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Menstrual health and related problems in adolescent girls of Lucknow district: a cross sectional study

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ABSTRACT

Background: Menstruation and related problems are difficult issues for adolescent girls and are a common reason for consulting healthcare providers. The objective of the study was to study the age of menarche, menstrual pattern, menstrual related health problems and health seeking behaviour for it.

Methods: A cross sectional study was carried out in urban as well as rural schools of Lucknow district from August 2014 to September 2015. Multistage random sampling was used to select the requisite number of girls. A total of 600 girls of age group 10-19 years were interviewed and analysed using appropriate statistical methods

Results: The mean age of menarche of the total population was 13.2±1 years. During menstruation, urban girls had significantly excessive passage of clots (26.5%) and faced more discomfort in their routine activities (78.8%) when compared to their rural counterpart (25.2% and 73.4% respectively), whereas the relation was inverse with regard to school absenteeism that was significantly higher in rural girls (44.0%) than urban girls (32.3%). The usual age of menarche as well as the pattern of pre-menstrual symptoms varied significantly between the girls of rural and urban

Conclusions: With few exceptions, menstrual health related problems have an unequal distribution in girls of rural and urban origin. Hence effective management of menstrual problems will lose its chase unless health education targeting all the three groups viz.; adolescent girls, concerned parents and teachers have to be uniformly strengthened.

Keywords: Age at menarche, Menstrual problems

INTRODUCTION

Adolescents (10-19 years) constitute 21.3% i.e. nearly 1/5th of total population of India. Adolescents are those between the ages of 10 and 19 years. Adolescence is a period when physical growth and maturation are accompanied by mental and psychological development.² Menarche, is the more common process in the pubertal growth of a girl. The age of menarche is generally between 10-16 years; however it may vary depending on geographic variation, environmental condition, nutritional status etc.³ Menstrual problems are common in late adolescence.⁴ Dysmenorrhoea is the commonest problems, among all other menstrual problem in adolescents.^{5,6} Many times the menstrual irregularities can be attributed to incomplete maturation of Hypothalamic-pituitary-ovarian axis. This may take more than two years for complete maturation after menarche. This often leads to anxiety, depression and other such psychological problems among the adolescent.^{7,8} The prevalence of menstrual disorders has been recorded as high as 87%. Menstruation, and the menstrual cycle are characterized by variability in volume, pattern and regularity. Menstrual disorders include menstrual polymenorrhea, irregularity, menorrhagia, menorrhea, dysmenorrhoea, and other related symptoms

.Thus, United Nations Children's Fund (UNICEF) and United Nation Fund for Population Activities (UNFPA) joined World Health Organization (WHO) and issued a joint statement on reproductive health of adolescents in 1989 to address to their problems.² Although, the onset of menstruation is unique to females, menstrual disorders are common traditions do not allow adolescent girls to realize their rights in many parts of the world. 10 Although menstrual irregularity can be normal during the first few vears after menarche, other menstrual signs and symptoms such as amenorrhea, excessive uterine bleeding, dysmenorrhea, and premenstrual syndrome may indicate a pathological condition which requires prompt attention and referral. 11 Thus, healthcare providers are of immense importance for these adolescent girls who are going through pubertal transition.¹² Healthcare providers have an opportunity to discuss reproductive health issues with mothers and their daughters. Thus, a need was felt to study menstrual problems among adolescent girls in Lucknow district.

Objective

 To study the age of menarche, menstrual pattern, menstrual related health problems and health seeking behaviour for it.

METHODS

According to the census 2011 the Lucknow district has a population of 45,88,4553 urban population 3037781 and rural population 1550737 (66.2% and 33.8%) respectively. This study was conducted in Government and Government aided schools of urban and rural areas of Lucknow from September 2014 to August 2015.

Study population

School going adolescents girls of age group 10 to 19 years who are enrolled in schools of Lucknow district during the academic year 2014-15.

