Menstrual hygiene among adolescent girls studying in a university of Gujarat

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ABSTRACT

Background: Menstruation marks the beginning of the reproductive life of a girl. A poor menstrual understanding and its unhealthy practices may increase the risk of reproductive infections, urinary tract infections, and even cancer. Therefore, the main objective of this study was to study the knowledge and attitude regarding menstrual hygiene among adolescent girls so that it can be taken as a background for designing necessary interventions in the community. Objectives: 1) To study the knowledge and attitude towards menstruation among adolescent girls and 2) to study the menstrual hygiene practices and health-seeking behaviour of the adolescent girls. Methods: This was a university-based descriptive cross-sectional study carried out by directly interviewing the subjects using the interviewer-administered questionnaire - pre-tested and pre-designed proforma. The data were analysed statistically by simple proportions. Results: Among the study subjects, 79% had proper knowledge about menstruation. 82% had a normal menstrual pattern. Nearly 96% used sanitary pads, and 2.3% used reusable cloths. Regarding restrictions, 74.8% restrained themselves from visiting the places of worship, 21% avoided physical exercise, and 7.8% had to remain isolated with minimal social contact. Nearly 19% made conscious efforts for dietary changes during menstruation. Conclusion: A majority of the subjects had a regular menstrual cycle, but menstrual problems were found to be more among those having irregular periods, those changing absorbents infrequently, with an inadequate frequency of cleaning, and those using plain water for cleaning. The study however does reflect the fact that menstrual hygiene was unsatisfactory among adolescent girls. Therefore, they need to be educated about the facts of menstruation and proper hygienic practices.

Keywords: Adolescent, menstrual hygiene, menstrual practices, menstruation

Introduction

Adolescence marks a period of rapid growth and development during which many changes at the physical, physiological, and behavioural levels occur. Adolescence estimates worldwide are at about 1.2 billion, and they constitute about 21% of the Indian population. Menstruation is a cyclical shedding of the endometrium under the hormonal influence controlled by the hypothalamic pituitary axis. It marks the beginning of reproductive life of a girl. Menstrual hygiene is a taboo which often women are uncomfortable discussing. What is meant for women and adolescent girls is to be able to manage menstruation hygienically and with dignity includes them using clean menstrual management materials to absorb or collect menstrual blood, which can be changed as often as needed in privacy for the duration of a menstrual cycle, washing the body as necessary with soap and water, and having access to safe and convenient disposal facilities for used menstrual management materials. Poor menstrual practices lead to the development of various morbid conditions such as reproductive tract infections and urinary tract infections. Learning about menstrual hygiene is an important part of health education in order to prevent various ill effects of...
poor menstrual hygiene practices, which may lead to reproductive tract infections, infertility, miscarriages, toxic shock syndrome, and cancer. Most of adolescent girls are uncomfortable when it comes discussing about menstruation, and thus, they do not have access to adequate information about this social taboo. Moreover, the lack of knowledge further impairs a girl’s daily activities, affects her attendance in college, and thus leads to poor academic performance. The reproductive health decisions which they will make today will affect the health of the upcoming generations. Women who have good knowledge about menstrual hygiene are less liable to suffer from reproductive tract infections. Reproductive tract infections and sexually transmitted infections are fairly common in primary care settings. Adequate knowledge regarding menstruation and menstrual hygiene is of paramount importance among adolescent girls in a given community as it will have a directly impact on reducing the burden of reproductive tract infections/sexually transmitted infections in primary care practice. This study is therefore aimed at studying the knowledge and perceptions regarding menstrual hygiene among the adolescent girls so that it can be then taken as a background for designing necessary interventions in the community so as to reduce its burden in family/primary care practice.

Methods

A cross-sectional descriptive university-based study was carried out in western India. The study included students pursuing medicine and nursing disciplines in the university. The data were collected by directly interviewing the subjects. The study was conducted between July and December 2019, that is, for a total duration of 6 months. As the study was carried out among medical allied students, to ensure a non-biased opinion, only the first-year students were interviewed as “Menstrual Hygiene” is a part of their curriculum in the succeeding years. All the female students studying in first year who consented for the study were included.

