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## Original Research Article

# Menstrual pattern amongst adolescent girls: a cross sectional study from Raichur, Karnataka

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## ABSTRACT

**Background:** Menstrual disorders in adolescent age are quite different than in adult women, both for diagnostic and therapeutic management. We need to take into account the problems in normal initiation of menarche, hematological problems, general endocrine problems, and fragile emotional status at this tender age. The objective of the study was to study the patterns of menstrual disorders in adolescent girls.

**Methods:** Cross sectional observational study was carried out in 200 adolescent girls, aged 12 to 19 years, among the students of S.R.P.S PU college and the district government Girls' school in Raichur during the period of January 2017 to December 2017. A pre-structured questionnaire was used and data was analysed using Statistical package for social sciences (SPSS) 23.0 version.

**Results:** Majority of the girls in our study were from 17-18 years age group (55%). The mean age of menarche was 13.2±0.9 years. Cycle length of <21 days was found in 4 (2%) of cases, 143 (71.5%) had 21-35 days cycle and 10 (5%) had >35 days cycle length. Majority had normal cycle length. Dysmenorrhea was found in 84 (42%) students. Premenstrual symptoms like tiredness were noted in 14 (7%) of cases, pain in the legs in 10 (5%), irritability in 8 (4%), lack of interest in work and play in 7 (3.5%), low back pain in 6 (3%), low/depressed mood in 6 (3%), anger in 4 (2%), anxiety in 4 (2%), difficulty in concentrating in 2 (1%), nausea/vomiting were noted in 2 (1%).

**Conclusions:** Prevalence of dysmenorrhea was 42%. Premenstrual symptoms like tiredness were noted in majority of the girls 7%, pain in the legs in 5%, irritability in 4%.

**Keywords:** Adolescent girls, Menstrual pattern

## INTRODUCTION

Menstrual disorders in adolescent age are quite different than in adult women, both for diagnostic and therapeutic management. We need to take into account the problems in normal initiation of menarche, hematological problems, general endocrine problems, and fragile emotional status at this tender age. Adolescent girls constitute nearly one tenth of Indian population and form a crucial segment of the society.<sup>1</sup> Their current nutritional status will decide the

well-being of the present as well as the future generations. Under-nutrition among these girls is associated with reduced lean body mass, lack of muscular strength and decreased work capacity. Moreover, under-fed girls are at risk of being stunted mothers who are likely to suffer obstetric complications and to deliver low birth weight babies. In the absence of effective nutritional interventions, the low-birth-weight girls become the next generation of stunted mothers, thus, perpetuating the vicious cycle of malnutrition.<sup>2</sup>

Adolescents are generally considered healthier than the very young or the very old, and hence their health problems were not given much prominence. Adolescent girls constitute a more vulnerable group, particularly in developing countries, where they are traditionally married at an early age and exposed to greater risk of reproductive morbidity and mortality.<sup>3</sup>

Anaemia is a highly prevalent disease in developing countries. Anaemia is common during adolescence due to demands of increased growth and menstrual blood loss. Studies have shown that iron deficiency exists in both clinical as well as subclinical forms in adolescent girls. In adolescent girls, the onset of menstruation can alter the iron status of an individual not only by creating a demand for more iron due to blood loss but also due to the pro-inflammatory nature of menstrual cycle itself.<sup>4</sup> Reproductive morbidities such as dysmenorrhoea, premenstrual syndrome, irregular menses, excessive bleeding during menstruation etc. are common in adolescent girls. In spite of this, health care seeking for reproductive morbidities is very low. Most of the adolescent girls remain silent without seeking health care. If these are not treated early, they could lead to various reproductive disabilities.<sup>5</sup>

Hence the present cross-sectional study was carried out with the objective to study the patterns of menstrual disorders in adolescent girls.

### **Objective**

To study the patterns of menstrual disorders in adolescent girls.

