



STUDY OF MENSTRUAL PATTERN AND MENSTRUAL HYGIENE PRACTICES AMONG ADOLESCENT GIRLS

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ABSTRACT

Background: Menstrual hygiene and management will directly contribute to MDG-2 and MDG-3. This study was conducted to know the awareness about menstruation before menarche and the source of information; to compare menstrual pattern and menstrual hygiene among adolescent girls from slum and non-slum area and also to find some socio-demographic determinants of menstrual hygiene.

Methods: A cross sectional study was conducted among 324 late adolescent girls, 200 from slum and 124 from non-slum. House to house survey was done.

Results: Awareness of menstruation before menarche was seen in 56.48% girls. Friends [38.8%] and mothers [38.25%] were the main informant. The difference in mean age of menarche [12.85±1.13 in slum and 13.12±1.15 in non-slum] and regularity of cycles [126(63%) in slum and 102(82.26%) in non-slum] was statistically significant, $p < 0.05$. 34% girls from slum and 45.97% from non-slum areas were practicing menstrual hygiene and this difference was statistically significant, $p < 0.05$. Literacy status of adolescent girls was found to be the determinant of menstrual hygiene.

Conclusion: Menstrual hygiene is an issue which needs to be addressed to all adolescent, with special emphasis in slum area. More emphasis should be given on improving adolescent literacy for achieving hygienic menstrual practices.

Key words: Menstrual Hygiene, Menarche, Adolescent

INTRODUCTION

Adolescence (Latin: adolescere= to grow) is the developmental period which follows childhood and precedes maturation. The menarche (Greek: month + origin), the onset of menstruation, is one of manifestation of pubertal changes seen during adolescents.¹

Menstruation is still a subject of taboo, superstition and folklore. One of the fallacies, supported by religious beliefs and practices, is that the menstruating woman is unclean. This idea alone is enough to instill feelings of shame, embarrassment and resentment.¹

The psychological trauma inflicted, at the first menstrual period without preparation may have

long-lasting psychic repercussions. If adolescents are properly prepared, they accept menstruation as a normal physiological activity.²

Among the gynecological problems, menstrual problems are said to be major ones especially among adolescent females. Reproductive tract Infections is closely related with poor menstrual hygiene.^{3,4} Menstrual hygiene and management will directly contribute to MDG-2 on universal education and MDG-3 on gender equality and women empowerment.⁵

Knowledge of the length and variation of menstrual cycle is necessary for patient education and for identifying deviations from normal to guide clinical evaluation.⁶

Menstruation is managed differently according to various local, social and cultural understanding. Therefore comprehensive information regarding menstruation is required for improving the awareness and level and quality of life in adolescents.

Hence with the above background the present study was carried out with the objectives to know the awareness about menstruation before menarche and the source of information; to compare menstrual pattern and menstrual hygiene among adolescent girls from slum and non-slum area and also to find some socio-demographic determinants of menstrual hygiene.

MATERIALS AND METHODS

A Community based cross sectional observational study was carried out among late adolescent girls 7 [15 to 19 age groups] residing in areas covered under the field practice area of Urban Health and Training Centre, Dr. V.M. Govt. Medical College, Solapur district, Maharashtra. The study was conducted from 1st March 2011 to 30th October 2011.

Adolescent girls who had attained menarche and willing to participate after gaining parents' permission were included in the study and those who were physically or mentally handicapped were excluded from the study.

In a pilot study, conducted in 30 adolescents, the proportion of adolescent girls with unhygienic menstrual practices found to be 56.6%. Using this value, optimum sample size of 324 was calculated assuming 95% confidence interval, 10% permissible error and 10% non response error. Slum and non-slum areas were taken as strata. By using Stratified random sampling with probability proportional to size, 200 girls from slum and 124 from non-slum area were selected.

The approval from institutional ethical committee was obtained prior to study. House to house survey was conducted. After taking verbal consent from the parents and study population, they were interviewed individually in privacy using pre-tested, predesigned, semi structured questionnaire. Reliability of questionnaire was found to be 90% by Test retest method using Karl Pearson's coefficient of correlation.

