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Original Research Article

Knowledge and practice of menstrual hygiene: a cross-sectional study among high school girls in Mangalore Taluk

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ABSTRACT

Background: Understanding and practicing menstrual hygiene is crucial for women's health globally. Unsafe menstrual hygiene practices (MHP) contribute to a lower quality of life. In impoverished nations, gender inequity, societal norms, cultural taboos, poverty, and inadequate facilities hinder meeting menstrual health demands. The study aimed to assess the level of knowledge and practice of menstrual hygiene among adolescent girls in Mangalore Taluk, Dakshina Kannada, Karnataka.
Methods: A cross-sectional study was conducted among 482 adolescent girls from government high schools in Mangalore Taluk. A cluster random sampling technique was adopted to select the schools and complete enumeration was done from each school with the aid of a semi-structured questionnaire. The data was analyzed by using SPSS v-23. Descriptive analysis showed frequency and percentage, and logistic regression explored associations between menstrual hygiene practices (MHP) and demographic variables.
Results: Out of 482 participants, 82.3% got primary menses information, mostly from mothers (77.8%). About 48.5% had average menstruation knowledge, and 76.8% followed proper MHP. Urban areas showed 4.368 times higher MHP practice than rural areas, revealing a significant relationship.
Conclusions: Study finds Mangalore high school girls generally maintain average menstrual hygiene practices. It is very important to set up suitable disposal facilities in schools and to organise awareness campaigns on good menstrual hygiene habits. Thus, it contributes to improving quality of life.

Keywords: Cultural taboos, Gender inequity, Hygiene, Menstruation, Sanitary products

INTRODUCTION

Menstruation, a universal occurrence in females during the reproductive years, begins in adolescence, accompanied by significant physiological and emotional changes. The process that occurs on a regular basis for women during their reproductive years is known as the menstrual cycle. It starts at the age of 12 to 15 and continues until menopause begins between the ages of 45 and 50. When there is a hormonal imbalance, the risk of endometriosis, fibroids, and polyps increases, and excessive blood loss during menstruation can result in anemia. The most common menstrual irregularities include amenorrhea, oligomenorrhea, menorrhagia, and dysmenorrhea. Premenstrual syndrome is a symptom of stress that appears before the onset of menstruation and includes mood swings, anxiety, headaches, and abdominal cramping.[1,2] Prioritize global well-being through menstrual hygiene management (MHM) to prevent infections, cervical cancer, school dropouts and poor academic performance etc.[3,4] Insufficient knowledge, washing facilities, and a lack of sanitary pads emphasize the urgent need for improved MHM.[5]

In resource-limited countries, girls frequently control their menstrual bleeding with old garments, tissue paper,

cotton or wool piece or a combination of these things. Tampons and menstrual cups, though available, are often inaccessible.

Where there are no suitable disposal facilities, there is a risk that used sanitary products would be dumped wherever, which could jeopardize the accomplishment of clean water and sanitation (SDG 6). Additionally, around 200 million women in underdeveloped nations struggle to access clean water for washing.[6,7]

Good menstrual hygiene is essential for the health and dignity of girls and women. As a result, it is critical to recognize existing practices, myths, and misconceptions about menstruation. From the standpoint of greater mobility and personal comfort, improving menstrual hygiene is crucial. It also reduces the likelihood of infections resulting from poor hygiene practices during menstruation. Schools are one of the finest places to learn about menstrual hygiene. To enhance interventions, understanding current knowledge and practices is vital. This study assesses adolescent schoolgirls menstrual hygiene practice (MHP).[8]

Objective

Primary objective was to assess the level of knowledge and status of menstrual hygiene practice. Secondary objective was to find the association between selected demographic characteristics and menstrual hygiene practice.

METHODS

Selection and description of participants

A cross-sectional study was conducted in Mangalore Taluk, Dakshina Kannada District. Dakshina Kannada (DK), also known as South Canara, is a coastal district situated in the southern part of Karnataka state.

The data were collected from selected government high schools in Mangalore Taluk, Dakshina Kannada, and Karnataka within a period of May 2022 to September 2022. As per district education officer (DEO) currently there are around 264 schools located in Mangalore Taluk. North and south Mangalore have 123 and 141 schools, respectively. Our study was focused only on government high schools located in Mangalore, which included 62 schools with an enrollment of 2990 students.

In order to estimate the anticipated percentage with a 5% margin of error and a 95% level of confidence, 576 participants were included in the study. According to the DEO, 2990 adolescent girls were studying in all government high schools in Mangalore Taluk. The finite population correction factor was applied. The updated sample size was 482. A cluster random sampling technique was used.

