream, age group, residence, menorrhagia.

Conclusions: Prevalence of school absenteeism during menstruation was 59.8%. Most common reasons for absenteeism were pain and tiredness. Significant associations were noted between age, academic stream, location of school, residence, age at menarche, presence of menorrhagia.

Keywords: Menstruation, Absenteeism, Higher secondary students, Adolescence

INTRODUCTION

Adolescence is the transition period from childhood to adulthood. Physical, cognitive, psycho-social and emotional changes occur during this period. One such change is the onset of menstruation; i.e. menarche. This in turn affect the health and well-being of an adolescent in many ways, it can affect day to day activities including

schooling and academic performance.¹ That will affect the quality of life of an individual- directly or indirectly, thus the society also.

Menstruation or menses is the natural bodily process of releasing blood and associated matter from the uterus through the vagina as part of the menstrual cycle. Those who menstruate have menstrual health and hygiene needs. Good menstrual hygiene is crucial for both physical and

mental health, education, and dignity of adolescent schoolgirls.² People who menstruate may miss school or work, or struggle to participate and benefit fully in educational activities, and achievement of gender equality is both affected by and dependent on removing stigma, discrimination and taboos associated with menstruation that often restrict their activities.³

School absenteeism is a significant issue that affects the academic performance and overall well-being of students. In recent years, there has been growing concern about the prevalence of school absenteeism among adolescent girls, particularly in developing countries. Menstrual disorders have been identified as one of the leading causes of school absenteeism among girls.⁴⁻⁶

World Bank (2005) showed that girls could miss up to 4 consecutive days of school every month because of their periods, meaning that they missed 10-20% of school time, which seriously impacted on their achievement.⁷ But, in India there are only limited studies on the topic, especially in Kerala.

Even though some studies mentioned a significant association between menstrual disorders and school absenteeism as part of studies on menstrual disorders; the factors associated with school absenteeism during menstruation as such is less studied.

So, this study aims to know the prevalence and factors associated with school absenteeism during menstruation. The findings of this study may contribute to the development of effective interventions to address the issue of school absenteeism during menstruation among adolescent girls.

METHODS

A school based cross-sectional study was conducted among 624 higher secondary female students in Kannur district from April 2024 to October 2025 after getting ethical clearance from the institution. Stratified random sampling was done among all higher secondary schools in Kannur district based on their location and management type. Within each substratum, 150 students were collected from randomly selected schools.

Sample size calculation

Calculated by the formula $n = Z_{\alpha}^2 pq/d^2$

A study done in 2018, on School absenteeism during menstruation among adolescent girls in Delhi shows 40% school absenteeism during their menstruation.⁴

So, p was taken as 40%, $q = (100 - p)$, $d = 10\%$ relative error, i.e. 10 % of 40. So, sample size = 576 which was rounded off to 600. Obtained sample size was 642, with a response rate of 97.2% i.e., 624

Sampling procedure

Stratified random sampling

A List of all the HSS schools of Kannur district was collected from official website-hs-CAP, then they were grouped into urban and rural-All schools situated at municipality or corporation area was considered as urban and those at panchayat were considered as rural.

Flow chart showing sampling technique is given below.