The operational definition to identify girls practicing menstrual hygiene was formulated. Adolescent girls who were changing pads ≥ 3 times a day, using disposable sanitary napkins or clean cloth and cleaning their external genitalia with soap and water daily during menstruation were considered as practicing menstrual hygiene in this study.

Data obtained was collated and analyzed statistically by simple proportions, chi square test, t- test and logistic regression using Microsoft Excel 2007 and SPSS 16 software. In Binary Logistic regression analysis dependent factor was menstrual hygiene and independent factors studied were the socio-demographic factors like age, area of residence, religion, type of family, socioeconomic status, educational status of adolescent, educational status of mothers' of adolescent girls and marital status of adolescents.

RESULTS

A total of 324 adolescents participated in the study. Out of which 200(61.72%) were residing in Slum Area and 124 (38.27%) in Non Slum area. Table 1 shows that a majority girls 141(70.5%) from slum area were educated from 5th to 10th standard whereas a majority girls 61(49.19%) were educated from 11th to 12th standard from non-slum area.

Table 1: Socio-demographic Characteristics of Adolescent girls

Characteristic	Slum (N=200)	NonSlum (N=124)	Total (N=324)	p value
Age				
Mean \pm SD	16.94 \pm 1.48	16.92 \pm 1.42	16.93 \pm 1.45	>0.05*
Educational Status of Adolescent				
Illiterate	4 (2)	1 (0.81)	5 (1.54)	<0.001†
Upto 4 th Std	9 (4.5)	0 (0)	9 (2.78)	
5 th - 10 th Std.	141 (70.5)	51 (41.13)	192(59.26)	
11 th - 12 th Std	30 (15)	61 (49.19)	91 (28.9)	
>12 th Std.	16 (8)	11 (8.87)	27 (8.33)	
Mothers Education				
Illiterate	6 (3)	1 (0.81)	7 (2.16)	<0.05†
Upto 4 th Std	99 (49.5)	45 (36.29)	144(44.44)	
5 th - 10 th Std.	31 (15.5)	22 (17.74)	53 (16.36)	
11 th -12 th Std.	54 (27)	49 (39.52)	103(31.79)	
>12 th Std.	10 (5)	7 (2.16)	17 (5.25)	
Religion				
Hindu	135 (67.5)	99 (79.84)	234(72.22)	p<0.05†
Muslim	65 (32.5)	25 (20.16)	90 (27.78)	
Family type				
Nuclear	116 (58)	96 (77.42)	212(65.43)	p<0.001†
3 generation	58 (29)	14 (11.29)	72 (22.22)	
Joint family	26 (13)	14 (11.29)	40 (12.35)	
SES				
I	0	4 (3.23)	4 (1.23)	p<0.05†
II	6 (3)	9 (7.26)	15 (4.63)	
III	44 (22)	28 (22.58)	72 (22.22)	
IV	130 (65)	81 (65.32)	211(65.12)	
V	20 (10)	2 (1.61)	22 (6.79)	
Marital Status				
Married	30 (15)	3 (2.42)	33 (10.19)	
Unmarried	170 (85)	121(97.58)	291(89.81)	p<0.001†

*Unpaired t-test; † Chi square test; Figures in the parenthesis indicate percentage

Table 2: Sources of information in Adolescent girls aware about Menstruation before menarche

	Slum	Non-slum	Total	p value
Awareness about menarche before onset				
Present	113 (56.5)	70 (56.45)	183 (56.48)	>0.05†
Absent	87 (43.5)	54 (43.55)	141 (43.52)	
Total	200 (100)	124 (100)	324 (100)	
Source of information				
Mother	42 (37.17)	28 (40)	70 (38.25)	
Teacher	13 (11.5)	13 (18.57)	26 (14.21)	
Friends	51 (45.13)	20 (28.57)	71 (38.8)	
Others*	5 (4.42)	9 (12.86)	16 (8.74)	
Total	113 (100)	70 (100)	183 (100)	