Data collection and measurements

Brief information was given to the teachers, adolescent girls, and their mothers before data was obtained regarding the study outcome and its benefit to the community. Upon receiving a signed consent letter from every mother and their children, a pretested and pre-validated questionnaire was used to collect data from the high school girls. The questionnaire carried demographic details such as age, family structure, location, education status of the mother, and their occupation. The second and third parts of the questionnaire were about the level of knowledge and practice of menstrual hygiene. The validity of the questionnaire was ensured through content validation by three subject experts and a pre-test with 40 high school female students.

Inclusion criteria

High school girls (aged between 12 and 16 years). Those who were present at the time of data collection.

Exclusion criteria

Those who have not started menstruation.

Ethics approval was obtained from the institution of Yenepoya Medical College (protocol number YEC-1/2022/077). Permission was obtained from the district education officer (DEO), Mangalore, Karnataka, for collecting data from the students. Participants were explained about the nature and purpose of the study. Written informed consent was obtained from the parents and assent from the students. Confidentiality of the data was maintained by storing the data collection forms in a lock and key cupboard and on a password-protected computer. Only the research team was allowed access to the data. The anonymity of the data was ensured by not linking the identification details of the participants to the study results.

Statistics

The collected data was analyzed using SPSS v-23. The status of knowledge and practice of menstrual hygiene was estimated along with the confidence interval (95%). Categorical variables were summarized by using frequency and percentage. The impact of knowledge and selected demographic variables on menstrual hygiene practice was analyzed using logistic regression analysis.

RESULTS

Distribution of the respondents according to the demographic characteristics (n=482)

An examination of the 482 participants revealed a noteworthy demographic distribution, with an overarching majority (58.5%) hailing from rural areas. Nearly half of the participants (49.38%) fell within the

14-year age bracket. Family structures among the respondents were predominantly nuclear, constituting 55.4%, while an overwhelming 97.1% currently reside with their parents.

Delving into the educational backgrounds, 57.7% of the mothers completed primary school, followed by 16.8% with secondary education, and a smaller percentage (3.5%) achieving higher secondary or above. On the paternal side, the data indicates that 63.9% of fathers completed primary school, 16.0% completed secondary education, and 6.0% attained higher secondary or advanced levels. A significant majority of fathers (81.5%) are engaged in daily labor, while more than half of the mothers (63.5%) identify as housewives. Frequency distributions of age among participants are given in Figure 1.

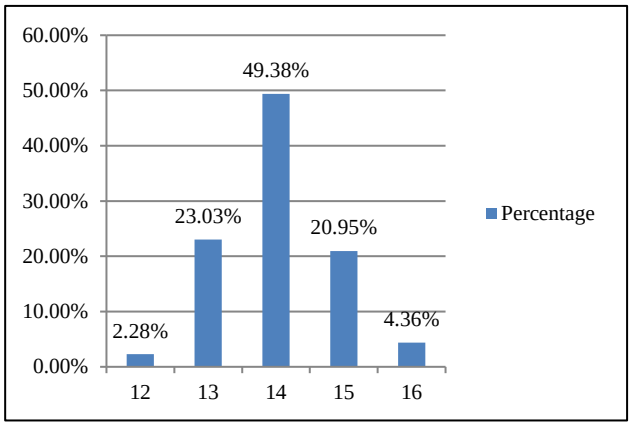

Figure 1: Frequency distribution of age among participants.

Distribution of respondents according to their level of knowledge about menstrual hygiene (n=482)

Detailed analysis revealed that a significant majority (82.3%) of adolescent girls possessed knowledge about menstruation before its onset, with mothers emerging as the predominant source of this information (77.8%). The data further discloses that a substantial portion (94.2%) of the students actively participated in school health awareness programs on menstrual hygiene, with teachers playing a crucial role (56.3%), closely followed by health centers (43.7%).

Examining perceptions, a vast majority (83.4%) of participants considered menstruation a normal physiological process. Approximately two-thirds (66.2%) identified the uterus as the source of bleeding, while over half (54.8%) believed that menarche typically occurs between the ages of 12 and 15. Additionally, a noteworthy 88% agreed that the normal duration of menstrual bleeding ranges from 2 to 8 days, and 62% opined that the interval between two menstrual cycles falls within the range of 24 to 38 days.

Table 1: Distribution of respondents based on their practices in menstrual hygiene (n=482).