A written consent was sought from the study subjects aged more than 18 years. For those below 18 years of age, an assent was taken from their local guardians for the study. The data were collected using a pre-tested, pre-structured, and validated proforma.

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Z = \frac{\text{3.96X50X50} 9900}{5X5 \times 25} = 396
\]

For the calculation of sample size, \( P \) was taken as 50% because of the lack of true estimation of population parameters. From this, the sample size derived after putting in the below-mentioned formulae was 396. As there was a limitation with respect to resources for data collection procedure, it was decided to survey 30% of the sample size for the study. Therefore, the minimum sample size decided for the survey was 119 students. At the end of the survey, 127 students were surveyed after obtaining their consent for the study.

The questionnaire had different sections consisting of socio-demographic profiles, questions about their menstrual cycles, and various problems associated with them, assessing their understanding regarding menstruation and their menstrual hygiene practices and also perceptions regarding various rituals and dietary practices during menstruation.

Approval from institutional ethics committee was sought before the commencement of the study dated 18.9.2019. The data were entered and analysed in MS Excel 2007. Basic descriptive statistics and proportions were calculated and presented. Chi squared test was used to draw associations between variables at a 5% level of significance.

Inclusion criteria

1. Students of medical and nursing studying at Parul University in their first academic year of undergraduate studies.
2. Those providing written consent/assent for the study.

Exclusion criteria

1. Those not providing written and verbal consent/assent for the study.

Results

As per Graph 1, the mean age of the study subjects was 18 ± 0.70 years as the subjects were college-going students. The mean age of menarche was 14 ± 2 yrs. Graph 2 shows that most (i.e., 80%) of the study subjects had a regular menstrual cycle and 20% had an irregular cycle. Duration of flow among the study subjects ranged from 1 to 7 days. Table 1 shows that 78.7% had proper knowledge about menstruation. About 31.3% of the girls received information from the school, 39.8% from their parents, 3.9% from their friends, and the rest (around 3.1%) from other sources. In the case of menstrual irregularity, only 23.6% received treatment in any form for the cause and among them, 11.8%, 11%, and only 0.8% received treatment from the doctor, pharmacy, and mother, respectively. As per Table 2, a majority of the study subjects (96.06%) used sanitary pads, 2.36% used reusable cloths, 3.15% used fresh cloths, 1.57% used tampons, and 0.7% used menstrual cups. Only a small proportion of study subjects (11.7%) changed the absorbent material more than thrice in a day, whereas 2% changed it thrice, 73% changed it twice in a day, and 10.2% changed it only once in a day. 90.6% practised disposing the absorbent material in the trash can, whereas 5.5%, 2.4%, 3.1%,

Graph 1: Age of the study subjects (n = 127)
and 0.8% practised the wash and reuse method, burning the absorbent, flushing it in the toilet, and disposing it in the incinerator, respectively. The frequency of washing and cleaning the genital area for hygiene with a frequency of more than 5 times a day was found in about 10% of the subjects only. About 12% practised cleaning less than twice a day. Nearly half of them used water for cleaning, whereas 9.4%, 9.4%, and 30.5% used soap and water, Dettol, and other agents (wash and other specific medicated soaps), respectively. There were many menstrual problems faced by the study subjects. As per Table 3, the most common of those included mood swings, lower abdominal pain, tiredness, and lower backache. The other complaints commonly experienced were excessive sleepiness, foul smelling discharge, increased frequency of micturition, burning micturition, and rashes in genital areas. Other minor complaints included itching, nausea, and vomiting. Regarding restrictions, Table 4 shows that about three quarters avoided themselves from visiting the places of worship, 43% avoided attending marriages or other rituals, 20.47% were not allowed to cook/serve food, 17.32% stayed indoors, 21% avoided physical exercise, and 7.87% had to remain isolated with minimal social contact. There were conscious efforts for dietary changes with increased intake of nutritious food such as fresh fruits and vegetables during menstruation, and these were practiced by about 19% of subjects. About 15% consumed more iron, and 21.26% consumed more protein. Even though the association between different factors and prevalence of menstrual problems was not significant statistically, a majority of the problems were found more among those not having regular periods, those with more duration of flow, those with either scanty or excessive menstruation, and those changing absorbents infrequently, with an inadequate frequency of cleaning. As per Table 5, a majority of them (92.9%) had menstruation for 2–7 days, whereas 31.1% had bleeding for more than 7 days and 1.6% for less than 2 days during a particular cycle. About 82% had normal menstruation, whereas 7.1% faced excess and normal quantities of menstruation. 33.9% of the study subjects passed blood clots during the menstruation.