## **METHODS**

The study was cross sectional observational study. The study was conducted at S.R.P.S PU college and the district government girls' school in Raichur. The study was conducted as one year-cross sectional study: from January 2017 to December 2017.

### **Source of data**

The study involved adolescent girls, aged 12 to 19 years, among the students of S.R.P.S PU college and the district government girls' school in Raichur.

### **Method of collection of data**

Study commenced after obtaining consent/permission from the authorizing body i.e., the respective principal/teacher.

### **Data was collected by**

A pre prepared questionnaire. Detailed history taking, including socio-economic, cultural and environmental

history. General physical examination. Systemic examination. Gynaecological examination (if required).

### **Sample size**

200 adolescent school going girls in the educational institutions.

### **Inclusion criteria**

Adolescent girls aged between 12 and 19 years.

### **Exclusion criteria**

Girls aged less than 12 years or more than 19 years.

This is a questionnaire based, cross sectional study in adolescent school girls. With questions related to menarche, last menstrual period, regularity of cycles, cycle length, duration, pain during menstruation, amount of bleeding, family history, premenstrual symptoms, family history, medical history and school absenteeism and effect of menstrual cycles on daily activities. Height, weight was recorded and BMI was calculated and values were classified based on WHO growth reference curves for school aged children and adolescents. 29 General physical examination was done after taking consent. Pallor, nutritional status, hirsutism, acne, pubertal changes, deepening of voice, secondary sexual characters including breast changes, pubic, axillary hair changes as per Tanner's staging were examined. Thyroid examination was done.

### **Statistical method**

All characteristics were summarized descriptively. For continuous variables, the summary statistics of mean± standard deviation (SD) were used. For categorical data, the number and percentage were used in the data summaries and diagrammatic presentation. Chi-square ( $\chi^2$ ) test was used for association between two categorical variables. In cases of more than 30% cell frequency <5, Freeman-Halton Fisher exact test was employed to determine the significance of differences between groups for categorical data. If the  $p < 0.05$ , then the results were considered to be statistically significant otherwise, it was considered as not statistically significant. Data were analyzed using Statistical package for social sciences (SPSS) software v.23.0. and Microsoft office 2007.

## **RESULTS**

Majority of the girls in our study were from 17-18 years age group (55%) followed by 34% from 15-16 years age group. The mean age of girls in our study was  $16.7 \pm 1.3$  years.

A total 39% of the girls achieved menarche at the age of 13 years and 36% achieved it at 14 years. The mean age of menarche was  $13.2 \pm 0.9$  years.

Cycle duration of 3-6 days was seen in most cases i.e.186 (93%), <3 days in 4 (2%) of cases and a duration of more than 7 days in 10 (5%) cases.

Cycle length of <21 days was found in 4 (2%) of cases, 143 (71.5%) had 21-35 days cycle and 10 (5%) had >35 days cycle length. Most of the students had normal cycle length.

Dysmenorrhea was found in 84 (42%) students. It is the most common menstrual disorder in our study group. Menorrhagia was seen in 26 (13%) of students. It is the next common menstrual disorder. 10 (5%) cases of oligomenorrhea were seen. 7 (3.5%) cases had hypomenorrhea. Polymenorrhoea was seen in 4 (2%) cases.

Of the Premenstrual symptoms, tiredness was noted in 14 (7%) of cases, pain in the legs in 10 (5%), irritability in 8 (4%), lack of interest in work and play in 7 (3.5%), low back pain in 6 (3%), low/depressed mood in 6 (3%), anger in 4 (2%), anxiety in 4 (2%), difficulty in concentrating in 2 (1%), nausea/vomiting were noted in 2 (1%).

**DISCUSSION**

In our study, conducted in Raichur, 200 adolescent school girls in the age group of 12-19 years were studied during the period of January 2017 to December 2017.

