Original Article

Menstruation: Experiences of Adolescent Slum Dwelling Girls of Siliguri City, West Bengal, India

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ABSTRACT

Background: Adolescence is defined as the teenage period of life, involving major biological changes and psycho-social development. In adolescence, the girls first experience menstruation and good hygiene is essential during this period. Menstrual hygiene is an issue that is insufficiently acknowledged and has not received adequate attention in the reproductive health in developing countries. **Aim:** To elicit the knowledge, attitude and practice of menstrual hygiene in adolescent slum dwelling girls of Siliguri city. **Subjects and Methods**: A cross sectional, community based study was conducted in slums of Siliguri city of West Bengal and cluster sampling was used to select 798 post menarcheal adolescent girls residing in the slums. Data on knowledge, attitude and practices regarding menstruation were collected with the help of a pre-tested and semi-structured schedule. Simple descriptive statistics were used to analyse the data using SPSS 16 software (Chicago IL, USA). Descriptive statistics were applied to calculate proportion, mean and standard deviation and Chi square test was used to test the association between categorical variables and a $P<0.05$ was considered significant. **Results:** The knowledge of the respondents was assessed and it was found that only 23.4% (187 out of 798) knew about menstruation before menarche, whereas 653 out of 798 girls remarked sanitary napkins as the ideal absorbent. Regarding attitude towards menstruation, 55% of girls attributed menstruation as a debilitating event and 37.6% of them agreed that their periods resulted in no negative effect. When enquired about the menstrual practices 71.3% used sanitary napkins as absorbent material. Majority of the study participants had fair knowledge and practice about menstruation. **Conclusion:** The results of the present study highlights the fact that more efforts should be made to create awareness about hygienic practices during menstrual period, especially in underserved areas like slums.

KEY WORDS: Adolescents, attitude, knowledge, menstrual hygiene, practice, slums

INTRODUCTION

Adolescence, as defined by the World Health Organization, is the period of life spanning the ages between 10 and 19 years[1] This period is characterized by major biological changes like physical growth, sexual maturation and psycho-social development which requires intense readjustment to the self, family, school, work and social life. During this phase of growth the girls first experience menstruation and related problems which is marked by feelings of anxiety and eagerness to know about this natural phenomenon.

Menstruation is the monthly vaginal bleeding at an interval of about 28 days from the uterine endometrium.[2] The menarche or time of onset of menstruation varies with race and family, but the mean age of menarche is typically between 12 and 13 years across well-nourished populations in developed countries.[3]

Good hygiene, such as use of sanitary pads and adequate washing of the genital area, is essential during menstruation. Women and girls of reproductive age need access to clean and soft absorbent sanitary products, which in the long run protect their health.[4] Limited access to products for sanitary hygiene and lack of safe sanitary facilities could prove to be barriers to increased mobility and the likelihood of resorting to unhygienic practices to manage menstruation.[5]

Menstrual hygiene and its management is an issue that is insufficiently acknowledged and has not received adequate attention in the reproductive health in developing countries. Reproductive health of women can be improved by increasing

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the accessibility, availability, affordability and acceptability of sanitary napkins and other protection materials for menstrual hygiene, as a result of which different Millennium Development Goals (2, 3, 5, 7 and 8) can be achieved, in particular the guaranteed right to education and the right to (sexual and reproductive) health.[6] Anecdotal evidence suggests that the lack of access to menstrual hygiene (which includes sanitary napkins, toilets in schools, availability of water, privacy and safe disposal) could constrain school attendance and possibly contribute to local infections during this period.[5] A study in West Bengal by Dasgupta *et al*., revealed that menstrual hygiene is far from satisfactory among large proportion of adolescents while ignorance, false perceptions, unsafe practices regarding menstruation and reluctance of the mother to educate her child are also quite common among them.[7] Similar findings were reported by Poureslami *et al*., in a study among female adolescents of Tehran suburbs; where only 1/3rd of the study participants practiced personal hygiene, such as taking a bath, and used hygienic materials (i.e., sterile pads) during menstruation.[8]