Study design

Cross-sectional descriptive study

Inclusion criteria

Inclusion criteria were school going adolescent girls 2. Adolescent girls of age group 10 to 19 years 3. Adolescent girls studying in classes VIII, IX, X, XI and XII; adolescent girls who's menarche started.

Exclusion criteria

Exclusion criteria were adolescents girls who are <10 years of age; adolescents girls who are studying VII class and below; adolescents girls with any chronic or medically diagnosed conditions; adolescents girls unable

to comprehend the study questionnaire. 5. Absentees. 6. Adolescents girls who's menarche not started.

Sampling

Sample size

The required sample size was calculated by using following formula:

$$n=(Z\alpha/2)^2 \times p \times (1-p)/d^2$$

n=sample size

z=value of Z statistic at $\alpha/2$ level of significance

p=prevalence of knowledge regarding menstruation taken as 50% (Juyal et al). 13

d=allowable error=5%

z statistics: for 0.05/2 the level of significance the value is 1.96.

Based on the probability the knowledge regarding menstruation is 50%. No reliable data available.

$$n=(2)^2\times0.5\times0.5/(0.05)^2=400$$

Since the subjects are chosen by multistage random sampling a design effect due to complex sample design comes into picture. Taking into account design effect of 1.5, the sample size will be (used to adjust design effect in multistage random sampling) the total sample size, $n=400\times1.5=600$.

Sampling design

Multi-stage sampling technique was used to select the requisite number of sample size. Adolescent were selected from urban and rural areas in the ratio of 2:1.

First stage

At first stage, Lucknow district was divided into urban and rural areas. In urban Lucknow that has six zones, all were selected and in rural Lucknow out of 8 blocks, 3 blocks were selected randomly.

Second stage

At the second stage, from each zone two senior secondary school was selected randomly from the listed senior secondary schools.

Similarly rural Lucknow was divided into eight blocks of which 3 blocks were randomly selected. In the next step from each block, one senior secondary school was randomly selected from listed senior secondary schools.

Third stage

At the third stage, in a given school, student from classes VIII to XII of age group 10-19 years were selected. Students within the class were selected through systematic random sampling to reach the required sample size.

Tools of data collection

Data were collected using a pre designed and pre tested interview and examination schedule which consisted of five parts. The questionnaire was also translated in local language (Hindi) for the convenience of students.

Ethical consideration

Owing to ethical consideration, permission was obtained from the Institutional Ethical Committee of the King George's Medical University UP, Lucknow before commencing of the study.

After honest explanation of the survey purpose, description of the benefits, oral consent was taken from Principal of each selected school principal to confirm willingness. Also affirmation that the students are free to withdraw if they felt any difficulty and to discontinue participation without any form of prejudice was made. Privacy and confidentiality of collected information was ensured throughout the process.

Appropriate health education was given to the respondents and teachers as well after end of session. Health education was mainly aimed at improving the knowledge of the students about the knowledge of menstruation and hygiene during menstruation.

Data collection procedure

Pretested structured schedule

Data on relevant parameters was collected on appropriate predesigned and pretested questionnaires including biosocial characteristics of the adolescents girls. The schedule was pretested on a sample of 50 students in a nearby school. Something which was confusing or inconsistent in the pre-test exercise including the interview protocol was corrected before actual data collection. Result of pre-test was not included in final study.

Completed schedules were checked weekly for consistency and completeness by the supervisors. The collected information was rechecked for its completeness and consistency before entering the data into a computer. After getting permission and other documents like list of schools from the District Inspector of Schools, Shiksha Bhawan, Lucknow schools were selected as mentioned in the sampling technique. When the schools were approached, immediately consent from the Principal in-

charge of the school was obtained and also approbation of the teachers whose period was bestowed for the data collection. Verbal consent was taken from each selected participant to confirm willingness. Honest explanation of the survey purpose, description of the benefits and an offer to answer all inquiries was made to the respondents. Also affirmation that they are free to withdraw consent and to discontinue participation without any form of prejudice was made.

