International Journal of Community Medicine and Public Health
Sukriti et al. Int J Community Med Public Health. 2024 Dec;11(12):4735-4741
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20243636

Original Research Article

An epidemiological study on menstrual knowledge among school going adolescent girls of 9th-12th standard of northwestern Punjab: a government private school comparison

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Received: 23 August 2024
Revised: 20 November 2024
Accepted: 21 November 2024

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ABSTRACT

Background: Although menstrual knowledge is pivotal in adolescent health education, shaping girl's understanding of their bodies, reproductive health, and overall well-being but difference is seen in knowledge of government and private school adolescent girls. Therefore, a study was planned to compare menstrual knowledge of government and private school adolescent girls and determine its associated factors.
Methods: A cross-sectional study was conducted in 28 senior secondary schools (14 government and 14 private) of Amritsar district, Punjab from which 1120 adolescent girls studying in class 9th,10th,11th and 12th standard (10 per class per school) were randomly selected. A semi-structured questionnaire was self-administered to collect the information from the study participants and data was analysed using SPSS version 21.0 and chi-square and unpaired t-test was used to establish association.
Results: The study reveals that overall mean score for private school goers was found to be 3.6±1.32 which was significantly higher than the government school goers (2.4±1.53). Menstrual knowledge was found to be associated with age, place of residence, type of family, caste, socio-economic status, educational and occupational status of both the parents.
Conclusions: Knowledge was found to be better among private in comparison to government school adolescent girls.

Keywords: Adolescents, Knowledge, Menstruation

INTRODUCTION

Every month, 1.8 billion people across the world menstruate.[1] Menstrual knowledge is pivotal in adolescent health education, shaping girl's understanding of their bodies, reproductive health, and overall well-being. It encompasses essential information such as the biological mechanisms of menstruation, proper hygiene practices, and menstrual health management. Equipped with this knowledge, girls can effectively manage their periods, maintain hygiene, and navigate the physical and emotional changes that come with puberty. Many girls do not have complete and accurate understanding of menstruation as a normal biological process. Educating girls before their first period on menstruation, builds their confidence, contributes to social solidarity and encourages healthy habits. Such information should be provided at home and at school.[2] A lack of information about menstruation leads to damaging misconceptions and discrimination, and can cause girls to miss out on normal childhood experiences and activities. Stigma, taboos and myths prevent adolescent girls from the opportunity to learn about menstruation and develop healthy habits.[2] In a study conducted in government and private schools of Tumkur found that only 34.1% girls had right perception about menstruation being a physiological process and 31.42% were aware about menstruation before attaining menarche.[3] Another study

conducted in urban and rural areas of Bangalore it was observed that only 64.6% of the girls could correctly answer 50% of the questions related to menstruation.[4] A rural study of Ludhiana district found that only 16.75% of the girls were aware about menarche priorly and more than three fourth of girls were not aware about the cause of bleeding.[5]

As no such study had been conducted in Amritsar district in recent past, therefore the present study was conducted to assess menstrual knowledge amongst adolescent girls studying in 9th, 10th, 11th and 12th class at senior secondary schools of Amritsar district.

METHODS

After obtaining due permission from ethical and research committee permission from the DEO was sought who provided us with the list of all Senior Secondary Schools of Amritsar district and current cross-sectional study was conducted over a span of one year i.e. 1st January 2023 to 31st December 2023 in 28 senior secondary schools of district Amritsar. A stratified random sampling technique was used for selection of schools from the schools list which was stratified on the basis of location (urban/rural) and ownership (government/private). Equal number of schools that is 7 each from both urban/rural areas and private/government strata were selected randomly from the list for assessment of menstrual knowledge. Within each school, 40 adolescent girls (10 from each grade of 9th to 12th) were randomly sampled, totaling 1,120 adolescent girls for the study. Two visits were made into the school. In the first visit, consent from the principal was taken and adolescent girls were selected to whom assent and consent forms were distributed. Another visit was made in which assent and consent forms were collected and semi-structured questionnaire was distributed to the selected students. Only those female students were included who had attained menarche at least 6 months before day of inclusion in the study and those who gave written informed assent/ consent for participation in study. The questionnaire consisted of two sections in which section-I consisted of 6 questions related to menstrual knowledge and section-II consisted of information related to socio-demographic profile of the students (Figure 1).