Slums have been defined as areas where such buildings are in any respect unfit for human behavior and are detrimental to safety, health and morals.[9] The living conditions in slums are usually unhygienic and contrary to all norms of planned urban growth and are an important factor in accelerating transmission of various air and water borne diseases.[10] Adolescents in slums face serious problem of lack of access to reliable knowledge on the process of growing up reproductive health practices. Understanding the gap in the knowledge, attitude and practices related to menstruation of the adolescent girls, will help in planning programmes for this vulnerable group. Studies on this subject have been attempted in other parts of the world, but very few have addressed the problem in slums, where the living conditions are less than satisfactory. This community based study assessed the experiences of adolescent girls from the perspective of their knowledge, attitude and practices regarding menstrual hygiene. Hence, the study was to elicit the knowledge, attitude and practices of menstrual hygiene among the adolescent girls dwelling in the slums of Siliguri city, West Bengal, India.

SUBJECTS AND METHODS

Siliguri city is located in Darjeeling district in the state of West Bengal, India, with a population of 9,69,195. It is situated in the foothills at the base of the Himalayas and can be described as the gateway to the North East of India, Bhutan, Nepal and Bangladesh. There are 154 slums in Siliguri city with a population of 1,73,111.[11] A cross sectional, observational, community based study was conducted during the period of April 2012 to July 2012 in slums of Siliguri city of West Bengal, India. The sample size of 810 for the study was calculated assuming the prevalence of knowledge of menstruation prior to attainment of menarche as 67.5%,[7] 95% confidence level, 5% absolute precision, design effect of two and non-response rate of 20%. Two-stage, 30-cluster sampling technique was used to select study subjects. First, all the slums of Siliguri city and their respective populations were listed. A cluster interval (5770) was obtained by dividing the total cumulative population of the slums by 30 (number of clusters). A random number less than the cluster interval (5770) were generated with the help of a computer generated random number table. The cluster, which represented this number, was picked up as the first cluster and subsequent clusters were selected by adding the cluster interval of 5952. Thus, 30 clusters were selected on the basis of systematic random sampling from the probability of the cluster selection based on the population size of the cluster. The inter- and intra-cluster homogeneity analysis was done and it was noted that there was inter-cluster homogeneity and intra-cluster heterogeneity. All the resident adolescent girls of the slums who had attained menarche served as the study population. From separate lists of the adolescent girls in the age group 10-19 years in each of these slums, prepared with the help of urban health workers and Anganwadi workers, twenty-seven adolescent girls were selected.

After reaching the selected slums, a central point in each cluster was identified and the direction of the first house was selected by rolling a bottle in the centre of a cluster. The process helped in selecting the first house and thereafter, the next closest house was selected till requisite numbers of study subjects were recruited. Subsequently, house-to-house search was done to collect data and if any adolescent girl was found in the house, she was interviewed at her home. If there were more than one adolescent girl in a single house, a listing of the adolescents was done on the back of the paper and the numbers of a currency note were used to select only one adolescent from each household.

Informed consent and assent were obtained from the guardians and the participating girls respectively. Participation in the study was voluntary and guarantee of confidentiality and anonymity of data was ensured. Ethical clearance was obtained from the Institutional Ethics Committee of North Bengal Medical College, Siliguri, West Bengal, India.

Data on knowledge and practice of menstrual hygiene were collected with the help of pre-tested, semi-structured schedule including ideal age at menarche, absorbents, duration of bleeding, regularity of the cycle. Demographic data included age, religion, literacy status and socioeconomic class. Attitude regarding menstruation

was collected using a modified version of The Menstrual Attitudes Questionnaire (MAQ) consists of 33 items involving five factors: menstruation as a debilitating, bothersome and/or natural event, anticipation and prediction of the onset of menstruation and denial of any effect of menstruation.[12] By initial translation (from English to the local vernacular Bengali), back-translation and re-translation, followed by a pilot study the questionnaire was customized for the study.