*Others included relatives, sister, television and books; † Chi square test; Figures in the parenthesis indicate percentage

Table 3: Menstrual pattern in Adolescent girls

Menstrual history	Slum (n=200)	NonSlum (n=124)	Total (n=324)	P value
Age of menarche				
Mean ± 2SD	12.85±1.13	13.12±1.15	12.95±1.14	<0.05*
Menstrual Cycles				
Regular	126 (63)	102(82.26)	278 (85.80)	<0.001†
Irregular	74 (37)	22 (17.74)	96 (29.63)	
Duration (Nos. of days)				
3	53 (26.5)	35 (28.23)	88 (27.16)	
4	82 (41)	52 (41.94)	134 (41.36)	
5	52 (26)	29 (23.39)	81 (25)	
6	7 (3.5)	2 (1.61)	9 (2.78)	
7	4 (2)	3 (2.42)	7 (2.16)	
8	2 (1)	2 (1.61)	4 (1.23)	
9	0	0	0	
10	0	1 (0.8)	1 (0.31)	
Mean±SD	4.17±0.99	4.17±1.15	4.17±1.05	
Menstrual Flow				
Normal	116 (58)	76 (61.29)	192 (59.26)	
Scanty	70 (35)	39 (31.45)	109(33.64)	p>0.05†
Excessive	14 (7)	9 (7.26)	23(7.10%)	

*Unpaired t test; † Chi square test; Figures in the parenthesis indicate percentage

Table 4: Menstrual and other associated complaints during Menstruation

Variales	Slum	NonSlum	Total	Pvalue
Complain				
Dysmenorrhoea	124 (62)	95 (76.61)	219(67.59)	<0.001†
Backache	23 (11.5)	19 (15.32)	42 (12.96)	
Legpain/cramps	16 (8)	12 (9.68)	28 (8.64)	
Weakness	13 (6.5)	11 (8.87)	24 (7.41)	
Rash at external genitalia	16 (8)	8 (6.45)	24 (7.41)	
Itching at external genitalia	14 (7)	9 (7.26)	23 (7.09)	
Irritable	15 (7.5)	7 (5.65)	22 (6.79)	
Others*	18 (9)	8 (6.45)	26 (8.02)	
Facing either of the above problem				
Yes	171 (85.5)	94 (75.81)	265(81.79)	<0.05†
No Problem	29 (14.5)	30 (24.19)	59 (18.21)	

*Others included complaints like nausea, headache, vomiting probably due to gastritis. †Chi square test; Figures in the parenthesis indicate percentage

A majority mothers 99 (49.5%) from slum area were educated up to 4th standard whereas from non-slum areas majority mothers 49(39.52%) were educated from 11th to 12th standard. Majority girls from slum and non-slum area belonged to Hindu religion [135(67.5%) and 99 (79.84%) respectively] and nuclear family type [116(58%) and 96 (77.42%) respectively]. Maximum girls 130(65%) from slum and 81(65.32%) from non-slum belonged to socio-economic Class IV. There were 30(15%) girls from slum and 3(2.42%) girls from non-slum who were married at the time of interview.

The mean age of girls residing in Slum area was 16.94±1.48 years and Non Slum area was 16.92±1.42 years with no statistical difference (p>0.05), so both these groups were comparable. The difference between the educational status of girls, mother educational status, religion, family type, socioeconomic status and marital status in both the groups was found to be statistically significant (p <0.05).

There were 183 (56.48%) girls who were aware about menstruation before menarche and 141 (43.52) were unaware. Out of the 183 respondents, majority reported friends (38.8%) and mothers (38.25%) as their first informant [Table 2]. None reported health personal as their source of information. Friends (45.13%) were the main informants in slum area and mothers (40%) in non-slum areas.

