

ORIGINAL RESEARCH

To study the level of knowledge and belief in menstruation and practices of menstrual hygiene among adolescent girls: A community-based cross-sectional study

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ABSTRACT

Background: Menstruation is a biologically inherent physiological process that occurs in teenage girls and women who have not yet reached menopause. To study the level of knowledge and behaviours about menstrual hygiene among adolescent girls: Community-based cross-sectional research. **Material and methods:** The present research, done by the Department of Preventive and Social Medicine, focused on a community-based cross-sectional analysis. The study specifically targeted teenage females who were attending school. A total of 110 school-going adolescent girls, namely in the 8th and 9th grades, were chosen to participate in the research. A pre-designed, pretested, and structured questionnaire was used in the research. The data gathering method included conducting personal interviews with the research participants. **Results:** The first response to the first occurrence of menstruation exhibited a range of emotions. Among the participants, 42 females (38.18%) reported feeling afraid, 21 (19.09%) reacted as if it were a normal occurrence, 19 (17.27%) had pain, 15 (13.64%) felt aggravation or disgust, and 13 (11.82%) had various other reactions. During menstruation, 47.27% of the girls refrained from participating in religious events, 15.45% refrained from engaging in physical activity or playing, 6.36% refrained from attending school, 14.55% refrained from attending family activities, 10.91% had no limitations, 3.64% refrained from doing home labour, and 1.82% refrained from observing fasting. Regarding menstrual hygiene habits, 40.91% of the girls used sanitary napkins, 24.55% used fresh cloths, 18.18% reused old cloths, and 16.36% rotated between these approaches. Regarding the washing of external genitals, 7 girls (6.36%) did not engage in any cleaning, 15 (13.64%) cleaned less than twice daily, 34 (30.91%) cleaned more than twice daily, and 54 (49.09%) cleaned according to their convenience and privacy. In terms of the cleaning procedure, 45 females (40.91%) used soap and water, 48 (43.64%) alone used water, 9 (8.18%) employed a piece of paper, and 8 (7.27%) opted for a piece of cloth. **Conclusion:** It might be inferred that teenage females have little understanding of menstruation and that their cleanliness habits are inadequate. Ensuring menstrual hygiene is a crucial issue that requires attention. Several variables are recognised to influence menstruation behaviours. It is crucial to be aware of the need for knowledge on maintaining good menstruation habits. Developing a system to promote and facilitate the adoption of good menstruation habits is crucial. It is advisable to encourage regular gynaecological examinations for all school-age females. Appropriate corrective steps should be implemented thereafter.

Keywords: Adolescent girls, Menstrual hygiene, Knowledge, Practices

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INTRODUCTION

Menstruation is a biologically inherent physiological process that occurs in teenage girls and women who have not yet reached menopause.¹ It is a phenomenon that is exclusive to females. Menarche, the beginning of menstruation, is a significant developmental milestone that typically occurs in females aged 11–15,

with an average age of 13 years.^{2,3}

It is a biological process that is linked to several mental and physical illnesses. Approximately 52% of the global female population is in the reproductive age group, which means that menstruation is a typical part of their lives. Therefore, maintaining proper menstrual hygiene is crucial for maintaining fundamental

hygiene habits. Adolescence is the stage of life during which individuals acquire and adopt information, attitudes, and behaviours that will shape their future and be transmitted to future generations. Consequently, any erroneous ideas, information, or behaviours around menstruation will have an impact on the health of women, as well as their community and future generations. Menstrual hygiene habits differ across urban and rural areas, particularly in India, where discussing menstruation and reproductive health is considered taboo. Menstruation is supported by several myths and societal beliefs. At the age of menarche, many girls lack knowledge about appropriate menstruation habits.^{4,7} The practice of isolating menstrual girls and imposing restrictions on them within the family has contributed to the development of a negative perception of menstruation. Due to the absence of a forum for discussing menstrual hygiene issues, girls and women often experience pain and illness. Additionally, the wearing of unsanitary clothing may contribute to the development of reproductive tract infections. Inadequate management of menstrual health may result in urinary tract infections, pelvic inflammatory illnesses, and vaginal thrush, as well as unpleasant odour and stained clothing.