Score of 1 was given for each correct response to question related to menstrual knowledge whereas '0' score was given for each incorrect response. Overall knowledge score ranged from 0-6. Along with this mean ($\bar{x}$) ±SD was calculated and students were classified as having good knowledge (>$\bar{x}$+1SD), average (between $\bar{x}$+1SD and $\bar{x}$-1SD) and poor (<$\bar{x}$-1SD)

Data was compiled using Microsoft Excel and analysed using SPSS 21.0. The results were presented in the form of tables and charts/diagrams for better understanding. Chi-square and unpaired t-test was used wherever applicable.

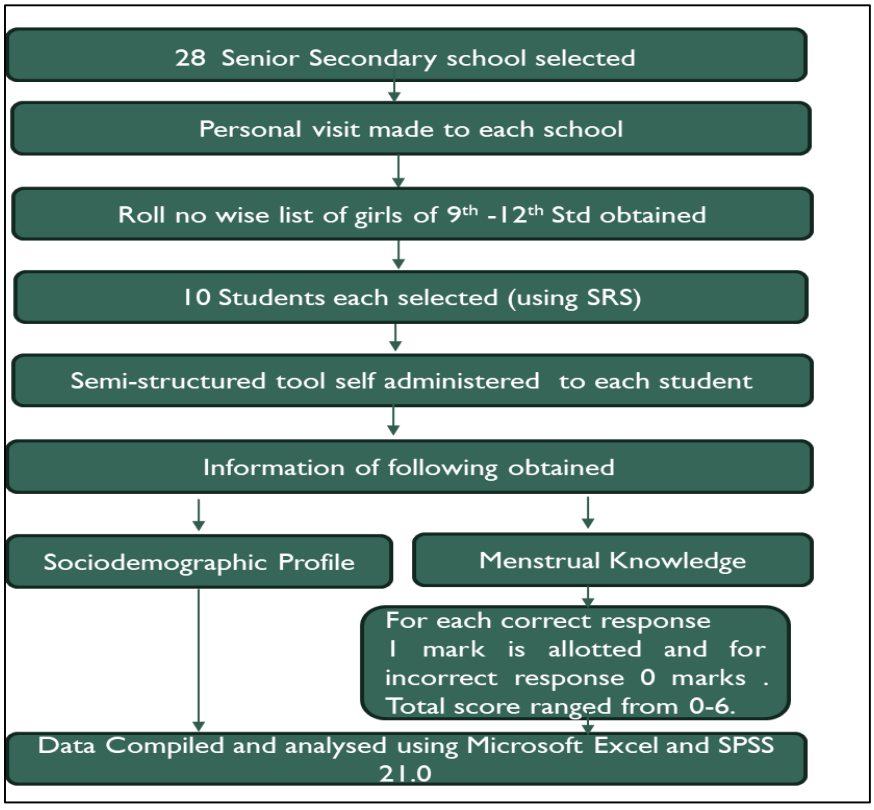

Figure 1: Methodology.

RESULTS

Socio-demographic profile

Majority of the study participants (48%) were from age group of 15-16 years. 46% resided in urban areas and 54% in rural areas. A majority (63%) of the participants lived in nuclear families, and 75% were Sikh by religion. There was a notable socioeconomic disparity between private and government school students, with 62% of private school participants belonging to upper and upper-middle classes, compared to only 9% of government school participants. Conversely, 23% of government school students were from the lower class, while this was true for only 3% of private school students, according to the B. G. Prasad classification. The literacy rates differed between parents of students in government and private schools. 83% of fathers and 74% of mothers were literate of government school students. In contrast, among private school students, the literacy rates were higher, with 97% of fathers and 93% of mothers being literate. Occupational differences were observed between the parents of government and private school students. Among government school participants, 52% of fathers were labourers, compared to 30% of private school fathers. Majority of mothers were housewives (76%) of private school students, while 44% of government school mothers were employed, with the majority (26%) working as labourers.

Responses in relation to menstrual knowledge

87% of the respondents said that menstruation occurs only in females and this knowledge was significantly lower amongst government school responders (79%) in comparison to private school responders (94%). 66 % said that menstruation occurs due to hormonal changes and 60% knew that it continued till menopause is achieved and this knowledge was significantly higher amongst private school responders as compared to government school responders. 34% private school responders had prior knowledge about menstruation as compared to 24% of government school responders and this difference was also found to be statistically significant (Table 1).