**Discussion**

It is known that menarche is an important milestone in a girl’s life as it marks the beginning of the reproductive phase. In this study, a total of 127 subjects were studied, out of which a majority were in the age of 18 years (51.2%), 24.4% were in the age of 17 years, and 24.4% were in the age of 19 years. The mean age of menarche was 14 ± 2 years. Another study by Thakre et al.[11] showed that the age of menarche ranged from 12 to 17 years.

The patterns of the menstrual cycle including the regularity, flow, and amount of bleeding were also analysed in the present study, and it was observed that 80.3% had a regular cycle, whereas in a study carried out by Wasnik et al.[12] in the Amravati district, 78.2% had menstruation for 2–7 days, whereas 3.1% had bleeding for more than 7 days and 1.6% for less than 2 days during a particular cycle. About 82% had normal menstruation, whereas 7.1% faced excess and normal quantities of menstruation. 33.9% of the study subjects passed blood clots during the menstruation.

| Graph 2: Type of menstrual cycle (n = 127) |
|------------------------------------------|
| **Regular** | **Irregular** |
| 20%         | 80%          |

**Table 2: Details regarding menstrual practices (n=127)**

| Type of absorbent used during menstruation | Frequency | Percentage |
|-------------------------------------------|-----------|------------|
| Sanitary pads                             | 122       | 96.06      |
| Reusable cloth                            | 3         | 2.36       |
| Fresh cloth                               | 4         | 3.15       |
| Tampons                                   | 2         | 1.57       |
| MS                                        | 1         | 0.79       |

| Frequency of changing the absorbent material as practised by subjects | Frequency | Percentage |
|------------------------------------------------------------------------|-----------|------------|
| Once                                                                   | 13        | 10.2       |
| Twice                                                                  | 93        | 72.7       |
| Thrice                                                                 | 3         | 2.3        |
| More than thrice                                                       | 15        | 11.7       |
| Total                                                                  | 124       | 96.9       |

| Disposal of the absorbent material | Frequency | Percentage |
|------------------------------------|-----------|------------|
| Throwing in the trash can          | 115       | 90.6       |
| Wash and reuse                     | 7         | 5.5        |
| Burn                               | 3         | 2.4        |
| Flush out in the toilet            | 4         | 3.1        |
| Disposal in the incinerator        | 1         | 0.8        |

| Frequency of cleaning/day | Frequency | Percentage |
|---------------------------|-----------|------------|
| 0                         | 1         | 0.8        |
| 1                         | 16        | 12.6       |
| 2-3                       | 63        | 49.6       |
| 4-5                       | 30        | 23.6       |
| 6-7                       | 16        | 12.6       |
| 10                        | 1         | 0.8        |
| Total                     | 127       | 100.0      |

**Table 1: Knowledge and source of information regarding menstruation among study subjects (n=127)**

| Knowledge about menstruation | Frequency | Percentage |
|------------------------------|-----------|------------|
| Yes                          | 100       | 78.7       |
| No                           | 27        | 21.3       |
| Total                        | 127       | 100.0      |

| Source of information | Frequency | Percentage |
|-----------------------|-----------|------------|
| School                | 40        | 31.3       |
| Parents               | 51        | 39.8       |
| Friends/Peers         | 5         | 3.9        |
| Others                | 4         | 3.1        |
| Total                 | 127       | 99.2       |
had a regular menstrual cycle and 21.8% had an irregular cycle. In a study by Jailkhani et al.,[13] 75.7% girls had regular menses.