AIM AND OBJECTIVES

A community-based cross-sectional study on the level of knowledge and belief in menstruation and practices of menstrual hygiene among adolescent girls.

MATERIAL AND METHODS

The present study was conducted among the school-going adolescent girls of the rural and urban areas of the Muzaffarpur district, Bihar, India, by the Department of Preventive and Social Medicine, Sri Krishna Medical College, Muzaffarpur, Bihar, India in collaboration with Department of Obstetrics & Gynaecology, Sri Krishna Medical College & Hospital, Muzaffarpur, Bihar, India, and focused on a community-based cross-sectional analysis. The period of the study was for a period of six months (August 2019– March 2020). Data such as name, age, etc. was recorded. The study specifically targeted teenage females who were attending school. A total of 110 school-going adolescent girls from the aforementioned schools, namely in the 8th and 9th grades, were chosen to participate in the present study.

Inclusion Criteria

- Girls who give written informed consent.
- All school-going menstruating girls between 12 and 17 years of age
- Available for follow-up.

Exclusion Criteria

- Girls who were not willing to participate in the present study were not included.

- Girls suffering from the menstrual disorder
- Those unable to attend follow-up.

Sampling Size Determination and Sampling Technique

In the present study, the prevalence for sample size calculation, i.e., the prevalence of 6.36%, was taken.

The following simple formula would be used for calculating the adequate sample size in prevalence study

- $n = Z^2 P (1-P)/d^2$
- n = sample size, Z = level of confidence, P = prevalence, and d = absolute error or precision.
- Z = Is standard normal variate (at 5% type 1 error ($P < 0.05$) it is 1.96 and at 1% type 1 error ($P < 0.01$) it is 2.58). As in majority of studies P values are considered significant below 0.05 hence 1.96 is used in formula. p = Expected proportion in population based on previous studies or pilot studies.
- The sample size was calculated using a single population proportion formula by considering a 95% confidence level, a 5% margin of error, and a 5.7% estimated proportion of overall prevalence.
- Sample size = $1.96^2 \times 0.064 (1-0.064)/0.05^2$
- =92

Considering a 10% non-response rate, the total minimum sample size for the study was 101 girls. A total of 110 school-going adolescent girls from the aforementioned schools, namely in the 8th and 9th grades, were chosen to participate in the present study.

A pre-designed, pretested, and structured questionnaire was used in the research. The data gathering method included conducting personal interviews with the research participants. Upon obtaining authorization from the school officials, the goal of the research was described to the class instructors of the 8th and 9th grades, and verbal assent was gained from the female pupils. The research volunteers were provided with a clear explanation of the study's goal and the kind of information they were required to provide. The study protocol received approval from the Institutional Ethics Committee.

Statistical Analysis

Descriptive statistics were applied for analysis, and the results were presented in a table and graph.

The data was recorded in MS Excel and exported to Epi-Info software, which was then assessed for both completeness and accuracy. Descriptive statistics were applied for analysis, and the results were presented in a table and graph.

RESULTS

The research had a total of 110 females with varying age distributions. Out of the total, 13 individuals (11.82%) were 12 years old, 29 individuals (26.36%) were 13 years old, 37 individuals (33.64%) were 14

years old, 19 individuals (17.27%) were 15 years old, and 12 individuals (10.91%) were 16 years old or older. Regarding the educational condition of the moms, a substantial majority of 91 (82.73%) were literate, while 19 (17.27%) were illiterate.