Table 1: Distribution of study participants according to their menstrual knowledge.

Variables	Government (n=560)	Private (n=560)	Total (n=1120)	χ^2 (p value; df)
Menstruation occurs in Females only	444 (79)	529 (94)	973 (87)	57.2 (0.001; 2)#
Menstruation is due to hormonal changes	266 (48)	481 (86)	747 (66)	189.7 (<0.001; 2)#
Menstruation continues till menopause is achieved	262 (47)	418 (75)	680 (60)	91.1 (<0.001; 2)#
Had prior knowledge about menstruation	136 (24)	192 (34)	328 (29)	13.5 (0.001; 1)#
Menstruation is physiological process	125 (22)	157 (28)	282 (25)	4.8 (0.08; 2)
Uterus is the organ of bleeding	115 (21)	285 (51)	400 (36)	140.2 (<0.001; 3)#

(Figures in parenthesis are percentages) (# p<0.05 is considered as statistically significant)

Table 2: Distribution of study participants according to the grading of menstrual knowledge (n=1120).

Type of school	Menstrual knowledge			χ^2 (p value; df)
	Good (n=222)	Average (n=696)	Poor (n=202)	
Government	62 (11)	326 (58)	172 (31)	145.8
Private	160 (29)	370 (66)	30 (5)	(<0.001; 2) #

(Figures in parenthesis are percentages) (# p<0.05 is considered as statistically significant)

Based on menstrual knowledge questions overall scores were calculated for each respondent and following this mean score for government and private schools were calculated. The knowledge (3.6±1.32) was found to be significantly higher among private school goers in comparison to government school goers (2.4±1.53) (Figure 2).

Menstrual knowledge and its associated factors

Menstrual knowledge was found to be associated with age of the participant, place of residence, type of family, caste, socio-economic status of the family, educational and occupational status of both the parents.

Overall, 62% of the study participants had average knowledge about menstruation, 20% had good knowledge and 36% had poor knowledge about menstruation. Knowledge in relation to menstruation was found to be significantly higher among private school goers where 29%, 66% and 5% had good, average and poor knowledge whereas 11%, 58% and 31% of government school study participants had good, average and poor knowledge. This difference was found to be statistically significant (Table 2).

Among the urban residents 23% had good menstrual knowledge whereas 17% of the rural residents had good menstrual knowledge. Significantly higher proportion of general category i.e. 32% possessed good knowledge

about menstruation in comparison to 13% among those who belonged to SC/BC/OBC caste (Table 3).

Knowledge level of the study participants increased with increase in educational status of the fathers where good knowledge ranged from 10% among study participants with illiterate fathers to 58% among fathers having education of graduate and above. This variation was found to be statistically significant. Similar trends were observed with education status of the mother where good knowledge was only 10% among those with illiterate mothers and 53% among those whose mothers were graduate and above.

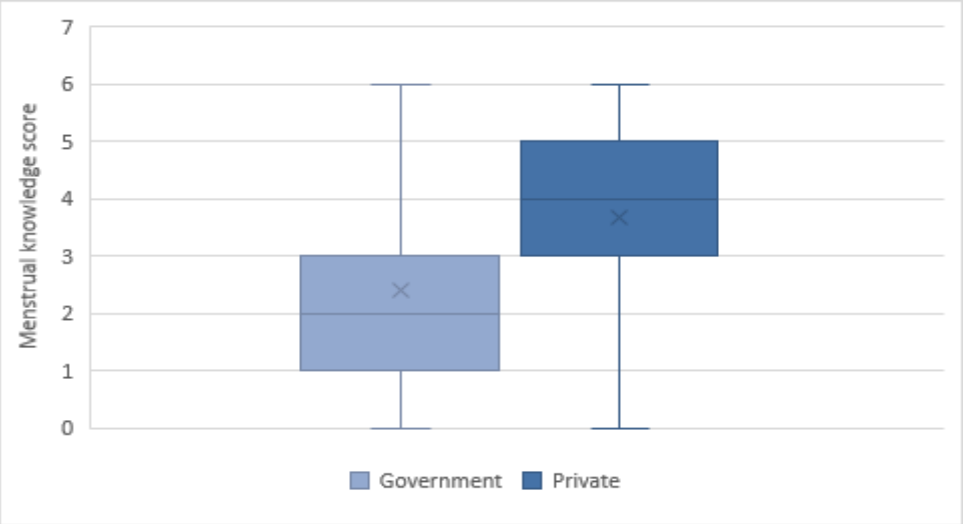

Figure 2: Box and whisker plot showing the distribution of study participants according to menstrual knowledge score (n=1120).