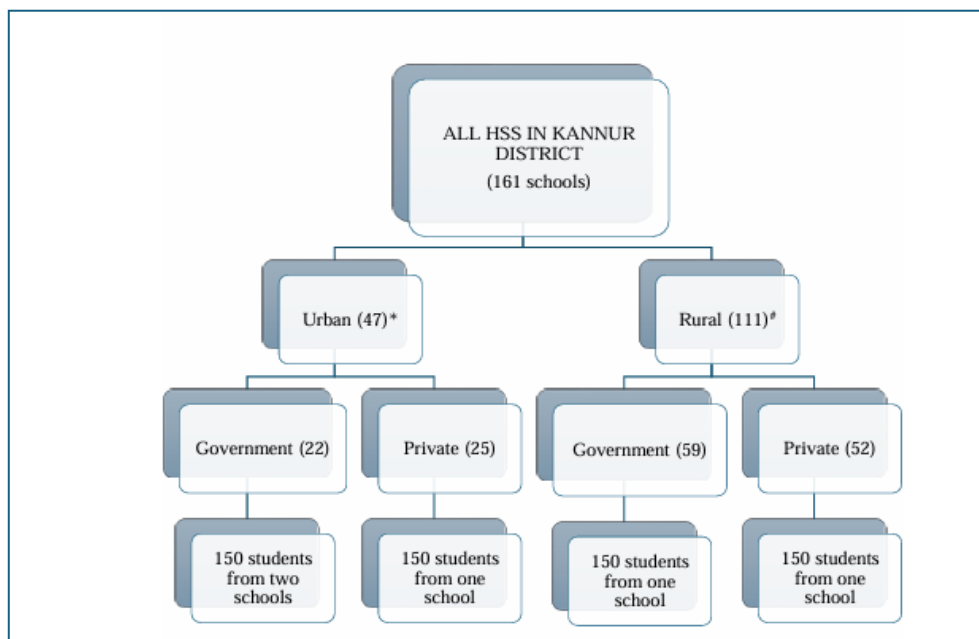


Figure 1: Flowchart of sampling technique.

*Special school for speech and hearing, boys only HSS are excluded from the sample. #Bous only is excluded from sample.

Inclusion criteria

All female students who attained menarche were included in the study.

Exclusion criteria

Special school for speech and hearing, students with mental illness/retardation-as it is difficult to get the information and students with any diagnosed genetic disorders like Turner's syndrome which interferes with menstruation were excluded from the study.

Data was collected using a self-administered pretested semi structured questionnaire and analyzed using SPSS 21. Results were expressed in terms of frequencies, percentages, mean, standard deviation. Chi-square test, Fisher's exact tests were used to test association.

RESULTS

Baseline characteristics of the population

Among the 624 higher secondary female students enrolled in this study, age ranges between 15-19 years (median±IQR=17±1 years), with the highest proportions at 17 (43.1%) years. All (100%) selected schools were co-educational type. Among the total 624 participants 372 (59.6%) were in plus one and 252 (40.4%) were in Plus two class. Stream-wise distribution of the participants indicates that majority were from science stream, 339 (54%), followed by humanities 184 (30%) and commerce 101 (16%) participants. The highest educational qualifications attained by majority of fathers and mothers were high school certificate 323 (53.5%) and 299 (47.9%), respectively, next to which lies the Intermediate or diploma qualifications, reported among 20.7% fathers and 26.6% mothers. When moving into higher levels of education, proportion of mothers with higher qualifications exceeded that of fathers. Even though educational status of mothers exceeds fathers, 517 (82.9%) were unemployed or unpaid, as they were homemakers. Only a small proportion of mothers were employed (17%), among them 49 (7.9%) were skilled workers followed by 27 (4.3%) engaged in elementary occupation.

According to modified BG Prasad SES scale 2025, the largest group, 28% (175) belonged to class IV (Lower middle). Least number of participants belonged to classes-I and V, 10.7% and 9.9% respectively. Majority (68%) of the participants lived in nuclear families, followed by three generation families (17.3%) and joint families (14.6%). Most participants were following Islam and Hinduism, accounting for 323 (51.8%) and 269 (43.1%), followed by Christianity 31 (5%). A very small proportion, 1 (0.2%), reported not following any religion. Most of the participants, 392 (62.8%) resided in rural areas, while 232 (37.2%) were urban residents. Total number of family members ranged from 2 to 16, with a

median of 5±2 members. Majority of the participants, 450 (72.1%) belonged to families with 2 to 5 members followed by 159 (25.5%) with 6 to 10 family members.

Prevalence of school absenteeism

Among the 624 study participants, Prevalence of school absenteeism during menstruation was 59.8% (373). Among absentees (373), 288 (77.2%) missed school for 2 to 3 days per menstruation, followed by 4-7 days (10.4%). Six (1.6%) students missed classes for more than 7 days per cycle also. A majority of 253 (67.8%) missed ≤6 days of classes for past 6 months during menstruation, while 111 (29.8%) missed between 6 to 12 days and 9 (2.4%) missed more than 12 days of classes. The median no. of days absent during menstruation was 4±4 (IQR) (Mean=4.37±4.07) days. Predominant reason for absenteeism during menstruation reported in the study was pain during menstruation, which accounts for about 91% among absentees, followed by tiredness (52%), discomfort (45%), fear of leakage of menstrual blood (27%), lack of sick room (20%), excessive bleeding (16%), lack of medicines for combating pain at school (11%), lack of proper disposal system for menstrual products (3.5%) and customs (2.7%) being the least.