The duration of menstrual flow among the study subjects varied from 1 to 7 days.

In this present study, a majority of the adolescent girls (79%) had proper knowledge about menstruation. In this study, it was found out that the mother was the first informant in a majority of the cases. 31.3% of the subjects had received information from the school, 39.8% from their mother, 3.9% from their friends, and the rest (around 31%) from unknown sources such as sisters, internet, and so forth. Although in a study conducted by Dudeja et al.[14] in western Maharashtra 60.7% girls revealed their mother as their source of information, 31.8% said that they obtained information from their friends.

Unhealthy menstrual practices may increase the risk of reproductive tract infections, urinary tract infections, and cervical cancer. The present study reflects the practices regarding menstruation hygiene among the adolescent girls, from the 127 respondents, and a majority of them (96.06%) used sanitary pads, 2.36% used reusable cloths, 3.15% used fresh cloths, 1.57% used tampons, and 0.7% used menstrual cups. The choice of using a sanitary pad was because it has a higher rate of absorbancy and efficacy; however, because sanitary pads are expensive, girls in rural areas prefer to use cloths. However, in a similar study conducted by Dasgupta et al.[15] the use of sanitary pads was much less, that is, only (11.25%) girls used sanitary pads during menstruation. However, in a study conducted by Jewitt et al.[16] in Kenya, it was found out that sanitary pads and clean cloths were not popular, but instead, cotton wool, plastic bags, dried leaves, cow dung, and paper were used. However, in a study conducted by Adhikari et al.[17] in Nepal, it was found out that the girls were using cloths as a means of absorbance but were not cleaning them properly before the usage, leading to infections.

Disposal methods as practised by the study subjects were quite varied. A majority of them (90.6%) practised disposing the absorbent material in the dustbin when compared to study by Patil et al.[18] where 51.67% of the subjects disposed the material in the dustbin. However, 5.5%, 2.4%, 3.1%, and 0.8% practised burning the absorbent, flushing it in the toilet, and disposing it in the incinerator, respectively. Those who used cloths and reused them during the next cycle had a practice of washing them with water, followed by drying them under the sun to use for the next cycle.

One of the other practices of menstrual hygiene among the girls studied was the frequency of cleaning, where it was found that among the subjects, 11.7% changed the absorbent material more than thrice in a day, whereas 10.2% changed once during a day and the majority (72.7%) changed more than thrice in a day. A higher frequency of change in the usage of the absorbent material is considered a good menstrual hygiene practice. These practices

| Table 3: Menstrual problems experienced by study subjects (n=127) |
|---------------------------|-----------------|----------------|
| Menstrual problems        | Frequency       | Percentage    |
| Inching                  | 18              | 14.17         |
| Rashes                   | 28              | 22.05         |
| Staining of clothes      | 5               | 3.94          |
| Sleepy                   | 41              | 32.28         |
| Tiredness                | 61              | 48.03         |
| Mood swings              | 94              | 74.02         |
| Foul smelling discharge  | 30              | 23.62         |
| Lower abdominal pain     | 82              | 64.57         |
| Burning micturition      | 8               | 6.30          |
| Increased frequency      | 17              | 13.39         |
| Lower backache           | 54              | 42.52         |
| Muscle cramps            | 24              | 18.90         |
| Nausea/Vomiting          | 4               | 3.15          |
| Abdominal pain           | 69              | 54.33         |