Later, the students were asked to gather in a separate hall and an attempt was made to convince all the students fulfilling inclusion criteria to participate in the study after informing them about the aims, objectives and likely benefits which would accrue from the study. As the questionnaire was self-administered type, caution was taken for missing values and each and every question was explained delicately even repeated if they didn't understood. Complete confidentiality and anonymity of the respondents was maintained. Furthermore, on collating the questionnaire back heedfulness was ensued to rectify missing values and if at all the repletion not possible on the same day, efforts were made for the same on the next day of visit to same school. A total of 600 students fulfilling the inclusion and exclusion criteria were enrolled for the study.

Data processing and analysis

Descriptive summary using frequencies, proportions, graphs and cross tabs were used to present study results. Probability (p) was calculated to test for statistical significance at the 5% level of significance. Association between knowledge and independent factor was determined using Chi Square test. The continuous variables were described as mean±standard deviation. The categorical variables were presented in terms of their frequencies and proportions. For comparison of means between the groups, independent t-test was used. In order to test the association between attributes, Pearson's chi-square test/Fisher's exact test were used. A p value of less than 0.05 have been considered as significant.

RESULTS

The distribution of menstrual pattern of adolescent girls shows that overall the mean age of the menarche was 13.1 years. Most of the girls (74.8%) attained menarche at the age of 13-15 years (71.8% in urban and 81.0% in rural) and only 1.5% of them attained menarche at the age of 16 or above. The difference in distribution was statistically significant. About two third of the girls had regular menstrual pattern (64.5% in urban and 65% in rural) and 35.3% had irregular menstrual pattern (35.5% in urban and 35.0% in rural). About 80% of the study population had 4-8 days duration of menstrual flow with contributions from urban and rural being 82.0% and 75.0% respectively. Maximum of the participants (75.5%) soaked less than 3 pads per day (73.8% in urban and 79.0% in rural), while those who soaked 4-6 pads per

day were 22.7% (23.8% in urban and 20.5% in rural) and only 1.8% soaked 7 pads or more per day. Excessive passage of clots were present in 25.2% of the girls (26.5% of urban and 22.5% of rural) and maximum

(74.8%) had normal bleeding with contributions from urban and rural being 73.5% and 77.5% respectively, the difference being statistically significant (p<0.05).

Table 1: Menstrual pattern of the adolescent girls.

Variables	Urban (n=400)		Rural (n=200)		Total (n=600)		Davolaro
	No.	%	No.	%	No.	%	P value
Age at menarche							
10-12 years	107	26.8	35	17.5	142	23.7	
13-15 years	287	71.8	162	81.0	449	74.8	0.04*
≥16 years	6	1.40	3	1.50	9	1.5	
Mean±SD	13.07±1.03		13.36±1.0	4	13.17±1.04		
Menstrual pattern			•				
Regular	258	64.5	130	65.0	388	64.7	0.90
Irregular	142	35.5	70	35.0	212	35.3	
Duration of menstrual flo	w						
<3 days	68	17.0	49	24.5	117	19.5	
4-8 days	328	82.0	150	75.0	478	79.7	0.079*
≥9 days	4	1.0	1	0.5	5	0.8	
Pads soaked per day							
<3 pads	295	73.8	158	79.0	453	75.5	
4-6 pads	95	23.8	41	20.5	136	22.7	0.134
≥7 pads	10	2.4	1	0.5	11	1.8	
Passage of clots							
Excessive	106	26.5	45	22.5	151	25.2	0.028*
Normal	294	73.5	155	77.5	449	74.8	0.026

Chi-square test/Fisher's exact test used; *p-values indicates significance at p<0.05.

Table 2: Health problems and health seeking behaviour during menstruation.