An arbitrary scoring system was used to score the participants' knowledge and practices. Each correct response under knowledge was given one point, whereas any wrong or don't know answer was given no mark. Correct responses for the questions under practice were given one point each and the wrong answers attracted no mark. This gave a total score of ten points for practice and six points for knowledge. Respondents who scored 0-2 points under knowledge were adjudged as having poor knowledge; whereas those that scored 3-4 and 5-6 were adjudged as having fair and good knowledge respectively. Similarly those subjects who scored >6 points, 4-6 points and 0-3 points under practice were adjudged as having good, fair and bad practices respectively.

The schedule was filled up by the four female trained interviewers. The data collected were entered into SPSS 16.0 (Chicago IL, USA) software and the principles of descriptive statistics were applied to calculate proportion, mean and standard deviation and Chi square test was used to test the association between categorical variables. In this study, knowledge, attitude and practice refer to information on what is known, believed and done respectively, in relation to menstruation among adolescent girls, who had already experienced menstruation. Adolescence was classified as early (10-13 years), mid (14-16 years) and late (17-19 years).[13]

RESULTS

Of 810 girls contacted, 798 participated in the study (Response rate = 98.5%). Majority of the girls (326 out of 798) were in mid adolescence (14-16 years) while the mean age of participants was 14.6 (1.3) years. Less than a quarter, 146 (18.3%) were married whereas 74 (9.3%) were employed as housemaids [Table 1].

Majority of the participants (574 0ut 0f 798) belonged to families practicing Hinduism and the rest were Muslims (224 out of 798). About three-quarter of the girls (602 out of 798) were from families having Below Poverty Line card (BPL card) with per capita income less than Rupees 540 (USD 10). Most of the girls (659 out of 798) attained menarche between 11 and 14 years. The mean age at menarche was 12.6 (1.4) years. The mean duration of menstrual cycle was 4.9 (1.2) days; and 714 out of 798 of the girls reported to have regular cycle.

Only 187 of girls had heard about menstruation before menarche. 328 of the 798 girls knew that menstruation is a physiological process, but about one third believed that it was a curse from God. Majority of the study subjects correctly knew the age for attaining menarche (316 out of 798) and the normal duration of menstrual flow (468 out of 798) [Table 2].

More than half of the girls (316 out of 798) attributed menstruation to a debilitating event, 356 agreed that menstruation is a bothersome event and about 585 of them thought of it as a natural event. Five hundred and twenty six (65.9%) girls agreed that the onset of menstruation could be predicted and anticipated and only 300 of them agreed that their periods resulted in no negative effect [Table 3].

Table 1: Baseline characteristics of the study subjects

	Frequency (*n*=798)	%
Age group		
Early adolescence (10-13 yrs)	285	35.7
Mid adolescence (14-16 yrs)	326	40.9
Late adolescence (17-19 yrs)	187	23.4
Literacy status		
No education	296	37.1
Below primary school	204	25.6
Primary school completed	170	21.3
Middle school completed	109	13.6
Secondary school completed or above	19	2.4
Marital status		
Not married	652	81.7
Married	146	18.3

Table 2: Key parameters used to assess respondents' knowledge of menstruation

Parameters of knowledge	Frequency (*n*=798)	Percentage
Heard about menstruation before attaining menarche	187	23.4
Knew correctly that menstruation is a physiological process	328	41.1
Knew correctly that uterus is the source of menstrual blood	233	29.2
Knew that the normal age for menstruation to begin is 12-13 years	316	39.6
Knew that the normal duration of menstruation is 3-7 days	468	58.6
Knew that sanitary napkins should ideally be used during menstruation	653	81.8

Table 3: Respondents' attitude towards menstruation (*n*=798)

Attitude	Frequency (*n*=798)	Percentage
Believed menstruation as a debilitating event	439	55.0
Believed menstruation as a bothersome event	356	44.6
Believed menstruation is a natural event	585	73.3
Believed that onset of menstruation can be anticipated and predicted	526	65.9
Believed menstruation has no negative effect on woman's performance	300	37.6

When enquired about the menstrual practices of the study subjects, it was observed that only a handful (121 out of 798) take bath daily and only about 241 had the habit of washing their external genitalia with soap and water during their periods. Though 569 (71.3%) girls used sanitary napkins as absorbent material, 312 of all the 798 girls (39.1%) had the habit of reusing the absorbent materials. Majority of the study population (93.1%) avoided religious places and about 3/4th (76.6%) of adolescent girls restricted the use of sour food during their menstrual periods [Table 4].