Menstrual characteristics

Median age at menarche was 13±1 (Mean=12.72±1.106) years, which ranges from 6 to 16 years. Normal age at menarche (11-15 years) was reported among most (93%) of the participants, while few reported early menarche (10 years or less) (2%) and late menarche (15 years or above) (5%). 18% (115) reported feeling embarrassed during menstruation, majority did not. 66% (414) reported regular cycles, while 34% (210) irregular cycles. Average duration of menstrual cycle was normal in majority 508 (81%) of the participants, while 81 (13%) and 35 (6%) students reported oligomenorrhea and polymenorrhea respectively. Duration of bleeding during each menstruation was ≤7 days in majority 597 (96%), while 27 (4%) reported bleeding duration of more than 7 days. Of the total 624 participants in the study, 567 (≈91%) reported one or more menstrual abnormalities. Out of which, the most frequent abnormality was dysmenorrhea, reported in 537 participants (95%), followed by heavy menstrual bleeding in 175 participants (31%). A total of 57 (10%) participants did not report any of the menstrual abnormalities. Of those reporting pain (537), 50% described mild pain, 28.7% moderate and 21% severe. 87 students did not experience any pain.

School absenteeism during menstruation varied significantly by school category ($p=0.016$), academic stream ($p=0.015$) and age group ($p=0.021$). Students in the rural private and rural government schools reported higher absenteeism compared to those schools situated in urban areas. Similarly, commerce and humanities streams reported higher absenteeism compared to those in the science stream.

Likewise, younger students (≤ 16 years) had significantly higher absenteeism than older students (> 16 years). Other variables such as parental education, occupation, religion, type of family, and socioeconomic class were not significantly associated with school absenteeism. However, students residing in rural areas had a significantly higher rate of absenteeism compared to their urban counterparts ($p=0.032$) (Table 1).

Among menstrual factors, early age at menarche ($p=0.012$) and menorrhagia (heavy menstrual bleeding) ($p=0.015$) were significantly associated with school absenteeism. Participants with an early onset of menarche and those who experienced heavy menstrual bleeding had higher absenteeism rates. Other variables, such as cycle regularity, duration of cycle, and embarrassment during menstruation showed no significant association (Table 2).

Table 1: Association between sociodemographic factors and absenteeism.

Domains	Categories	Absenteeism	No absenteeism	P value
School category	Urban government	85 (55.6%)	68 (44.4%)	0.016*
	Urban private	81 (54.0%)	69 (46.0%)	
	Rural government	93 (58.9%)	65 (41.1%)	
	Rural private	114 (69.9%)	49 (30.1%)	
Class	Plus one	227 (61%)	145 (39%)	0.441*
	Plus two	146 (57.9%)	106 (42.1%)	
Stream	Science	185 (54.6%)	154 (45.4%)	0.015*
	Commerce	66 (65.3%)	35 (34.7%)	
	Humanities	122 (66.3%)	62 (33.7%)	
Age group (in years)	≤ 16	200 (64.4%)	111 (35.7%)	0.021*
	> 16	173 (55.3%)	140 (44.7%)	
Education of father	Up to high school	225 (59.7%)	152 (40.3%)	0.791*
	Intermediate/diploma	73 (58.4%)	52 (41.6%)	
	Graduate and above	64 (62.7%)	38 (37.3%)	
Education of mother	Up to high school	186 (58.3%)	133 (41.7%)	0.561*
	Intermediate/diploma	105 (63.3%)	61 (36.7%)	
	Graduate and above	82 (59%)	57 (41%)	
Occupational status of fathers	Unemployed	7 (63.6%)	4 (36.4%)	0.999#
	Employed	355 (59.9%)	238 (40.1%)	
Occupational status of mothers	Unemployed	314 (60.7%)	203 (39.3%)	0.283*
	Employed	59 (55.1%)	48 (44.9%)	
Socio economic class	Class I	38 (56.7%)	29 (43.3%)	0.979*
	Class II	97 (59.1%)	67 (40.9%)	
	Class III	94 (60.3%)	62 (39.7%)	
	Class IV	107 (61.1%)	68 (38.9%)	
	Class V	37 (59.7%)	25 (40.3%)	
Family size	2 to 5	279 (62%)	171 (38%)	0.168*
	6 to 10	85 (53.5%)	74 (46.5%)	
	11 to 16	9 (60%)	6 (40%)	
Family type	Nuclear	260 (61.2%)	165 (38.8%)	0.364*
	Joint	55 (60.4%)	36 (39.6%)	
	Three generation	58 (53.7%)	50 (46.3%)	
Religion	No religion	1 (100%)	0	0.965#
	Hindu	162 (60.2%)	107 (39.8%)	
	Muslim	191 (59.1%)	132 (40.9%)	
	Christian	19 (61.3%)	12 (38.7%)	
Residence	Rural	247 (63%)	145 (37%)	0.032*
	Urban	126 (54.3%)	106 (45.7%)	