| Table 4: Habits and restrictions during menstruation (n=127) |
|-------------------------------------------------------------|
| Habits during menstruation                                   | Frequency | Percentage |
| Not attending schools/marriages/other rituals                | 55        | 43.31      |
| Not serving/cooking food                                    | 26        | 20.47      |
| Practising dietary restrictions                             | 16        | 12.60      |
| Avoidance of visit to places of worship                      | 95        | 74.80      |
| Staying indoors                                            | 22        | 17.32      |
| Being isolated at home                                      | 10        | 7.87       |
| Discontinuation of physical exercise                        | 27        | 21.26      |

| Table 5: Association between various practices and menstrual problems among adolescent girls |
|------------------------------------------------------------------------------------------------|
| Variables                                                        | Yes | No | Test Value | P   |
| Regularity of the menstrual cycle                                | 93  | 9  | χ²*         | 0.26|
| Irregular                                                        | 25  | 0  | 1.22       |     |
| Duration of flow                                                 |     |    |            |     |
| <2 days                                                          | 2   | 0  | Fisher's exact test | 1.00|
| 2-7 days                                                         | 111 | 8  | 0.31       |     |
| >7 days                                                          | 5   | 1  |            |     |
| Amount of menstruation                                           |     |    |            |     |
| Scanty                                                           | 9   | 0  | χ²          | 0.68|
| Normal                                                           | 96  | 8  | 0.74       |     |
| Excess                                                           | 13  | 1  |            |     |
| No. of times the absorbent is changed                            |     |    |            |     |
| Once a day                                                       | 13  | 0  | χ²          | 0.52|
| Twice a day                                                      | 88  | 8  | 1.282      |     |
| More than twice a day                                           | 17  | 1  |            |     |
| Frequency of cleaning the genital area during menstruation       |     |    |            |     |
| <2 times                                                         | 40  | 4  | χ²          | 0.41|
| >2 times                                                         | 78  | 5  | 0.52       |     |
| Agents used for cleaning                                        |     |    |            |     |
| Plain water                                                      | 59  | 5  | χ²          |     |
| Soap/disinfectants                                              | 59  | 4  | 0.103      | 1.00|
need to be encouraged as menstrual hygiene is known to be a very important risk factor for reproductive tract infections.\cite{15}

The adolescent girls were assessed for the cleaning practices of the external genitalia. Nearly half of them used water only for cleaning, whereas 9.4%, 9.4%, and 30.5% used soap and water, Dettol, and other agents, respectively. In a study conducted by Dasgupta et al.,\cite{15} it was found that 97.5% girls used both soap and water for cleaning. These differences in practices could be because the students are being taught the basics of hygienic practices as a part of their curriculum.

The present study shows menstrual problems of the respondents. A majority of the respondents (74.02%) had got mood swings during periods. About 14.17% suffered from itching, 22.05% from rashes, 23.62% from foul smelling discharge, 64.57% from lower abdominal pain, 6.3% from burning micturition, and 13.39% from increased frequency. However, in a study conducted in Taiwan by Chang et al.,\cite{19} it was found that girls suffered physical and emotional difficulties during menstruation. As a traditional practice, most adolescent girls in India do observe some restrictions during the menstrual period. The current study also evaluated those restrictions practised by them. Many girls are subjected to daily restrictions just because they are menstruating, and such restrictions are followed because of the lack of proper knowledge. About 44% of the study subjects avoided attending marriage/other rituals during menstruation. 20.47% were not allowed to cook/serve food, 17.32% stayed indoors, 7.87% were isolated, and 21.26% avoided physical exercise during the said period. A study by Sadiq et al.\cite{20} found that 84.2% of the girls restrict their physical activity while menstruating. The commonest restriction found in this study by the majority (74.80%) was not visiting the places of worship when compared to another study conducted by Rokade et al.,\cite{21} where 68% in slum and 70.16% in non-slum girls visited avoiding the places of worship. The underlying basis of such a restriction is the traditional belief of impurities associated with menstruation. In a study by Thakuri DS in Nepal, it was found out that household activities, such as cooking meals, touching male family members, and attending cultural and religious ceremonies, were all forbidden to adolescent girls during menstruation.\cite{22} In a study conducted by Mukherjee et al.,\cite{22} in Nepal, 47.8% of the participants reported not touching food items such as fruits and vegetables during menstruation. Such social restrictions create a harsh situation for menstruating women.\cite{24}