Association between grades of knowledge and practice are shown in Tables 5 and 6. Girls in late adolescent age group (17-19 years), with higher education (secondary school completed or above) and who were married were found to have significantly better knowledge and practice ($P<0.001$) about menstruation as compared to their counterparts. Significant association was observed between having good knowledge and good practices.

More than half (411 out of 798) of the adolescent girls were informed about menstruation from their friends, followed by mass media, teachers, books and only 44 gathered knowledge from their mother [Figure 1].

DISCUSSION

Girls attain menarche during adolescence and menstrual cycles during this period are often irregular. According to the World Health Organization's international and multi-center study of 3073 girls, the median length of the first cycle after menarche was 34 days, with 38% of cycle lengths exceeding 40 days.[14] In the present study, the mean age at menarche was 12.6 years which was concordant with the findings of studies by Dasgupta *et al*., from WestBengal[7] and Khanna *et al*., from Rajasthan.[15]

Three hundred and sixteen (39.6%) subjects of this study knew correctly that the normal age for menarche was 12-13 years. This was quite different to the results of a study among women of reproductive age group in an urban resettlement area of Delhi by Baridalyne and Reddaiah[16] where 54.3% of the respondents said that the normal age for attaining menarche was 13 to 14 years. In a similar study conducted among nursing students in Alexandria, Egypt, 85%

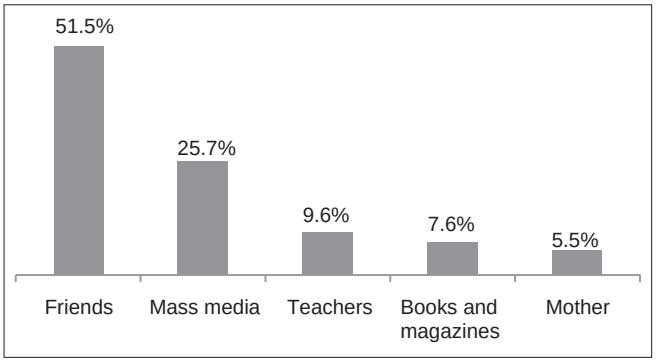

Figure 1: Respondents' sources of information about menstruation. (*n*=798)

Table 4: Menstrual practices of the study subjects

Parameters	Frequency (*n*=798)	Percentage
Takes bath daily with soap during menstruation	121	15.2
Cleans external genitalia with water and soap during periods	241	30.2
Uses sanitary napkin as absorbent material during menstruation	569	71.3
Stores the unused absorbent materials correctly in cupboard/trunk	379	47.5
Does not reuse the absorbent material	486	60.9
Disposes the used sanitary napkin correctly (*N*=569)	279	49.0
Takes increased rest during menstruation	103	12.9
Wears clean clothes during menstruation	379	47.5
Avoid religious places during menstruation	743	93.1
Restrict sour food like pickles during period	611	76.6

Table 5: Socio-demographic factors influencing participants' knowledge regarding menstruation

	Knowledge				*P* value
	Good	Fair	Poor	Total	
Age group					
Early adolescence (10-13yrs)	55 (19.3)	91 (31.9)	139 (48.8)	285	<0.001
Mid adolescence (14-16 yrs)	37 (11.3)	159 (48.8)	130 (39.9)	326	
Late adolescence (17-19yrs)	71 (38.0)	99 (52.9)	17 (9.1)	187	
Literacy status					
No education	5 (1.7)	97 (32.8)	194 (65.5)	296	<0.001
Below primary school	39 (19.1)	138 (67.6)	27 (13.2)	204	
Primary school completed	49 (28.8)	73 (42.9)	48 (28.2)	170	
Middle school completed	57 (52.3)	37 (33.9)	15 (13.8)	109	
Secondary school completed or above	13 (68.4)	4 (21.1)	2 (10.5)	19	
Marital status					
Not married	77 (11.8)	307 (47.1)	268 (41.1)	652	<0.001
Married	86 (58.9)	42 (28.8)	18 (12.3)	146	
Total	163 (20.4)	349 (43.7)	286 (35.8)	798	