Variables	Urban		Rural		Total		D 1
	No.	%	No.	%	No.	%	P value
Dysmenorrhoea	n=400		n=200		n=600		
Present	347	86.8	173	86.0	520	86.5	0.80
Absent	53	13.2	27	14.0	80	13.5	0.80
Type of dysmenorrhoea	n=347		n=173		n=520		
Spasmodic	256	73.8	138	79.8	394	75.8	0.13
Congestive	91	26.2	35	20.2	126	24.2	0.13
Dysmenorrhoea related proble	ms						
Present	189	54.5	83	48.0	272	52.3	- 0.13
Absent	158	45.5	90	52.0	248	47.7	0.13
Problems faced	n=127		n=50		n=177		
Uneasiness in routine works	100	78.8	30	60.0	130	73.44	_
Poor concentration	14	11.0	8	16.0	22	12.42	0.03*
Others	13	10.2	12	24.0	25	14.12	
Premenstrual symptoms	n=400		n=200		n=600		
Present	258	64.5	132	66.0	390	65.0	0.717
Absent	142	35.5	68	34.0	210	35.0	0.717
Type of symptoms*	n=258		n=132		n=390		
Breast discomfort	40	15.50	24	18.18	64	16.41	_
Abdominal bloating	75	29.07	41	31.06	116	29.74	
Poor concentration	18	6.98	5	3.79	23	5.90	0.00*
Changes in appetite	87	33.72	45	34.09	132	33.85	0.00
Mood swings	24	9.30	16	12.12	40	10.26	
Others	14	5.43	1	0.76	15	3.85	

Continued.

Variables	Urban		Rural		Total		Danilos
	No.	%	No.	%	No.	%	P value
Discharge per vaginum	n=400		n=200	•	n=600		•
Present	124	31.0	62	31.0	186	31.0	0.99
Absent	276	69.0	138	69.0	414	69.0	0.99
Foul smelling discharge	n=124		n=62		n=186		
Yes	68	54.8	31	50.0	99	53.2	0.53
No	56	45.2	31	50.0	87	46.8	0.33
Other problems	n=28		n=14	•	n=42		•
Body ache	17	60.71	10	71.42	27	64.28	_
Itching when used cloths	6	21.42	1	7.14	7	16.66	0.30
Weakness	5	17.85	0	0	5	11.90	0.30
Nausea	0	0	3	21.42	3	7.14	
Remedies taken	n=347		n=173		n=520		
Medicine	80	23.1	30	17.3	110	21.2	
Rest	61	17.6	32	18.5	93	17.9	0.42
Hot fomentation	200	57.6	106	61.3	306	58.8	
Nothing	6	1.7	5	2.9	11	2.1	

Chi-square test/Fisher's exact test used; *p-values indicates significance at p<0.05.

Table 3: Menstruation induced school absenteeism and health seeking behaviour.

Variables	Urban (n=400)		Rural (n=200)		Total (n=600)		P value
	No	%	No	%	No	%	1 value
Absenteeism in past 2 months							
Yes	129	32.3	88	44.0	217	36.2	0.005*
No	271	67.8	112	56.0	383	63.8	0.005**
No of days absent	n=129		n=88		n=217		
≤4 days	112	86.82	61	69.31	173	79.7	
>4 days	17	13.17	27	30.68	44	20.2	0.47
Mean±SD	3.16±2.95		3.87 ± 2.06		3.45 ± 2.65		'
Reasons							
Abdominal pain	100	77.52	70	68.4	170	63.9	
Body ache	16	12.4	14	2.2	30	5.0	0.54
Others	13	10.75	4	4.54	17	7.83	
Consultation sought							
Yes	94	72.9	59	67.0	153	70.5	0.35
No	35	27.1	29	33.0	64	29.5	0.55
Source of consultation							
Mother	62	48.06	43	48.86	105	48.38	
Friend	20	15.5	20	22.72	40	18.43	
Elder sister	23	17.82	15	26.13	38	17.51	0.43
Doctor	18	13.95	10	11.36	28	12.90	
Others	6	4.65	0	0.0	6	2.76	
Treatment sought							
Rest	50	38.78	28	31.82	78	35.94	
Medicine	34	26.36	25	28.40	59	28.18	0.76
Hot fomentation	45	34.88	35	39.77	80	36.86	

Chi-square test/Fisher's exact test used; *p-values indicates significance at p<0.05.