* χ^2 test, #Fisher's exact test

Table 2: Association between menstrual characteristics and absenteeism.

Domain	Categories	Absenteeism	No absenteeism	P value
Age at menarche	Early	11 (100%)	0	0.012*
	Normal	340 (58.5%)	241 (41.5%)	
	Late	22 (68.8%)	10 (31.3%)	

Continued.

Domain	Categories	Absenteeism	No absenteeism	P value
Regularity	Irregular	127 (60.5%)	83 (39.5%)	0.799*
	Regular	246 (59.4%)	168 (40.6%)	
Duration of cycle	Polymenorrhea	24 (68.6%)	11 (31.4%)	0.342*
	Normal	297 (58.5%)	211 (41.5%)	
	Oligomenorrhea	52 (64.2%)	29 (35.8%)	
Duration of bleeding	≤7 days	359 (60.1%)	238 (39.9%)	0.391*
	>7 days	14 (51.9%)	13 (48.1%)	
Embarrassment	Present	76 (66.1%)	39 (33.9%)	0.126*
	Absent	297 (58.3%)	212 (41.7%)	
Presence of menstrual abnormalities	Polymenorrhea	24 (68.6%)	11 (31.4%)	0.275*
	Menorrhagia	118 (67.4%)	57 (32.6%)	0.015*
	Secondary amenorrhea	22 (75.9%)	7 (24.1%)	0.070*
	Dysmenorrhea	323 (60.1%)	214 (39.9%)	0.637*

* χ^2 test

DISCUSSION

Socio demographic profile of the study population

The present study was conducted among 624 participants in the higher secondary coeducation schools situated in urban and rural areas of Kannur district in northern Kerala.

In this study, age of the participants ranged from 15 to 19 years, with median age (IQR) of 17 (1) years, which is comparable with the study done in Uganda where median age of 16 (IQR=15,16) years was reported, but is more when compared to the study by Alenur et al in Telangana, where median age (IQR) was 14 (15-14) years. This might be due to the inclusion of only late adolescents studying in HSS in the present study.^{8,9}

The highest educational qualifications attained by majority of fathers and mothers were high school certificate 323 (53.5%) and 299 (47.9%) respectively, next to which lies the Intermediate/diploma qualifications, reported among 20.7% fathers and 26.6% mothers. When moving into higher levels of education, proportion of mothers with higher qualifications exceeded that of fathers. Parental education, especially mothers' education in other studies in India and other countries like Ghana reported a lower proportion of literate mothers comparing to the present study.^{6,10,11}

Even though educational status of mothers exceeds fathers in the present study, 82.9% mothers were unemployed or unpaid, as they were homemakers. Only a small proportion of mothers were employed (17%), which coincides with the majority (69.7%) of mothers as housewives in a cross sectional study conducted by Kumbeni et al in rural northern Ghana, where 49.7% of the mothers had primary education or lesser education.⁶