(t=14.05; p<0.001; df-1118)#

Table 3: Association of menstrual knowledge with socio-demographic profile (n=1120).

Variables	Menstrual knowledge			χ^2 (p value; df)
	Good (n=222)	Average (n=696)	Poor (n=202)	
Age (years)				
11-14	38 (17)	131 (59)	52 (24)	15.7 (<0.003; 4) #
15-16	125 (23)	315 (59)	95 (18)	
17-19	59 (16)	250 (69)	55 (15)	
Place of residence				
Urban	119 (23)	336 (65)	58 (11)	30.9 (<0.001; 2) #
Rural	103 (17)	360 (59)	144 (24)	
Type of family				
Nuclear	136 (19)	454 (65)	112 (16)	6.64 (0.03; 2)#
Joint	86 (21)	242 (58)	90 (21)	
Caste				
General	126 (32)	242 (61)	26 (7)	89.4 (<0.001; 2)#
Others	96 (13)	454 (63)	176 (24)	
Religion				
Sikh	166 (20)	516 (62)	157 (19)	6.5 (0.16; 4)
Hindu	52 (22)	150 (64)	34 (14)	
Others	4 (9)	30 (67)	11 (24)	
Socioeconomic status of the family				
I	77 (44)	91 (51)	9 (5)	156.7 (<0.001; 8)#
II	59 (27)	146 (66)	15 (7)	
III	39 (16)	170 (68)	41 (16)	
IV	37 (11)	203 (63)	84 (26)	
V	10 (7)	86 (58)	53 (36)	

(# p<0.05 is considered as statistically significant)

Table 4: Association of educational and occupational status of parents with menstrual knowledge of study participants (n=1120).

Variables	Menstrual knowledge			χ^2 (p value; df)
	Good (n=220)	Average (n=692)	Poor (n=201)	
Educational of status of father	**n=220**	**n=692**	**n=201**	**n=1113**
Illiterate	11 (10)	69 (62)	31 (28)	158.1 (<0.001;10)#
Primary	15 (10)	94 (64)	38 (26)	
Middle	36 (14)	148 (59)	65 (26)	
High	74 (17)	309 (70)	60 (14)	
Intermediate	28 (42)	33 (50)	6 (9)	
Graduate and above	56 (58)	39 (40)	2 (2)	
Occupation of father	**n=220**	**n=692**	**n=201**	**n=1113**
Salaried (Government/private)	76 (25)	187 (62)	39 (13)	56.8 (<0.001;6)#
Business	87 (26)	206 (62)	38 (12)	
Skilled /unskilled labourer	56 (12)	285 (62)	116 (26)	
Unemployed	1 (4)	14 (61)	8 (35)	
Educational status of mother	**n= 222**	**n=695**	**n=202**	**n=1119**
Illiterate	18 (10)	115 (62)	51 (28)	134.6 (<0.01;10)#
Primary	18 (12)	100 (65)	35 (23)	
Middle	24 (11)	138 (66)	49 (23)	
High	84 (21)	263 (64)	62 (15)	
Intermediate	18 (38)	27 (56)	3 (6)	
Graduate and above	60 (53)	52 (45)	2 (2)	
Occupation of mother	**n=222**	**n=695**	**n=202**	**n=1119**
Salaried (government/private)	45 (31)	75 (53)	23 (16)	39 (<0.001;6)#
Business	16 (25)	40 (61)	9 (14)	
Skilled/unskilled labourer	11 (6)	112 (66)	47 (28)	
Housewives	150 (20)	468 (63)	123 (17)	

(# p<0.05 is considered as statistically significant)

As far as economic status of father was concerned 35% of the study participants whose fathers were unemployed had poor knowledge. On the contrary 26% and 25% of the study participants with salaried and businessman fathers possessed good knowledge about menstruation. This difference was statistically significant. Poor knowledge level was found to be 28% among those whose mothers were skilled/ unskilled labourers and only 6% of them had good knowledge. On the other hand, 31% of the study participants whose mothers were salaried had good knowledge and 16% had poor knowledge (Table 4).