Table 1: Demographic Characteristics of the Study Subjects

Characteristics	Number	Percentage (%)
Age in years		
12	13	11.82
13	29	26.36
14	37	33.64
15	19	17.27
≥16	12	10.91
Education status of mother		
Literate	91	82.73
Illiterate	19	17.27

Table 2: Information About Menarche and Perception About Menstruation (n=110)

Variable	No.	%
Age of menarche (years)		
≤11	11	10.00
12	20	18.18
13	44	40.00
14	22	20.00
≥15	13	11.82
Awareness about menstruation before menarche	69	62.73
Source of information before menarche (n=69)		
Mother	33	47.83
Sister	11	15.94
Friends	8	11.59
Teachers	6	8.70
Relatives	3	4.35
TV	4	5.80
Movie	2	2.90
Magazines and others	2	2.90
Reaction to 1st menstruation		
Scared	42	38.18
Usual	21	19.09
Discomfort	19	17.27
Irritation/disgusted	15	13.64
Other than above	13	11.82
Restrictions and taboos (avoided activities) during menstruation		
Religious occasion	52	47.27
Physical activity/playing	17	15.45
Schooling	7	6.36
Attending family functions	16	14.55
No restrictions at all	12	10.91
Household work	4	3.64
Keeping fast	2	1.82

In relation to the onset of menarche, 11 girls (10.00%) experienced the start of menstruation at or prior to the age of 11 years, 20 (18.18%) at the age of 12 years, 44 (40.00%) at the age of 13 years, 22 (20.00%) at the age of 14 years, and 13 (11.82%) at the age of 15 years or above. Out of the total number of females, 69 (62.73%) had knowledge about menstruation prior to their first menstrual period, also known as menarche. The main sources of knowledge known to a certain

group were primarily mothers (33, 47.83%), followed by sisters (11, 15.94%), friends (8, 11.59%), teachers (6, 8.70%), relatives (3, 4.35%), TV (4, 5.80%), movies (2, 2.90%), and magazines or other sources (2, 2.90%).

The first response to the first occurrence of menstruation exhibited a range of emotions. Among the participants, 42 females (38.18%) reported feeling afraid, 21 (19.09%) reacted as if it were a normal

occurrence, 19 (17.27%) had pain, 15 (13.64%) felt aggravation or disgust, and 13 (11.82%) had various other reactions. During menstruation, 47.27% of the girls refrained from participating in religious events, 15.45% refrained from engaging in physical activity

or playing, 6.36% refrained from attending school, 14.55% refrained from attending family activities, 10.91% had no limitations, 3.64% refrained from doing household work, and 1.82% refrained from observing fasting.

Table 3: Menstrual Hygiene and Practices During Menstruation

Practice of Menstrual Hygiene	No.	%
Use of material during menstruation		
Sanitary napkins	45	40.91
New cloths	27	24.55
Reuse old cloth	20	18.18
Alternate use of above all	18	16.36
Cleaning of external genitals		
Not at all	7	6.36
<2 times	15	13.64
>2 times	34	30.91
As per convenience and privacy	54	49.09
Cleaning with		
Soap and water	45	40.91
Only water	48	43.64
Piece of paper	9	8.18
Piece of cloth	8	7.27
Disposal of menstrual material used		
Throwing in dustbin	72	65.45
Flushing in toilets	16	14.55
Washing and reusing	11	10.00
Don't want to tell	7	6.36
Dumping/burning	4	3.64

Regarding menstrual hygiene habits, 40.91% of the girls used sanitary napkins, 24.55% used fresh cloths, 18.18% reused old cloths, and 16.36% rotated between these approaches. Regarding the washing of external genitals, 7 girls (6.36%) did not engage in any cleaning, 15 (13.64%) cleaned less than twice daily, 34 (30.91%) cleaned more than twice daily, and 54 (49.09%) cleaned according to their convenience and privacy. In terms of the cleaning procedure, 45