According to modified BG Prasad SES scale, the largest group (28%) belonged to class IV (Lower middle) in this study. It is similar to the study done among adolescent

girls in resettlement colonies of Delhi, where majority (33.9%) belonged to class IV, with less no. of participants belonged to classes I, 10.7% and 4.7% in Kannur and Delhi respectively.¹²

Family structure in today's world is mostly nuclear, which corroborates with the evidence from this study and various other studies. Majority (68%) of students lived in nuclear families in the present study, followed by three generation families (17.3%) and joint families (14.6%) in the present study. Similarly, 60.0% participants reported a nuclear family structure in a study by Gupta et al in urban slums of India, and Garg et al in Delhi where nuclear family comprised of 84.4%.^{11,12}

School absenteeism

Prevalence of school absenteeism during menstruation for the past 6 months in the present study accounted for 59.8% (373), which is greater when compared to the available Indian studies, ranged from 13.9% to 53%.^{4,8,10-21} When considering the international studies, school absenteeism varies widely from 14% to 70%.^{5-7,22-25}

The reasons for school absenteeism during menstruation reported were similar in most of the studies discussed here, where the predominant reason stated was pain during menstruation (dysmenorrhea). Other reasons in this study includes tiredness, discomfort, fear of leakage of menstrual blood and staining of clothes, lack of sick room/no place to manage periods at school, excessive bleeding, lack of medicines for pain at school, lack of proper disposal system for menstrual products at school and customs forbidding students to stay out of school. Apart from above mentioned reasons; due to shame, lack of toilet facility and water supply, lack of pads and premenstrual symptoms cited in other studies.^{4,8,12-14-31}

In the present study, among absentees majority (77.2%) missed up to 2 to 3 days per menstruation, which is higher comparing to other studies where most of them took only one or two days of leave.^{4,5,10,12,14,17,18,27} Some

(2.2%) students even remained out of school for more than 5 days every month in a study in Jalandhar, while in this study 1.6% remained out of school for more than 7 days.¹⁷ Even though it is a small proportion, it raises concern for addressing the issues related with.

When considering total number of days of menstrual absenteeism during past 6 months (n=373), majority 67.8% missed ≤6 days of classes, while 29.8% missed between 6 to 12 days and 2.4% missed more than 12 days of classes. The median (±IQR) no. of days absent during menstruation was 4±4 (Mean±SD=4.37±4.07) days. Considering an average of 100 to 120 working days over 6 months in higher secondary schools in Kerala state, this absenteeism accounts for roughly 5% to 10% of working school days, which is an alarming concern and should be addressed appropriately, since higher secondary education is a crucial phase that builds foundation for future education and career paths.

Factors associated with school absenteeism during menstruation

Sociodemographic factors

School absenteeism during menstruation varied significantly by school category (p=0.016), academic stream (p=0.015) and age group (p=0.021) in the present study, where students in the rural private and rural schools reported higher absenteeism compared to those schools situated in urban areas. Similarly, commerce and humanities streams reported higher absenteeism compared to those in the science stream. Likewise, younger students (≤16 years) had significantly higher absenteeism than older students (>16 years) in the present study. In contrast to this, a study done in Luang Prabang Province, Lao People's Democratic Republic by Inthaphatha et al, noted age 16 years or older as a factor associated with school absence due to menstruation. But schools outside the city were significantly less associated with school absence. A logistic regression analysis was performed which identified higher age (age>16 years old) (Adjusted OR (AOR)=1.79, 95% CI=1.37-2.34, p<0.001) and higher allowance (>200,000 LAK per week) (AOR=2.38, 95% CI=1.16-4.87, p<0.05) were significantly associated with school absence. Living with relatives (AOR=0.64, 95% CI=0.43-0.95, p<0.05) and studying at schools outside the city (AOR=0.59, 95% CI=0.38-0.90, p<0.05) were significantly less associated with school absence due to menstruation than living with their parents and schools in the city respectively.³²

Age and type of school were not statistically significant in some studies, but the socio-demographic characteristics like age, education, religion, socioeconomic status, residential area were not significantly associated with school absenteeism in a study by Garg et al.^{12,31} Multivariable logistic regression in another study showed that, among girls, missing ≥5 days of school in the past month was independently associated with older age

(aOR=2.53, 95% CI 1.08, 5.96 for those aged 15-17 vs 12-14), religion (aOR=0.35, 95% CI=0.13, 0.99 for Muslim vs Catholic).³⁰ All these findings were in contrast with the present study, where younger age group has more absenteeism which is statistically significant.