**Table 1: Distribution according to age group.**

Age (years)	Number of cases	Percentage
13-14	16	8
15-16	68	34
17-18	110	55
>18	6	3
<b>Total</b>	200	100

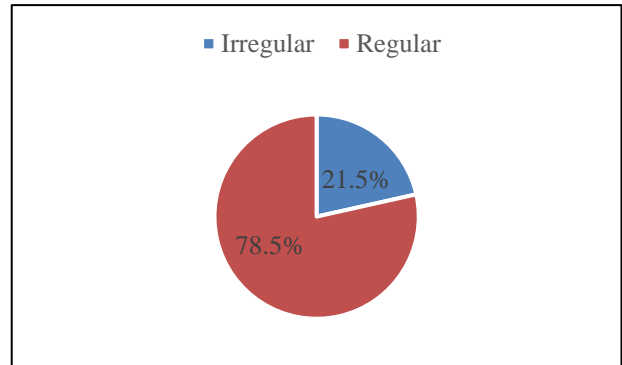
In the study done by Lee et al mean age group was 15.4±1.8 years and in Rigon et al 7 study mean age group was 17.1±1.4yrs. The mean age of girls in our study, lies between these two studies. It was 16.7±1.3 years.<sup>6</sup>

**Table 2: Distribution of cases according to age of menarche.**

Age of Menarche (years)	Number of cases	Percentage
11	8	4
12	36	18
13	78	39
14	72	36
15	6	3
<b>Total</b>	200	100

In the study done by Lee et al mean age of menarche was 12.3±1.1 years and in Rigon et al study mean age of

menarche was 12.4±1.3 years.<sup>6,7</sup> The mean age of menarche in girls in our study was slightly higher. It was 13.2±0.9 years.



**Figure 1: Pattern of menstruation.**

**Table 3: Distribution of cases according to duration of menstrual cycle.**

Cycle duration (days)	Number of cases	Percentage
<3	4	2
3 to 7	186	93
≥7	10	5
<b>Total</b>	200	100

**Table 4: Distribution of cases according to length of menstrual cycle.**

Cycle length (days)	Number of cases	Percentage
<21	4	2
21-35	143	71.50
>35	10	5
<b>Total</b>	157	100

In the study done by Jaget et al, 58 (29%) had irregular cycles and 142 (71%) had regular cycles.<sup>8</sup> Negi et al found irregular cycles in 135 (28.72%) and regular cycles in 335 (71.28%).<sup>9</sup>

**Table 5: Distribution of cases according to menstrual disorders.**

Menstrual disorder	Number of cases	Percentage
Polymenorrhoea	4	2
Hypomenorrhea	7	3.5
Oligomenorrhea	10	5
Menorrhagia	26	13
Dysmenorrhea	84	42

In our study, cycles were regular in 157 (78.5%) girls and irregular in 43 (21.5%). The incidence of regular cycles was slightly higher in our group.

**Table 6: Distribution of cases according to premenstrual symptoms.**

Premenstrual symptoms	Number of cases	Percentage
Nausea, vomiting	2	1
Irritability	8	4
Anger	4	2
Anxiety	4	2
Pain in the legs	10	5
Tiredness	14	7
Low back pain	6	3
Lack of interest in work and play	7	3.5
Difficulty in concentrating	2	1
Low/depressed mood	6	3

**Table 7: Comparing mean age of participating students from other studies.**

Study	Sample Size	Mean age of subjects
Lee et al <sup>6</sup>	2247	15.4±1.8 years
Rigon et al <sup>7</sup>	4892	17.1±1.4 years
Our study	200	16.7±1.3 years

**Table 8: Comparing mean age of menarche with other studies.**

Study	Sample Size	Mean Age of menarche
Lee et al <sup>6</sup>	2247	12.3±1.1 years
Rigon et al <sup>7</sup>	4892	12.4±1.3 years
Our study	200	13.2±0.9 years

In the study by Jaget et al, 16 (8%) had duration <3 days, 3-6 days duration was seen in 169 (84.5%) and 15 (7.5%) had >7 days duration.<sup>8</sup> Dambhare et al study had <3 days duration in 9 (1.6%) girls, 3-6 days duration 545 (97.15%) girls and 7 (1.25%) with >7 days duration.<sup>10</sup>