Variables	Frequency	Percentage
Type of absorbent material		
Commercially made sanitary pads	455	94.4
Sanitary clothes	27	5.6
Change pads or cloths per day		
Once	12	2.5
twice	209	43.4
more than three times	261	54.1
Change of menstrual material during the low bleeding days		
2 to 4 hours	258	53.5
4 to 6 hours	199	41.3
More than 6 hours	25	5.2
Using sanitary cloth during menstruation (at least once)		
Yes	153	31.7
No	329	68.3
Material used for cleaning sanitary clothes		
With normal water	18	11.8
With water and soap	97	63.4
With hot water	38	24.8
Dries cloths in sunlight		
Inside hanging	33	21.5
Inside hidden	43	28.1
Outside hanging	27	17.7
Outside hidden	50	32.7
Cleans external genitalia during menstruation		
Yes	469	97.3
No	13	2.7
Bath during menstruation		
Daily	467	96.9
Alternative days	6	1.2
Thrice in a week	9	1.9
Cleaning of external genitalia		
With water	95	19.7
with water and soap	387	80.3
Disposes the pads by wrapping with paper		
Yes	429	89
No	53	11
Disposal of menstrual material in schools		
Open field	6	1.2
Latrine	121	25.1
Waste basket	215	44.6
Take back to home	105	21.8
Burning kit	35	7.3
Disposal of menstrual material in home		
Latrine	126	26.1
Waste bins	139	28.9
Burning	217	45
Hygienic practice		
Good	370	76.8
Bad	112	23.2

Among the total respondents, more than 3/4th of them (76.8%) found good practice [the 95% CI was (72.68-80.41%)].

Furthermore, nearly 59% of participants asserted that menstrual blood does not contain harmful substances, and precisely 50% demonstrated awareness of how hormones influence the menstrual cycle. Notably, only half of the respondents held the belief that menstrual pain is not indicative of a disease (53.5%), and an almost equal proportion (54.1%) acknowledged the benefits of engaging in physical activities during menstruation. This comprehensive breakdown sheds light on the diverse perspectives and knowledge levels among the study participants.

Table 2: Distribution of factors associated with participant's menstrual hygiene practice (n=482).

Independent variables		Univariable analysis			Multivariable analysis		
		Unadjusted odds ratio	95% CI	P value	Adjusted odds ratio	95% CI	P value
Age (years)		1.022	(0.795-1.315)	0.865	0.983	(0.747-1.293)	0.901
Place	Urban	4.688*	(2.748-7.995)	<0.0001	4.368*	0.000	<0.0001
	Rural	Ref	Ref	Ref	Ref	Ref	Ref
Mother's education	Illiterate	0.769	(0.340-1.742)	0.529	0.562	(0.235-1.345)	0.196
	Below primary	0.821	(0.473-1.425)	0.482	0.838	(0.471-1.489)	0.546
	Above primary	Ref	Ref	Ref	Ref	Ref	Ref
Family structure	Nuclear	1.071	(0.649-1.767)	0.790	0.991	(0.583-1.685)	0.973
	Extended	2.654*	(1.296-5.433)	0.008	1.805	(0.847-3.845)	0.126
	Joint family	Ref	Ref	Ref	Ref	Ref	Ref
Knowledge score		1.111	(1.015-1.216)	0.022	1.087	(0.954-1.238)	0.210

The overall score for menstrual knowledge ranges from 0 to 9. The mean±SD knowledge score was 5.7137±1.84. Nearly half (48.5%) of the teenage girls had an average understanding of menstruation, while 38.8% had good knowledge. Less than 1/4th (12.7%) of the adolescent girls had poor knowledge of menstruation. Distribution of respondents based on their practices in menstrual hygiene (n=482) are given in Table 1. Distribution of factors associated with participant's menstrual hygiene practice (n=482) are given in Table 2 reports that, the odds of good practice for students residing in urban areas are 4.368 times higher than those residing in rural areas (p<0.0001). The other socio-demographic variables are not significantly associated with the practice. The children of mothers with "above primary" levels of education were more likely to have good hygiene practices. The students from nuclear families were less likely to have good hygienic practices when compared with the students from joint families. Students living with extended families were more likely to have good hygiene practices. Knowledge was a favorable factor for good practice (AOR=1.087, p=0.210); the odds of good practice increase with an increase in the knowledge score.

DISCUSSION

A cross-sectional study was conducted to assess the level of knowledge and practice of menstrual hygiene among high school girls in Mangalore Taluk. In our study, nearly half (48.5%) of the respondents had average and 38.8% had good knowledge about menstruation. We also found there was a statistically significant association between MHP and the residence area.