The difference in mean age of menarche [12.85±1.13 in slum and 13.12±1.15 in non-slum area] was found to be statistically significant, p<0.05[Table 3]. Also the difference in reporting regularity of cycles in both the groups [126(63%) in slum and 102(82.26%) in non-slum] was statistically highly significant p<0.001. The mean length of the menstrual cycle was found to be almost equal in both slum and non-slum girls [4.17±0.99 days and 4.17± 1.15days respectively]. About 116(58%) girls from slum and 76(61.29%) girls from non-slum area reported normal menstrual flow whereas 14(7%) girls from slum and 9(7.26%) girls from non-slum reported excessive menstrual flow. This difference in menstrual flow in both the groups was not found to be statistically significant, p>0.05.

Table 4 shows the distribution of adolescent girls according to menstrual and associated complaints during menstruation. The most common complaint prevalent among the girls was dysmenorrhoea, 95(76.61%) in non-slum and 124(62%) in slum and this difference was statistically highly significant p<0.001. One adolescent faced more than one menstrual problem. The percentage of adolescent girls facing menstrual problems was more among girls from slum area 171(85.5%) than adolescent girls from non-slum 94(75.81%).

Table 5: Practice of Menstrual hygiene

Characteristics	Slum (n=200)	Nonslum (n=124)	Total (n=324)	P value
Type of Sanitary pads used				
Disposal	73 (36.5)	39 (31.45)	112(34.57)	p>0.05*
Cloth	82 (41)	67 (54.03)	149(45.99)	
Both	45 (22.5)	18 (14.52)	63 (19.44)	
Reuse of pads				
Clean	67 (52.76)	42 (49.41)	109(51.42)	p>0.05*
Unclean	60 (47.24)	43 (50.59)	103(48.58)	
Frequency of changing of sanitary pads				
<3 times a day	92 (46)	28 (22.58)	120(37.04)	p<0.001*
≥ 3 times a day	108 (54)	96 (77.42)	204(62.96)	
Cleaning of external genitalia				
Satisfactory	112 (56)	75 (60.48)	187(57.72)	p>0.05*
Unsatisfactory	88 (44)	49 (39.52)	137(42.28)	
Menstrual Hygiene practices				
Hygienic	68 (34)	57 (45.97)	125(38.58)	p<0.05*
Unhygienic	132(106.5)	67 (54.03)	199(61.42)	

*Chi square test; Figures in the parenthesis indicate percentage

Table 6: Logistic regression analysis of socio-demographic factors affecting menstrual hygiene (N=324)

Variables	Sig.	aOR	95% CI
Age	0.060	1.273	0.990 - 1.638
Slum Area	0.186	1.470	0.831 - 2.598
Hindu Religion	0.213	0.672	0.360 - 1.256
Family_type	0.988		
Nuclear Family	0.975	0.987	0.446 - 2.184
Joint Family	0.927	1.044	0.418 - 2.608
SES	0.583		
SES I	0.787	0.615	0.018 - 21.116
SES II	0.999	1.121E9	0.000 - .
SES III	0.434	0.534	0.111 - 2.568
SES IV	0.509	1.464	0.472 - 4.540
SES V	0.802	0.879	0.319 - 2.417
Mother Education	0.588		
Up to 4 th Std.	0.734	1.242	0.356 - 4.334
5 th to 10 th Std.	0.672	1.325	0.360 - 4.878
11 th to 12 th Std.	0.825	0.868	0.246 - 3.055
Adolescents' Education	0.011		
Illiterate	0.045	13.681	1.062 - 176.239
Up to 4 th Std	0.013	13.078	1.720 - 99.460
5 th to 10 th Std.	0.000	11.343	3.137 - 41.018
11 th to 12 th Std.	0.003	6.250	1.838 - 21.251
>12 th Std.	0.002	5.821	1.927 - 17.587
Married	0.084	0.417	0.155 - 1.125
Constant	0.023	0.003	

aOR=Adjusted Odds Ratio

a. Binary logistic regression analysis

b. Variable(s) entered on step 1: Age, Area of residence (slum/non-slum), Religion, Family type, SES (Socio-economic Status), Mother Education, Education, Marital Status.

