

## **BMI & MENSTRUAL IRREGULARITIES AMONG ADOLESCENT GIRLS**

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### **ABSTRACT**

#### **Background of the study**

Menstruation is characterized by variability in regularity, volume, and pattern. The prevalence of menstrual disorders in India has been noted as high as 87%. Dysmenorrhea is the most common menstrual disorder among women, with a prevalence of 60%–93%. Factors that commonly play a role in the regularity, and flow of a woman's menstrual cycle include hormonal changes, genetics, serious medical conditions, and BMI.

#### **Methods**

Present study based on Descriptive survey research design with 231 adolescent girls selected by Stratified random sampling method. Descriptive and inferential statistics used for analysis.

#### **Result**

Dysmenorrhea was experienced more in adolescent girls who had lower BMI compared to others, out of 128 girls who had BMI <18.5, it was observed that 115 girls complained of dysmenorrhea, which was around 89.84%. It was observed less in adolescent girls who had normal BMI 26 (30.95%). This difference was statistically significant. Similarly, other symptoms of menstrual problems such as oligomenorrhea, menorrhagia, irregular cycles, were seen more in girls who had BMI <18.5 or >25 when compared with who had normal BMI.

#### **Conclusion**

Majority of the adolescents had abnormal BMI. The most common menstrual problem was dysmenorrhea followed by irregular menstrual cycle. BMI plays a significant role to regulate menstrual cycle.

**Key Words:** Menstrual irregularities, BMI

## **INTRODUCTION**

Adolescence is period of physical and psychological human development that usually occurs during the period from puberty to legal adulthood.<sup>1</sup> It is the time when there is rapid changes in their body and these changes put them prone to get various problems. The most challenging problems are related to menstruation; in girls.<sup>2</sup>menstrual cycle is a determinant of women's health. Disorders in cycle or its irregularities are a major gynecological problem among female adults, especially adolescent and a major source of anxiety to them and their family.<sup>3</sup>

Menstrual cycle is typical physiological course that is regarded as periodic and cyclic shedding of progesterone endometrium followed by loss of blood which is additional vital sign adds a powerful tool to the assessment of normal development and the exclusion of pathological conditions in adolescent and young girls.<sup>4</sup>Some variety of menstrual dysfunction occurs in adolescent girls which may affect normal life of adolescent and young adult women. Physical, Mental, Social, Psychological, Reproductive problems are often associated with menstrual irregularities and menstrual problems.

Menstruation is characterized by variability in regularity, volume, and pattern. A survey reported about 64% girls having minimum one problem related to menstruation.<sup>5</sup>The prevalence of menstrual disorders in India has been noted as high as 87%.<sup>6</sup>Several types of menstrual disorders are prevalent, such as menstrual irregularity, menorrhagia, polymenorrhea, oligomenorrhea, dysmenorrhoea, etc., It has been observed that most of the girls face some or the other problem, which are individual specific. Dysmenorrhea is the most common menstrual disorder among women, with a prevalence of 60%–93%.<sup>7</sup>

A number of medical conditions can cause irregular menstruation, which can be diagnosed and treated at early stage. However, this part of women's health is mostly neglected. More than 90% of menstrual problems are preventable just by early detection and appropriate treatment.<sup>8</sup>

Factors that commonly play a role in the regularity, and flow of a woman's

menstrual cycle include hormonal changes, genetics, serious medical conditions, and body mass index<sup>9,10</sup>

Numerous studies have been conducted earlier to address the problems related to menstrual abnormalities in young students, yet few reports are available on relationship between menstrual problems and BMI. An etiological relationship between menstrual disorders and BMI may be sought for further evaluation. This study was carried out to assess the Body Mass Index and determine the prevalence of Menstrual Irregularities among the adolescents of selected higher secondary schools of Nadiad, Kheda, Gujarat. The study is also to assess the relationship between Body Mass Index and Menstrual Irregularities among the adolescents.

**Materials and methods:**

A cross-sectional study was carried out among adolescent girls studying at selected higher secondary schools of Nadiad, Kheda, Gujarat. For the purpose of studying menstrual patterns and problems of adolescent students, a total of among 231 adolescent students were included by Stratified proportionate random sampling technique. This study is restricted only to girls who had attained menarche.

Respondents were made informed about the details of the study and Permission was obtained from principal of the higher secondary school and written informed consent was taken from the parents of the girls before taking part in the study. They were briefed about the questionnaire. Checklist was constructed to collect Menstruation-related information such as personal details, age of menarche in years, regularity, and problems during menstruation cycle. Confidentiality of responses was maintained.