Table 6: Socio-demographic factors influencing participants' practices regarding menstruation

	Good	Fair	Poor	Total	*P* value
Age group					
Early Adolescence (10-13yrs)	37 (13.0)	113 (39.6)	135 (47.4)	285	<0.001
Mid adolescence (14-16 yrs)	69 (21.2)	131 (40.2)	126 (38.7)	326	
Late Adolescence (17-19yrs)	53 (28.3)	83 (44.4)	51 (27.3)	187	
Literacy status					
No education	31 (10.5)	127 (42.9)	138 (46.6)	296	<0.001
Below primary school	27 (13.2)	71 (34.8)	106 (52.0)	204	
Primary school completed	29 (17.1)	89 (52.4)	52 (30.6)	170	
Middle school completed	59 (54.1)	37 (33.9)	13 (11.9)	109	
Secondary school completed or above	13 (68.4)	3 (15.8)	3 (15.8)	19	
Marital status					
Not married	82 (12.6)	293 (44.9)	277 (42.5)	652	<0.001
Married	77 (52.7)	34 (23.3)	35 (24.0)	146	
Knowledge					
Good	101 (62.0)	33 (20.2)	29 (17.8)	163	<0.001
Fair	27 (7.7)	241 (69.1)	81 (23.2)	349	
Poor	31 (10.8)	53 (18.5)	202 (70.6)	286	
	159 (19.9)	327 (41.0)	312 (39.1)	798	

were acquainted with the age at menarche and length of the menstrual cycle.[17] However, 58.7% of the girls from this study knew that the normal duration of menstruation is 3 to 7 days.

A study conducted among school going adolescent girls in Saoner, Nagpur reported that 36.9% of their subjects knew about menstruation before attaining menarche.[18] This figure was higher than the 23.4% obtained from the present study. The Nagpur study also reported that 18.3% of the girls believed that menstruation is a physiological process and only 1% believed it as a curse from God. In the present study however, it was observed that a similar proportion of respondents believed that menstruation is a physiological process and a curse from God, whereas 21.8% believed that menstruation is a disease. The disparity in the findings of the two studies may perhaps be due to the fact that a substantial number of the participants in the current study were illiterate as opposed to the Nagpur study.

Narayana *et al*.,[19] from Pondicherry reported that one-third of the girls they studied correctly identified that the uterus was the source of menstrual blood and this finding is close to the 29.8% observed in the present study. The present study also observed as in other studies[17,18] that most of the girls (81.8%) believed that sanitary pads are the best absorbent for use during menstruation.

The inadequate knowledge of menstruation observed among the subjects of this study may be attributed to the fact that menstruation and menstrual practices are clouded by taboos and socio-cultural restrictions for women as well as adolescent girls in India.[5]

Attitudes toward menstruation play an important role in the perception of menstrual distress. In a study done in Taiwan by Zxy-yann Jane Lu,[20] forty-six percent of women agreed that the onset of menstruation could be predicted and anticipated, which was quite similar to our study (50.4%). In the same study, about 35% and 25.3% of women agreed that menstruation was a debilitating and bothersome event respectively whereas the corresponding figures in our study were somewhat higher 41.5% and 33.7% respectively. This difference may be attributed to the cultural differences between the two countries.