**Table 10: Cycle duration compared to other studies' findings.**

Study	Sample size	<3 days	3-6 days	>7 days
Jaget et al <sup>8</sup>	200	16 (8%)	169 (84.5%)	15 (7.5%)
Dambhare et al <sup>10</sup>	561	9 (1.6%)	545 (97.15%)	7 (1.25%)
Our study	200	4 (2%)	186 (93%)	10 (5%)

Our study, findings had values lying between these two studies with cycle duration of 3-6 days in 186 (93%), <3 days in 4 (2%) of cases and a duration of more than 7 days in 10 (5%) cases.

### Menstrual disorders

Dysmenorrhea was noted in the studies done by Priya et al, Kulkarni et al, Rathod et al, Deo et al as 325 (65%), 120 (53.6%), 213 (32.5%) and 50 (31.64%).<sup>11-14</sup> In our study, it was found in 84 (42%) students, falling within the range of values detected in these studies.

Menorrhagia was noted in 945 (17%), 55 (11%), 16 (10.13%) in the studies done by Agarwal et al<sup>15</sup>, Priya et al and Deo et al.<sup>11,14</sup> In our study it was found to be within the same range. It was recorded in 26 (13%) of students.

Oligomenorrhoea was seen in 850 (15.3%), 80 (16%) in studies by Agarwal et al and Priya et al while no cases were detected in study by Deo et al. In our study, fewer cases were noted.<sup>11,14,15</sup> There were 10 (5%) cases of oligomenorrhoea

Polymenorrhoea Agarwal et al, Priya et al, Deo et al found Polymenorrhoea in 111(2%), 20 (4%), 2 (1.26%) cases respectively.<sup>11,14,15</sup> Our study finding was similar to these studies with 4 (2%) cases.

Hypomenorrhoea was found in 30 (6%), 6 (3.79%) in studies done by Priya et al and Deo et al respectively while Agarwal et al found no cases in their study.<sup>11,14,15</sup> Our study showed 7 (3.5%) cases, a value lying between these two values.

### Premenstrual symptoms

In a study conducted by Bakhtiari et al, of 536 cases tiredness was noted in 269 (50.1%) of cases, pain in the legs in 56 (10.4%), irritability in 72 (13.4%), lack of interest in work and play was not detected, low back pain in 148 (27.6%), low/depressed mood in 43 (8%), anger in 72 (13.4%), anxiety in 72 (13.4%), difficulty in concentrating was not detected, nausea/vomiting were noted in 27 (5%).<sup>16</sup>

In our study, out of 200 patients, 24 (12 %) cases had premenstrual symptoms. Of the premenstrual symptoms, tiredness was noted in 14 (7%) cases, pain in the legs in 10 (5%), irritability in 8 (4%), lack of interest in work and play in 7 (3.5%), low back pain in 6(3%), low/depressed mood in 6 (3%), anger in 4 (2%), anxiety in 4 (2%), difficulty in concentrating in 2 (1%), nausea/vomiting were noted in 2 (1%).

### CONCLUSION

Premenstrual symptoms like tiredness was noted in majority of the girls 7%, pain in the legs in 5%, irritability in 4%. In our study, menstrual disorders like dysmenorrhea affected 42% of girls, menorrhagia affected 13% of girls, oligomenorrhoea affected 5% girls, hypomenorrhoea affected 3.5% and polymenorrhoea affected 2% of the girls. Therefore, it is vital to understand the existing pattern of menstrual disorders among adolescent girls and further

plan on education and evaluation. It thus helps in promoting health in young girls. It is important to educate the adolescents about normal menstrual cycle and menstrual hygiene. They should be aware about abnormal menstrual patterns and proceed for timely evaluation and management to avoid complications in general health, psychosocial health and reproductive health.

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