The main problem observed in adolescent dysmenorrhea was present in 86.5% (86.8% of urban and 86.0% of rural girls). Spasmodic type of dysmenorrhea was explained by 75.8% of the girls while 24.2% had congestive type of dysmenorrhea (26.2% of urban and 20.2% of rural).

Dysmenorrhea related problems were present in more than half of the study population (52.3%), of which uneasiness in routine works almost same. It was followed by the lack of concentration and other problems that contributed to 12.4% and 14.1% respectively, with the urban and rural distribution being 11.0% and 16.0% for

poor concentration, 10.2% and 24.0% for others respectively. This difference in distribution of problems faced during dysmenorrhea was statistically significant. Premenstrual symptoms were present in 65% (64.5% of urban and 66.0% of rural girls) of which changes in appetite remained the most common symptom (33.8%) followed by abdominal bloating (29.7%), breast discomfort (16.4%), mood swings (10.3%), poor concentration (5.9%) and others (3.8%) and it also had significantly different distribution between the urban and rural girls (p<0.05). overall 31% girls experienced discharge per vaginum. Overall 53.2% girls had foul smelling discharge (54.8% of urban and 50.0% of rural) girls. The remedies for menstruation related health problems (n=520), hot fomentation remained the most common 58.8% (57.6% of urban and 61.3% of rural), followed by medicine intake which was 21.2% (23.1% of urban and 17.3% of rural), then by adequate rest which was 17.9% (17.6% of urban and 18.5% of rural) and about 2.1% taken no treatment for the symptoms.

The menstruation induced school absenteeism and health seeking behaviours followed. 36.2% of the girls could not attend schools during menstruation in the past two months (32.3% of urban and 44.0% of rural) 56.0% of rural). This difference in distribution between urban and rural girls was statistically significant (p<0.05). Of those who were absent to school during menstruation (n=217), nearly 80% had taken leave up to 4 days (86.8% of urban and 69.3% of rural) and only 20.2% had taken leave more than 4 days (13.2% of urban and 30.6% of rural). Abdominal pain remained the most common reason (78.4% with 77.5% of urban and 79.5% of rural) for taking leave. It was followed by the body ache which was 13.8% (12.4% of urban and 15.9% of rural and other reasons (non-availability of soap 0.8%, excessive bleeding, weakness) were said by 7.8% of the girls. Of these girls, consultation was sought only 70.5% of the girls (72.9% of urban and 67.0% of rural) while it was not sought by the rest 29.5% (27.1% of urban and 33.0% of rural). Overall 48.4% mothers were the preferred source of consultation by the girls followed by the friends (18.4%, with 15.5% of urban and 22.7% of rural), elder sisters (17.5% with 17.8% of urban and 26.1% of rural) and doctors been consulted only by 12.9% of the girls (13.9% of urban and 11.4% of rural). Of the treatment sought, hot fomentation and rest remained the equally preferable choices 36.8% and 35.9% respectively followed by drug intake which was 28.2% and the difference in distribution of this between the rural and urban girls was not statistically significant (p>0.05).