Multivariable logistic regression in a study in Uganda by Miiri et al showed that, among girls, missing ≥5 days of school in the past month was independently associated with lower socio economic status (aOR=2.34, 95% CI 1.34, 4.11), while in the present study socio economic status was not statistically significant.³⁰ Other variables such as parental education, occupation, religion, type of family, were not significantly associated with absenteeism in the present study.

However, students residing in rural areas had a significantly higher rate of absenteeism compared to their urban counterparts (p=0.032), with a similar higher likelihood of absenteeism associated with girls living in rural areas of Bangladesh, with a coefficient of -5.6 (CI: -10.06, -1.14, p<0.01).³¹

Mother's education and privacy in school were only significant at the univariate level in a study by Kumbeni et al while mothers education was not significant in the present study.⁶

Menstrual characteristics

Among menstrual factors, early age at menarche (≤10 years) (p=0.012) and menorrhagia (heavy menstrual bleeding) (p=0.015) were significantly associated with absenteeism. Participants with an early onset of menarche and those who experienced heavy menstrual bleeding had higher absenteeism rates. Students who reported no menstrual abnormalities had significantly lower absenteeism (p<0.001). Other variables, such as cycle regularity, duration of cycle, and embarrassment during menstruation, showed no significant association in the present study. Similarly, menorrhagia was identified as a significant predictor of academic absenteeism in a multivariate logistic regression analysis in a study conducted among high school students in Norway. The OR for academic absenteeism was 1.55 for participants with menorrhagia, with a statistical significance of p=0.012.⁹

A prospective cohort analysis found that adolescents reporting heavy or prolonged bleeding had significantly more time off school, missing an average of 1.7 additional days of school per year (a 16.58% increase). Heavy or prolonged bleeding was also associated with 48% higher odds of persistent absence (missing 10% or more of school time).³³ In another study conducted in Myanmar, heavy bleeding was associated with increased odds of absenteeism in multivariable comparisons aOR=3.33, 95% CI 1.51-7.34, p=0.003).³⁴ Pain, fear of leakage and excessive bleeding was cited as a major reasons for absence in India and noted statistically

significant association between school absenteeism and excessive bleeding ($\chi^2=20.923$, $p=0.00$).¹⁷ Which was comparable with the present study.

CONCLUSION

The prevalence of school absenteeism during menstruation is 59.8%. Predominant reason for absenteeism during menstruation reported in the study was pain during menstruation, which accounts for about 91% among absentees, followed by tiredness (52%), discomfort (45%), fear of leakage of menstrual blood (27%), lack of sickroom (20%), excessive bleeding (16%), lack of medicines for combating pain at school (11%), lack of proper disposal system for menstrual products (3.5%) and customs (2.7%) being the least. Significant factors associated were school category, academic stream, age group, residence, age at menarche, presence of menorrhagia.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