There were 29(14.4%) and 30 (24.19%) girls from slum and non-slum area respectively who had no

complaints. The difference in reporting of menstrual complaints in both the groups was also statistically significant, p<0.05.

Table 5 shows the distribution of adolescent girls according to their menstrual hygienic practices. Majority of the girls from slum and non-slum areas preferred using cloth napkins during menstruation [82(41%) and 67(54.03%) respectively]. Almost half the girls from both groups [67(52.76%) from slum and 42(49.41%) from non-slum] were using clean cloth. Cleaning of genitalia was satisfactorily seen in 112 (56%) girls from slum and 75 (60.48%) from non-slum area. The frequency of changing of sanitary pads (≥3 times a day) was satisfactorily seen in 108(54%) from slum and 96(77.42%) girls from non-slum area. The difference was statistically highly significant for frequency of changing of pads, p<0.001 and not significant for type of sanitary pads used and use of clean pads, p>0.05. According to operational definition, only 68 (34%) girls from slum and 57(45.97%) from non-slum area practiced satisfactory menstrual hygiene. This difference was found to be statistically significant, p<0.05. The commonest reasons given by girls for unhygienic practices during menstruation were lack of privacy at public places, schools and working places [37(28.03%) in slum and 22(32.84%) in non-slum area] followed by affordability of the sanitary napkins [37(28.03%) in slum and 18(26.87%) in non-slum area], lack of information [31(23.48%) in slum and 22(32.84%) in non-slum area], Lack of toilets/bathroom [21(15.91%) in slum and none from non-slum area] and other reasons included lack of water supply, lack of time, laziness and scanty flow [6(4.55%) in slum and 5(7.46%) in non-slum area]

The result of binary logistic regression analysis (Table 6) shows that only adolescent educational status was significantly associated with the dependent variable i.e. menstrual hygiene.

Regarding different types of restrictions practiced during menstruation, 249(76.85%) girls followed some restrictions and 75(23.15%) did not practice any restriction. There were 154(77%) girls from slum area and 95(76.61%) girls from non-slum area who practiced various types of restrictions. There was no statistical difference seen in restrictions practiced by the adolescent girls of both the groups, p>0.05. The commonest restriction reported in both the groups was related to religious activity [136(68%) in slum and 87(70.16%) in non-slum girls], followed by household activities [14(7%) in slum and 6(4.48%) in non-slum girls], going to school [8(4%) in slum and 4(3.23%) in non-slum girls] and other restrictions included playing and restriction to food items [7(3.5%) in slum and 5(4.03%) in non-slum girls]

DISCUSSION

The awareness of menstruation before menarche in adolescent girls reported by A Dasgupta et al.³ (67.5%) and D Kumar et al.⁸ (60.2%) was higher compared to this study [56.48%]. But study done by P Nair et al.⁹ reported lower percentage of awareness [45.5%]. These differences are probably due difference in literacy status of adolescent girls and their mothers, SES, cultural taboos and area of residence. The studies done by A Dasgupta et al.³ and D Kumar et al.⁸ reported mothers as the main informant. Similarly in this study the main informant was mothers in non-slum area whereas in slum area main informants were their friends. Probably this may be due to difference in literacy status of mothers of both the groups and especially mothers from slum area with poor knowledge refrain from advising their daughters.

The mean age of menarche was reported to be 12.8 and 12.85+0.867 years in studies done by A Dasgupta et al.³, S Thakare et al.¹⁰ respectively which are comparable to mean age of menarche [12.85±1.13 years] of girls from slum area in this study and it was 13.02+1.13 and 13.26 years in the study done by D Kumar et al.⁸ and S. Kansal et al.⁴ which are comparable to [13.12±1.15 years] from non-slum area. Regional difference or factors like hereditary, environmental conditions, body stature, SES, nutritional and health status, family size, level of education and psychological well being are known to influence menarche age.⁸