DISCUSSION

In the present study it was observed that out of the total adolescent girls studied, 74.8% girls had attained menarche between the age of 13-16 years. The mean age at menarche in urban school girls was $13.07~(\pm 1.03)$ years, which was significantly lower when compared with mean age at menarche in rural schools girls which as

13.36 (± 1.06). The combined age of menarche was 13.17 ± 1.04 . Study conducted by Sachan et al the mean age at menarche in rural school girls was 13.19 (1.5) years, which was significantly higher when compared with mean age at menarche in urban school girls, which was 12.67 (1.4) years.¹⁴

In our study, it was observed that overall 35.3% with 35.5% in urban and 35% in rural girls had irregular cycles respectively. According to Sachan et al, it was observed that about our fourth of the school girls had irregular menstrual cycle, Verma et al revealed that irregular menstruation was 22.9% in the adolescent girls and Deo et al in adolescent school girls of urban and rural school girls in Ambohogi, had observed that menstrual cycle irregularity was more in urban school girls (7.95%) than rural school girls (2.86%).

In present study, it was observed that duration of menstrual flow was normal (4-8 days) with 82.0% urban and 75.0% rural school girls respectively where study conducted by Sule et al (in turkey the menstrual flow lasting more than 8 days). ¹⁶

In present study 86.8% schools girls were suffering with dysmenorrhea. Whereas 61.27 % of the girls reported dysmenorrhoea in the study conducted in Dharan and Turkey and in urban area 65% Houston et al.¹⁷ Sharma et al and Agrawal et al concluded that 79.65 adolescent girls in Gwalior were suffering with dysmennorhoea.^{18,19}

In present study it has been observed that overall 65.0% girls suffered from premenstrual symptoms. Similar findings of premenstrual symptoms were found in study conducted by Joseph et al.²¹ The most common premenstrual symptom change in appetite, backache, mood swing, breast heaviness, abdominal boating and poor concentration. Similar finding of other premenstrual symptoms was found by Sharma, et al.¹⁹ In present study 73.4% girls were unable to do routine activities due to dysmenorrhea.

In present study it was observed that out of 600 girls only 31.0% school girls complaining of foul smelling discharge per vaginum. Reason was poor hygiene and may be not changing change their pads more than three times. There is lack of knowledge about use of menstrual absorbent and personal hygiene practices. The contradictory findings were found in the study performed by Joseph et al.²⁰ In their study they found that only 19.4% girls complained of discharge per vaginum.

In present study 73.4% girls were unable to do routine activities due to dysmenorrhea. Women with premenstrual symptoms have reported a greater number of days with impairment in routine work, school and household activities Dean et al Robinson et al.^{21,22} The study results show the disturbance of routine activities of the study subjects due to dysmenorrhea and premenstrual symptoms Banikarim et al and Busch et al.^{23,24}

In the present study it was observed that all girls who are suffered from menstrual related problem had taken medication. About 23% urban school girls had taken medicine for dysmenorrhea.

In present study it was observed that out of total girls studied about 36.2% with 32.3% urban school girls and 44.0% rural school girls had been absent from school due to menstrual problem respectively. In this study overall 79.70% girls were absent less than 4 days due to menstrual related health problem, and about 20.2% girls were absent more than 4 days due to menstrual related health problem. The main reason for school absenteeism is abdominal pain. Similar finding was present study done by Dharampal et al in which school absenteeism from school 13.9% was effect of the menstruation related health problems on their daily routine. Dysmenorrhea and premenstrual symptoms were perceived as most distressing cause of school absenteeism.

In the present study it was found about 48.06% urban school girls consulted for menstrual problems with their mothers. While 48.86% rural girls consulted for menstrual problem with their mother. The contradictory finding of Thakre et al concluded that in urban 48.50% and in rural 21.20% girls consulted with their mother on the issue on menstrual problems.²⁶ The reason for this contradictory outcome is due to higher literacy rate of urban mother in comparison to rural mothers.

CONCLUSION

There is need for education for the girls about menstruation. They did not hesitate to discuss about menstruation. There should be a programme conducted in school about menstruation and related problems and how to solve these problems during menstruation so that there is no effect on education of the girls because during menstruation some girls not attend the schools and lacking of facilities in the school.

Limitations

There are some limitations of my study are-

- I have taken only those girls whom menarche started.
- Some girls had taken interest in filling the questionnaire whom menarche not started.

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