- Nanditha SK, Karibeeran S. Perspectives of Women in Kerala on menstruation and menstrual leave. In book: Social Work Education, Social Equity and Development, Chapter: 14, Publisher: Authors Press, New Delhi, India. 2023;130-43.
- UNICEF. MHM-Monitoring-Resource.
- How Good Menstrual Hygiene Keeps Girls Learning | UNICEF USA. 2023. Available at: <https://www.unicefusa.org/stories/how-good-menstrual-hygiene-keeps-girls-learning>
- Vashisht A, Pathak R, Agarwalla R, Patavegar BN, Panda M. School absenteeism during menstruation amongst adolescent girls in Delhi, India. *J Fam Community Med*. 2018;25(3):163-8.
- Sivakami M, Maria Van Eijk A, Thakur H, Kakade N, Patil C, Shinde S, et al. Effect of menstruation on girls and their schooling, and facilitators of menstrual hygiene management in schools: surveys in government schools in three states in India, 2015. *J Glob Health*. 2019;9(1):010408.
- Kumbeni MT, Ziba FA, Apenkwa J, Otupiri E. Prevalence and factors associated with menstruation-related school absenteeism among adolescent girls in rural northern Ghana. *BMC Womens Health*. 2021;21(1):279.
- World Bank. Menstrual Health and Hygiene. Available at: <https://www.worldbank.org/en/topic/water/brief/menstrual-health-and-hygiene>. Accessed on 25 January 2026.
- Alenur R, Koteswaramma Ch, Maktha VK, Dayyala S. A study on menstrual hygiene practices and school absenteeism during menstruation among high school girls from an urban area of Hyderabad, Telangana. *MRIMS J Health Sci*. 2024;12(3):161-5.
- Gravdahl OF, Svenningsen R, Majak P, Majak G. Menstrual-related symptoms as red flags for school absenteeism among Norwegian adolescents (MINA): A cross-sectional study. *Acta Obstet Gynecol Scand*. 2025;104(4):746-54.
- Yaliwal RG, Biradar AM, Kori SS, Mudanur SR, Pujeri SU, Shannawaz M. Menstrual Morbidities, Menstrual Hygiene, Cultural Practices during Menstruation, and WASH Practices at Schools in Adolescent Girls of North Karnataka, India: A Cross-Sectional Prospective Study. *Obstet Gynecol Int*. 2020;2020:6238193.
- Gupta S, Agarwal A, Sharma A, Agrawal P. Assessment of Menstrual Hygiene Practices and Their Determinants Among Adolescent Girls in Urban Slums of India: A Community-Based Cross-Sectional Study. *Cureus*. 2025;17(8):e90505.
- Garg S, Singh MM, Marimuthu Y, Borle A, Bhatnagar N, Basu S. School absenteeism during menstruation among adolescent girls in resettlement colonies of Delhi: a community-based cross-sectional study. *Indian J Community Health*. 2021;33(1):82-9.
- Antherjanam DS. Prevalence and pattern of menstrual disorders among school going adolescents in northern district of Kerala. *Public Health Rev Int J Public Health Res*. 2016;3(3):109-18.
- Krishnaiah BN, Nanjundaswamy DL, Kulkarni SN, Vasu DP, Kulkarni AG, Kurre B. Prevalence, Socio-cultural Restrictions and Determinants of School Absenteeism during Menstruation among Adolescent School Girls in Bangalore. *Indian J Community Health*. 2023;35(1):71-6.
- Dambhare DG, Wagh SV, Dudhe JY. Age at menarche and menstrual cycle pattern among school adolescent girls in Central India. *Glob J Health Sci*. 2012;4(1):105-11.
- Karthika P, Abedi AJ, Mehnaz S, Tabassum. IJCM_31A: Menstrual characteristics and school absenteeism among adolescent school girls of Aligarh--A Cross-sectional Study. *Indian J Community Med*. 2024;49(1):S9.
- Sangha NK, Kaur P, Sangha FS, Kaur N, Singh S. A cross-sectional study to assess menstrual hygiene and school absenteeism related to menstruation among school going adolescent girls of Jalandhar district. *Int J Community Med Public Health*. 2022;9(11):4185.
- Ahmed S, Nimonkar R, Kalra SK, Singh PMP, Rajiva, Singh S. Menstrual hygiene management and menstrual problems among adolescent girls in an urban area in north India: A cross-sectional study. *J Fam Med Prim Care*. 2024;13(3):1012-9.
- van Eijk AM, Sivakami M, Thakkar MB, Bauman A, Laserson KF, Coates S, et al. Menstrual hygiene management among adolescent girls in India: a systematic review and meta-analysis. *BMJ Open*. 2016;6(3):e010290.
- Vayeda M, Ghanghar V, Desai S, Shah P, Modi D, Dave K, et al. Improving menstrual hygiene