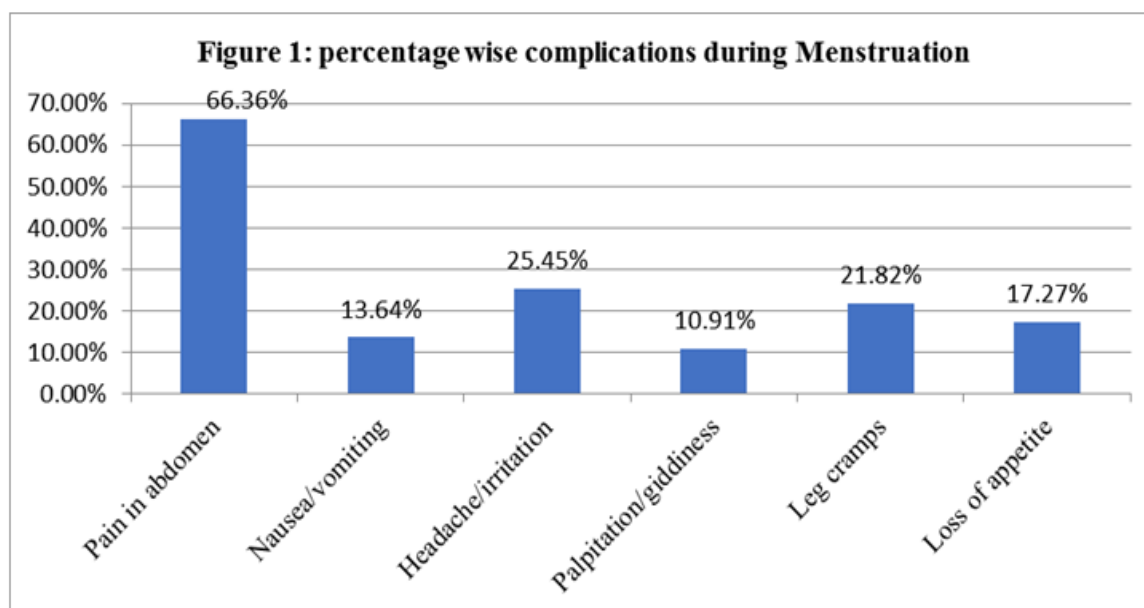
females (40.91%) used soap and water, 48 (43.64%) alone used water, 9 (8.18%) employed a piece of paper, and 8 (7.27%) opted for a piece of cloth. Regarding the disposal of menstruation products, 65.45% of the girls tossed them in the garbage, 14.55% flushed them in toilets, 10.00% cleaned and reused them, 6.36% did not divulge their technique, and 3.64% opted for dumping or burning [Table 3].

Table 4: Health Problems during Menstruation

Complications	No.	%
Pain in abdomen	73	66.36
Nausea/vomiting	15	13.64
Headache/irritation	28	25.45
Palpitation/giddiness	12	10.91
Leg cramps	24	21.82
Loss of appetite	19	17.27

The research found many health issues encountered by females during menstruation. Abdominal discomfort was the prevailing condition, as reported by 73 females, accounting for 66.36% of the cases. In addition, 15 females (13.64%) suffered symptoms of

nausea or vomiting, 28 (25.45%) had headaches or irritation, 12 (10.91%) reported palpitations or giddiness, 24 (21.82%) had leg cramps, and 19 (17.27%) noticed a decrease in appetite [Table 4].



DISCUSSION

Looking at the demographic attributes of the study subjects, the table of 110 girls demonstrates a rather random distribution of girls of different ages. Of them, 13 participants were 12 years old, 29 participants were 13 years old, 37 participants were 14 years old, 19 participants were 15 years old, and 12 participants were 16 years of age or older. This distribution is comparable to the study done by Mushi et al.⁸ in 2021, on schoolgirls in Tanzania; a greater percentage of them were between the ages of 13 and 15.

In another study done by Patil et al.⁹ in 2020, concerning the age distribution, we found similar results where a higher percentage of girls from rural India were in the age bracket of 13–14 years.

The social class of the mothers regarding their education level was also defined as follows: 91 (82.73%) were literate, while 19 (17.27%) of the mothers were illiterate. This agrees with the observation made by Singh et al.¹⁰ in a cross-sectional study, who noted that mothers's literacy levels in urban areas are higher and therefore determine health literacy and the practices of adolescent girls with issues of menstruation.