DISCUSSION

Menstrual knowledge was assessed on basis of 6 questions where overall scores were calculated.

Awareness of menstruation before menarche varied significantly across different regions and school types. In the current study, only 29% of girls were aware of menstruation before attaining menarche, with a higher awareness among government school students (34%) compared to private school students (24%). This is consistent with findings from Mohali, Punjab, where 36% of girls were aware, but contrasts with a study in Jaipur showing much higher awareness rates of 73.84% in government schools and 87.57% in private schools.[6,7] Furthermore, 60% of participants correctly attributed menstruation to hormonal changes, aligning closely with a study from Ethiopia where 60.9% of girls had this knowledge.[8]

Knowledge about menstruation being a physiological process was limited, with only 25% of participants correctly identifying it as such, which is slightly higher than the 18% reported in a study by Subhash et al in Nagpur.[9] Moreover, there were significant differences in knowledge about the uterus as the bleeding organ, with 21% of government school students and 51% of private school students correctly identifying this. These findings highlight the need for improved menstrual health education, particularly in government schools.

Out of 1120 adolescent girls, 81.9% had good/fair (19.8%, 62.1%) knowledge and 18.1% had poor knowledge about menstruation. Contrasting differences were found in study conducted in Ethiopia where 60.9% girls had good knowledge and 39.1% had poor knowledge.[10] This difference can be due to more effective reach of menstrual education programs in India and various socio-political factors.

Younger adolescents (24%) from age group of 11-14 showed a higher proportion of poor knowledge. This might be due to the relatively recent introduction of menstrual education at a young age, supported by a study conducted in Tanzania, it was observed that higher the age (>13 years) of the girl better was the menstrual knowledge.[11]

Study participants from urban areas had a higher proportion (23%) of good knowledge, 65% had average knowledge, and only 11% had poor knowledge in comparison to rural study participants. This suggests better access to information and resources in urban areas and more cultural taboos in rural areas.

In this study significantly higher proportion of those belonging to general category (32%) possessed good knowledge compared to 13% among SC/BC/OBC categories. This disparity might reflect underlying socio-economic and educational inequalities among different caste groups.

A decreasing trend in knowledge was observed with decreasing socio-economic status where 44% of those belonging to upper class had good menstrual knowledge in comparison to only 7% of those belonging to lower class. This highlights the positive impact of better educational and economic resources. In support to this study conducted in Lucknow where it was menstrual knowledge was found to be associated with the monthly income of family where an increasing trend of knowledge was seen with increase in monthly income.[12]

The educational and economic status of parents significantly influenced the menstrual knowledge of the study participants. 53% among those whose mothers were graduate and above had good menstrual knowledge as compared to only 10% among those whose mothers were illiterate. Educated mothers are more likely to have better health literacy and communicate important health practices to their children.

35% of participants with unemployed fathers had poor knowledge where as 26% and 25% of participants with salaried and businessman fathers had good knowledge about menstruation. Similarly, 31% of participants with salaried mothers had good knowledge. This shows stable and higher-income jobs likely provide better access to educational resources and a conducive environment for learning about menstrual health. This is supported by findings of Gujrat where menstrual knowledge was found to be associated with increase in education of the parents.[13]

The study was limited to schools within a 20-kilometer radius of the government medical college in Amritsar district because of logistic constraint. This geographical restriction may limit the generalizability of the findings to broader or more diverse areas within Punjab or India.

CONCLUSION

Menstrual knowledge of government and private school going adolescents from 9th to 12th class were assessed and scored. It was found that knowledge was significantly higher among private school study participants as compared to the government school study participants. Despite of inclusion of health-related topics like menstruation in the curriculum, knowledge and awareness still lack among students. There is still a need to sensitize school students on menstruation. Improved menstrual knowledge will help to improve menstrual hygiene practices in the future.

ACKNOWLEDGEMENTS

I would like to acknowledge principals, school teachers and study participants for their full cooperation in the study.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee (letter no.10762)

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Cite this article as: Sukriti, Padda P, Mahajan S. An epidemiological study on menstrual knowledge among school going adolescent girls of 9th-12th standard of northwestern Punjab: a government private school comparison. Int J Community Med Public Health 2024;11:4735-41.