- management among adolescent girls in tribal areas of Gujarat: an evaluation of an implementation model integrating the government service delivery system. *Sex Reprod Health Matters*. 2021;29(2):1992199.
21. Maria van Eijk A, Thakur H, Kakade N, Patil C, Shinde S, Surani N, et al. Effect of menstruation on girls and their schooling, and facilitators of menstrual hygiene management in schools: surveys in government schools in three states in India, 2015. *J Glob Health*. 2019;9(1):010408.
 22. Gold-Watts A, Hovdenak M, Daniel M, Gandhimathi S, Sudha R, Bastien S. A qualitative study of adolescent girls' experiences of menarche and menstruation in rural Tamil Nadu, India. *Int J Qual Stud Health Well-Being*. 2020;15(1):1845924.
 23. Edet OB, Basse PEM, Esienumoh EE, Ndep AO. Missing school during period: perspectives of adolescent schoolgirls in Cross River State, Nigeria. *Pan Afr Med J*. 2022;42.
 24. Shah V, Nabwera H, Sonko B, Bajo F, Faal F, Saidykhan M, et al. Effects of Menstrual Health and Hygiene on School Absenteeism and Drop-Out among Adolescent Girls in Rural Gambia. *Int J Environ Res Public Health*. 2022;19(6):3337.
 25. GoI, Ministry of drinking water and sanitation. *Menstrual-Hygiene-Management-Guidelines*. 2015.
 26. Tegegne TK, Sisay MM. Menstrual hygiene management and school absenteeism among female adolescent students in Northeast Ethiopia. *BMC Public Health*. 2014;14(1):1118.
 27. Sebert Kuhlmann A, Key R, Billingsley C, Shato T, Scroggins S, Teni MT. Students' Menstrual Hygiene Needs and School Attendance in an Urban St. Louis, Missouri, District. *J Adolesc Health*. 2020;67(3):444–6.
 28. Andargie FA, Tinuola FR. Effects of school menstrual hygiene management, water, sanitation, and hygiene interventions on girls' empowerment, health, and educational outcomes: Lasta district, Amhara regional state, Ethiopia. Parker A, editor. *PLOS One*. 2025;20(4):e0321376.
 29. Alam MU, Luby SP, Halder AK, Islam K, Opel A, Shoab AK, et al. Menstrual hygiene management among Bangladeshi adolescent schoolgirls and risk factors affecting school absence: results from a cross-sectional survey. *BMJ Open*. 2017;7(7):e015508.
 30. Miiró G, Rutakumwa R, Nakiyingi-Miiró J, Nakuya K, Musoke S, Namakula J, et al. Menstrual health and school absenteeism among adolescent girls in Uganda (MENISCUS): a feasibility study. *BMC Womens Health*. 2018;18(1):4.
 31. Jahan F, Shuchi NS, Shoab AK, Alam MU, Bashar SkMdK, Islam K, et al. Changes in the menstrual hygiene management facilities and usage among Bangladeshi school girls and its effect on school absenteeism from 2014 to 2018. *Glob Health Action*. 2024;17(1):2297512.
 32. Inthaphatha S, Louangpradith V, Xiong LI, Xiong V, Ly L, Xaitengcha V, et al. Menstrual health and factors associated with school absence among secondary school girls in Luang Prabang Province, Lao People's Democratic Republic: A cross-sectional study. *PLoS ONE*. 2021;16(12):e0261268.
 33. Sawyer G, Fraser A, Lawlor DA, Sharp GC, Howe LD. Associations of adolescent menstrual symptoms with school absences and educational attainment: analysis of a prospective cohort study [Internet]. *Epidemiology*; 2024.
 34. Swe ZY, Mon NO, Than KK, Azzopardi PS, Kennedy EC, Davis J, et al. Adolescent girls' experiences of menstruation and schooling in monastic schools in Magway Region, Myanmar: A mixed-methods exploration. *Front Reprod Health*. 2022;4:893266.

Cite this article as: Pothangode R, Kumaran JA. Prevalence and factors associated with school absenteeism during menstruation among higher secondary female students in Kannur district: a school based cross-sectional study. *Int J Community Med Public Health* 2026;13:2928-35.