It was found that 11 girls (10.00%) indicated that they began menstruation at or before 11 years; 20 girls (18.18%) said they started menstruating at 12 years; 44 girls (40.00%) said at 13 years; 22 girls (20.00%) at 14 years; and 13 girls (11.82%) at 15 years or older. This age distribution of menarche can be equally traced in other studies conducted on the subject. For instance, Chumlea et al.¹¹ in 2003, conducted a study and informed us that the mean age of menarche in the United States was about 12.3 years; fluctuations like those seen in the current study were seen. In the same regard, Singh et al.¹⁰ in 2020, stated that the mean age of menarche in the study

samples from India was about 13 years, similar to our study.

A notable 69 girls (62.73%) were aware of menstruation before experiencing menarche. Among those who were aware, the primary sources of information were mothers (33, 47.83%), sisters (11, 15.94%), friends (8, 11.59%), teachers (6, 8.70%), relatives (3, 4.35%), TV (4, 5.80%), movies (2, 2.90%), and magazines or other sources (2, 2.90%). These findings are consistent with the study by Narayan et al.¹² in 2001, which emphasised the role of mothers as the primary source of menstrual information, followed by peers and other family members.

Reactions to the first menstruation varied, with 42 girls (38.18%) feeling scared, 21 (19.09%) reacting as if it were usual, 19 (17.27%) feeling discomfort, 15 (13.64%) experiencing irritation or disgust, and 13 (11.82%) having other reactions. This distribution of emotional responses is similar to the findings of Aniebue et al.¹³ in 2009, where a significant number of girls reported fear and discomfort as their initial reactions to menarche.

In terms of menstrual hygiene practices, 45 girls (40.91%) used sanitary napkins, 27 (24.55%) used new cloths, 20 (18.18%) reused old cloths, and 18 (16.36%) alternated between these methods. These findings are comparable to the study by Dasgupta and Sarkar¹⁴ in 2008, which reported that the use of sanitary napkins was increasing but many girls still relied on cloth materials, particularly in rural areas.

When it came to cleaning external genitals, 7 girls (6.36%) did not clean at all, 15 (13.64%) cleaned less than twice daily, 34 (30.91%) cleaned more than twice daily, and 54 (49.09%) cleaned as per convenience and privacy. This is similar to the findings of Thakre et al.¹⁵ in 2011, who noted variability in genital hygiene practices among

adolescents, often influenced by the availability of water and privacy.

For the disposal of menstrual materials, 72 girls (65.45%) threw them in the dustbin, 16 (14.55%) flushed them in toilets, 11 (10.00%) washed and reused them, 7 (6.36%) did not disclose their method, and 4 (3.64%) opted for dumping or burning. These practices align with those reported by Ali and Rizvi¹⁶, who observed that improper disposal methods are common due to a lack of awareness and proper facilities.

The study identified several health problems experienced by the girls during menstruation. The most common issue was abdominal pain, reported by 73 girls (66.36%). Additionally, 15 girls (13.64%) experienced nausea or vomiting, 28 (25.45%) had headaches or irritation, 12 (10.91%) reported palpitations or giddiness, 24 (21.82%) had leg cramps, and 19 (17.27%) experienced a loss of appetite. These findings are consistent with the study by Houston et al.¹⁷ in 2006, which identified abdominal pain and headaches as the most prevalent menstrual-related symptoms among adolescents. Similarly, Patel et al. in 2016 reported a high prevalence of menstrual discomfort, including nausea and leg cramps, among schoolgirls in their study.¹⁸

Limitation(s) of the study

Due to the sensitive topic of menstruation, social desirability response bias and informational bias may have an effect on the final result. It was challenging to compare findings with other studies because the standard data collection tool was not available.

CONCLUSION

It might be inferred that teenage females have little understanding of menstruation and that their cleanliness habits are inadequate. Ensuring menstrual hygiene is a crucial issue that requires attention. Several variables are recognised to influence menstruation behaviours. It is crucial to be aware of the need for knowledge on maintaining good menstruation habits. Developing a system to promote and facilitate the adoption of good menstruation habits is crucial. It is advisable to encourage regular gynaecological examinations for all school-age females. Appropriate corrective steps should be implemented thereafter.

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