Meher et al.¹¹ and MKC Nair et al.¹² reported dysmenorrhoea in 73.17% and 72.4% adolescent girls respectively which is comparable to girls (76.61%) from non-slum area in this study and P Nair et al.⁹ reported in 63.75% girls which is comparable to girls (62%) from slum area. In this Study, though the percentage of girls complaining of dysmenorrhoea was more in non-slum girls but the percentage of girls facing different menstrual problem was high in girls from slum area. The difference in both the groups was statistically significant. The difference can merely be due to difference in attitude and tolerance among these groups. The attitude that every girl has to face this problem, unawareness regarding the availability of remedies for menstrual problem by health professionals and also cultural inhibition to discuss on this subject can be some of the reason for high prevalence of menstrual problem among adolescent girls. Among the various problems faced by girls during menstruation, the complaint of rash and itching at external genitalia reported in both the groups can be attributed to unsatisfactory menstrual hygiene.

The regularity of cycles was reported to be 63% and 82.26% in girls from slum and non-slum area in this study which was higher to findings of study

done by D Kumar et al.⁸ and T Zegeye et al.¹³ [61% and 57.2% respectively]. The mean length of the menstrual cycle was found to almost equal in both slum and non-slum girls. The mean length of menstrual cycle was reported to be 3.96 ± 1.72 days in study conducted by D Kumar et al.⁸ which was lower compared to this study [4.17±1.05]. About 58% from slum and 61.29% girls from non-slum areas reported that their menstrual flow was normal which was lower compared to the study findings of D Kumar et al.⁸ [70.2%]. Overall wide variation in menstrual pattern was observed in various studies.

The preference of cloth pads to sanitary napkins found in our study was consistent with the study findings of A Dasgupta et al.³ Out of the girls using cloth napkins, there were 52.76% from slum and 49.41% girls from non-slum areas using clean cloth whereas in the study done by Arora P et al.¹⁴ it was found to be higher (58%).

Cleanliness of external genitalia was found to be unsatisfactory among 44% girls from slum and 39.52% from non-slum girls which differed with the study findings of A Dasgupta et al.³ (15%) and S Thakre et al.¹⁰ [58.09%].

Frequency of changing of napkins was found to be satisfactory among 62.96% girls in this study which was higher compared to findings in study done by MKC Nair et al.¹² [17.3%].

Only one third girls from slum area and half of the girls from non-slum area were practicing satisfactory menstrual hygiene. Lack of privacy and affordability were the main reasons enumerated by girls for unhygienic menstrual practices.

Adolescent literacy status was found to be the determinant of menstrual hygiene. Similarly in the study done by Ray S et al.¹⁵ revealed that good menstrual hygiene was more among girls in more than grade X in school and also Kansal et al.⁴ in their study stated that respondents educated up to high school and above were less likely to maintain unhygienic practices during menstruation.

P Arora et al.¹⁴ reported that all girls were restricted from some activities most commonly from performing religious activities. A Dasgupta et al.³ reported that 15% girls did not practice any restriction and among 85% girls who practiced restrictions the commonest was for religious activity. Even in this study the most common restriction reported was performing religious activities. S Thakre et al.¹⁰ reported that only 26.36% girls did not practice any restriction which is comparable with the finding of this study (23.15%). There was no difference seen in restrictions practiced by the adolescent girls of both the groups.

CONCLUSION

Friends and mothers being the potential source of information in slum and non-slum areas, it is imperative for health professional to intervene among adolescents and mothers at different levels for the circulation of correct knowledge.

Age at menarche varies by residence i.e. later among non-slum than slum ones. Wide variation is seen in menstrual pattern. A significant number of adolescent girls face problems during menstruation. Therefore it is necessary to motivate them for consultation so that early identification of abnormal menstrual patterns by health professionals will prevent further complications.

Menstrual hygiene is an issue which needs to be addressed to all adolescent, with special emphasis in slum area. Use of sanitary napkins can be improved by social marketing. More emphasis should be given on improving adolescent literacy for achieving hygienic menstrual practices.

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