Socio demographic characteristics

In our study, most of the participants belonged to the 14-year-old age group, and they were from rural areas (58.5%). Over one-half of them reside in nuclear families (55.4%). Most of them were living with their parents (97.1%). More than half of the mothers completed at least primary education, and nearly 2/3rd of them were housewives (63.5%). This was found to be similar to the study conducted in Mangalore, Karnataka, by Javalkar et al, where the researcher found that nearly 76.7% of mothers were educated up to high school and 56.9% of them lived in nuclear families.[9]

Knowledge regarding menstruation

In the current study, the majority of the participants agreed that menstruation is a normal process (83.4%), and most (82.3%) of the adolescent girls had knowledge regarding menstruation before the onset. It was found that the mothers were a prior source of knowledge (77.8%). This was found to be similar to the earlier studies from Dakshina Kannada, which showed that 63.4% received information from mothers. Apart from that study, other studies from Pakistan by Mansoor et al and Ethiopia had similar findings regarding source of knowledge, with a percentage of 48.6% and 38.3%, respectively.[1,3,9]

The present study showed that only 12.7% had poor knowledge of menstrual hygiene. This finding was comparatively twice as high as a study conducted in

Nepal by Yadav et al, which found that participants had a low level of knowledge (6.2%) about menstruation.[10]

Also, our study found that schools play a major role in conducting awareness programs on menstrual hygiene with the aid of health centers. However, they received the incorrect answer for a few questions, such as the effect of hormones, the organ responsible for bleeding, and the reason behind the pain during menstruation, though it was a part of their curriculum.

Menstrual hygiene practice

In this study, it was observed that among 482 high school girls, 76.8% had good MHP, which was higher than the similar study done in Ethiopia by Belayneh et al and in Nepal by Yadav et al, which showed that MHP among their participants was 46.6% and 40%, respectively.[1,10]

In our study, most (94.4%) of the respondents were familiar with sanitary pads, and only 5.6% were using clothes during the menstrual cycle, which was in contrast with the study conducted in Nepal, in which 21.3% were using commercially made sanitary pads and 53.9% were using reusable clothes during menstruation.[10] Our result showed that incorrect hygiene practices were especially prevalent among those who had worn their clothes at least once. The habit of daily bathing (96.9%) and cleaning of the genital area (80.3%) during menstrual days were found satisfactory. The results about cleaning the genital area were similar to the findings from Quota, conducted by Michael et al, which found that 80.5% were following appropriate cleaning of the genital area during menstruation.[11]

This study showed that more than half (54.1%) of the respondents change their sanitary pads at least three times per day, which is important to prevent several infections. This finding was better than that of a study conducted in southeast Nigeria by Duru et al, which showed 22.6% of the participants changing their pads frequently.[12]

It is important to note from our study that, the majority (89%) of them followed the way of wrapping it with paper and disposing of it. However, when it came to the disposal method, about 1/4th (26.1%) of the adolescent girls were discarded in latrines at home as well as at school (25.1%), and nearly 1/4th (21.8%) was taken back to the home in the absence of better facilities at their schools. While considering the disposal at home, 45% of them followed the burning method as disposal, which is in line with findings from southeast Nigeria done by Duru et al (51.9%).[12]

Factors associated with menstrual hygiene practice

The second objective of the study was to find the factors associated with MHP. The odds of good practice for students residing in urban areas were 4.368 times higher than those residing in rural areas, which was statistically significant (p value <0.0001). The current findings are similar to those of a study conducted in central Ethiopia by Bulto et al, which found that students who were from urban residences were 2.62 times more likely to have safe menstrual hygiene practices than those from rural residences.[4]

The other socio-demographic variables were not significantly associated with the practices. However, the adolescents who had mothers with "above primary" levels of education were more likely to have good hygiene practices because mothers were the leading source of knowledge. The students from nuclear families were less likely to have good hygienic practices when compared with the students from joint families. The students living with extended family were more likely to have good hygiene practices.

Knowledge was the favorable factor for good practice; the odds of good practices increasing with an increase in the knowledge score. This finding, supported by the study from southern Ethiopia, found a statistically significant association between poor knowledge of menstruation and menstrual hygiene practice.

CONCLUSION

A study in Mangalore Taluk found that about half of adolescent girls had average menstruation knowledge. Surprisingly, over three-quarters practiced good menstrual hygiene. However, lacking burning kit facilities in most schools may hinder timely disposal of sanitary materials, affecting prompt changes. Schools should educate students about local menstrual products. Cloth users tended to dry indoors, reflecting cultural constraints, especially in joint families. Additionally, most girls wrapped pads in paper pre-disposal, believing it keeps surroundings clean. Urban students were more likely to practice good hygiene, possibly due to better facilities and parental education, and rural economic constraints. At the end of the data collection from schools, we were able to conduct an awareness program in several schools. During our interactions with school authorities, we realized the challenges faced in the disposal of menstrual materials.

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