Hygiene related practices of women during menstruation are of considerable importance as it affects health by increasing vulnerability to infection especially the infections of urinary tract and perineum. In a study, from Navi Mumbai among adolescent school girls by Nemade *et al*. All the girls studied reported that they do not visit holy places during menstruation and 102 (51.77%) girls reported that they remain in isolation at home during menses.[21] We also observed that more than 90% of the study subjects avoided religious places during menstruation. This is similar to the finding of Narayan *et al*., in Pondicherry[19] where 85.8% opined that one shouldn't go to temple during menstruation. The similarity in findings of the studies may be due to the fact that many religions still hold primitive ideas about menstruation and its negative effect on women, leading to prohibitions about cooking, attending places of worship and sometimes requiring women to live separately from men at this time.[22]

The type of absorbent material used during menses is of primary concern since reusable material could be a source of infection if improperly cleaned. An important finding of this study was that about 71.3% of the study subjects used sanitary pads as absorbents whereas in the study by Baridalyne and Reddaiah,[16] only one-third of the study subjects used sanitary pads as absorbents. A disturbing finding in this study was about 40% re-used the absorbent material. This indicates that the awareness about the possible hazards of reusing pads was poor, which emphasizes the risk leading to high prevalence of reproductive tract infections.

With respect to storage of the absorbent materials, it was found that less than half of the girls (47.5%) stored their unused sanitary pads properly in cupboards/trunks whereas a few (17.4%) girls kept the unused materials in the bathrooms and 35.1% bought sanitary napkins as and when required. A similar study, done by Omidvar *et al*.,[23] revealed that 56.6% of the girls stored the clean (unused) pads in the cupboards or drawers 15% and 21.1% used dress cabinet and bathroom respectively for storage. Place of storage of pads/napkins is equally important for cleanliness, especially the practice of storing sanitary pads in bath rooms is disturbing since it could harbor dust and insects.

This study found that less than one third of the girls cleaned their external genitalia with soap and water during menstruation, a figure that is higher than the 45% reported by Devi *et al*.,[24] from a study among rural adolescent girls of Andhra Pradesh. Only 15.2% of the girls in this study took bath daily during menstruation which was considerably higher than reported by Dhingra *et al*.,[25] in Jammu and Kashmir, where none of the girls took bath during the days of menstrual period. This may be due to the religious and cultural differences prevalent between the girls of West Bengal, which is a Hindu dominated state compared to the Muslim dominated states of Andhra Pradesh and Jammu and Kashmir. Regarding method of disposal of used sanitary pads, only 15.4% of the girls disposed the material in dustbins. This proportion is lower than the 57.5% reported by Dasgupta *et al*.[8]

Majority of the study population had fair knowledge and practice of menstruation and significant associations were

found between level of knowledge and practice with marital status, age and literacy status in the present study which was similar to the findings of the studies done in slums of Mumbai[26] and among school going adolescents of Thiruvananthapuram, India,[27] and Kano, Nigeria.[28]

Good knowledge begets good behavior patterns and practices. Quite expectedly, good knowledge was significantly associated with good practice in the present study and other similar studies.[26,28]

Myth, mystery and superstition have long enveloped the facts about menstruation. Therefore, the awareness given to the girls should be accurate. Parents and friends can act as good sources of knowledge transfer among adolescent girls, since most of girls have access to both. The major source of information on menstruation in the present study was friends which is concordant with the findings of other studies.[29,30] In the study by Dasgupta *et al*., in Kolkata, they found that mothers were the main source of information on this subject followed by mass media.[8] In this study however, mothers were the main source of information to only 44 (5.5%) of the girls. This could be due to lack of proper communication between mothers and daughters, due to traditional taboos; such discussion was found awkward and embarrassing.

CONCLUSION

Although the Government of India has included Adolescent Health as a component of Reproductive and Child Health Programe II, little progress has been seen in the slums with respect to the health of adolescent girls. The results of the present study highlight the disturbing state of knowledge, attitude and practice of menstrual hygiene among adolescent girls living in the slums of Siliguri city in West Bengal. Making low cost sanitary napkins available, sustained and effective public health awareness program and setting up of special clinic for adolescent girls in slums are formidable strategies for making menstrual hygiene and management better for the adolescent population.

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