It is known that inappropriate nutritional patterns in adolescence, especially during menstruation, can predispose various health problems later on. In one study conducted by Kordi et al.,\cite{25} it was found out how irregular eating habits can lead to increased menstrual distress in adolescent girls. From the present study, only 18.90% of the respondents were aware and 18.90% made conscious efforts for dietary changes during menstruation, and from them, 14.96% consumed more iron and 21.26% consumed more protein. However, the number practising them is meagre and needs to be more widely prevalent among them to improve their nutritional status during menstruation. This clearly reflects the lack of awareness regarding certain areas of menstrual hygiene practices prevalent among the study population. Primary care and community care providers can reflect on this and design strategies for future actions.

**Conclusion**

Menstruation is an important indicator of reproductive health and development; thus, menstrual hygienic practices are of major concern. It can be concluded from the study that a majority of the study subjects had a regular menstrual cycle with a normal duration and amount. However, a small proportion did have menstrual irregularities. A large proportion of the subjects did have the knowledge of menstruation, but about one-fifths did not have adequate information. Hence, it is very crucial to educate girls about the physiological facts of menstruation, wipe off false taboos, and lead them to proper hygienic practices to safeguard themselves against reproductive tract infections. In most case scenarios, the source of information was the family and school. The health-seeking behaviour of the subjects in the case of menstrual irregularity was primarily to avoid seeking any form of treatment. Also, a very small proportion sought treatment from a doctor in the case of any such irregularity. A majority used sanitary pads and followed a correct disposal technique. Only one-third of the subjects used an appropriate cleaning method for genitals. Most of the complaints as experienced by the subjects included mood swings, generalized and lower abdominal pain, and lower backache. Not cooking or serving food, not visiting places of worship, and not attending social functions were the main restrictions practised by the subjects during menstruation. Associations between the menstrual cycle and various other factors were found not to be significant, but the better practices were among those with a normal menstrual cycle. A majority of the problems were found to be more among those not having regular periods, those with more duration of flow, those with either scanty or excessive menstruation, those changing absorbents infrequently, with inadequate frequency of cleaning, and those using plain water for cleaning. Menstrual morbidities are one of the common morbidities found in the primary care settings, and the above factors reflect the main risk factors for them and need due attention of policy makers and care givers.

**Recommendations**

The knowledge deficit with regard to menstrual problems and subsequent health-seeking behaviours are age old problems of our country. Even though Rashtriya Kishor Swasthya Karyakram, was launched on a large scale across the country, it has somehow not been able to percolate the correct knowledge among the adolescents and correct their menstrual practices. This probably is also the reason that the interventions are not as well being practised and the information and correct practices have not well percolated in the community. Special focus on the adolescent girls.
is the need of the hour as the health of adolescence shall be critical for the health of adulthood. Adolescent health clinics must be amalgamated with primary health centres which can be extended up to Anganwadis to improve the health-seeking behaviour of the adolescents as well. Clinics which focus on not only clinical treatment but also counselling, psychological, and emotional support and care are the need of the hour. For this, a team needs to be formed at the grassroot level, providing adequate support to the adolescents, and needs to be started in both urban and rural areas and needs Government prioritization and shall go a long way in improving adolescent/menstrual health in India. Proper awareness regarding personal hygiene in the form of cleaning the genitals with appropriate products is of paramount importance and should be covered during the awareness and Information, Education, and Communication campaigns.

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**Conflicts of interest**

There are no conflicts of interest.

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