For anthropometric examination, weight was recorded using a standardized weighing scale that was kept on a firm horizontal surface. The weight of girls was measured barefoot with minimal clothes and warm clothing; shoes and socks were removed. Height was measured using a non-stretchable tape. The height of girls was measured barefoot.<sup>11</sup> BMI (kg/cm<sup>2</sup>) was calculated using WHO classification for BMI. The BMI cut-off points are <18.5 kg/m<sup>2</sup> (underweight), 18.5–24.9 kg/m<sup>2</sup> (normal range), >25 (overweight), 25–29.9

kg/m<sup>2</sup> (pre-obese), and >30 kg/m<sup>2</sup> (obesity).<sup>12</sup>

The data were collected, entered, and analyzed in SPSS 18. The data were analyzed using descriptive & inferential statistics. The statistical significant association was considered at  $P < 0.05$ .

**Result:**

Study participants were classified based on their BMI. Figure 1 describes the prevalence of underweight and over weight in study participants. Almost 128 (55.41%) were having low BMI, which implies that >50% of the girls were undernourished. Only 19 (8.22%) of adolescent girls were overweight.

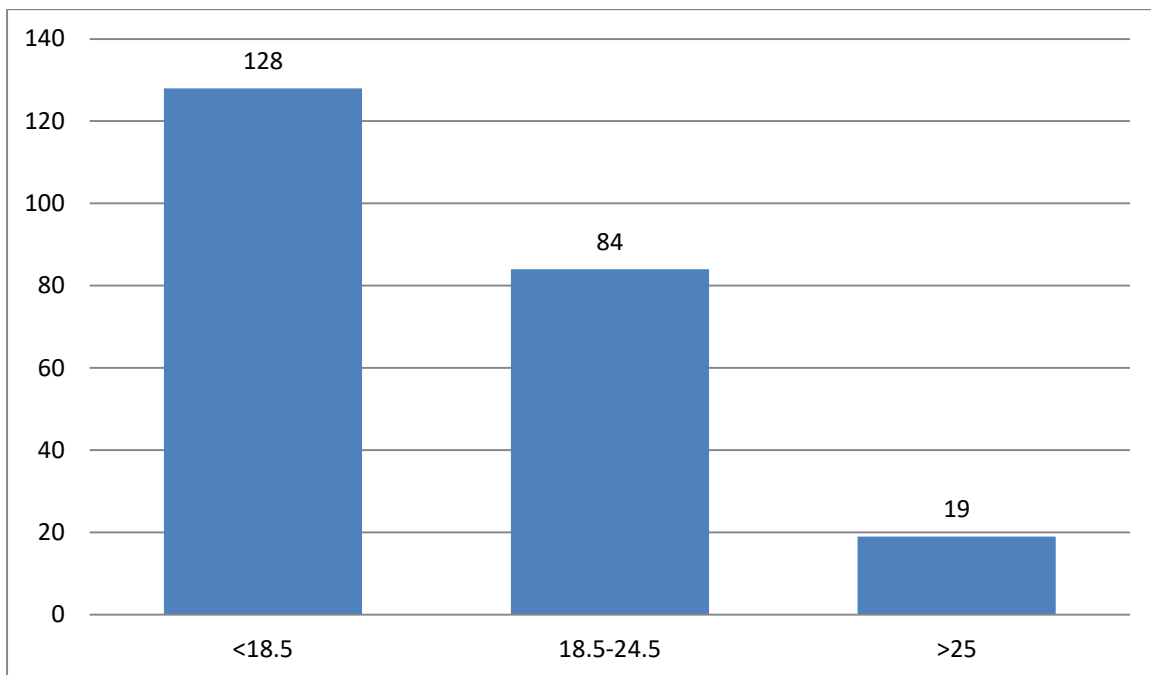


Figure:1 Distribution of samples according to BMI

Table: 1 Association of Menstrual irregularities with BMI

Variables	<18.5	18.5-24.9	>25	Significance
Dysmenorrhoea Yes no	115 13	26 58	10 9	p- 0.002
Oligomennorhoea Yes No	98 30	12 72	11 8	p- 0.011
Menorrhagia Yes No	30 98	21 63	8 11	p- 0.027
Irregular cycle Yes No	85 43	12 72	7 12	p- 0.032
Amount of blood loss Scanty Moderate Heavy	78 20 30	12 30 42	2 9 8	p- 0.04
Intervals of periods <21 Days 21-35 days >35 days	3 40 85	6 66 12	2 10 7	p- 0.024
Duration of periods < 2 days 3-7 days >8 days	3 119 6	6 46 32	1 10 8	p- 0.031

Table 1 summarizes the prevalence of menstrual-related problems in relation with BMI. Dysmenorrhea was experienced more in adolescent girls who had lower BMI compared to others, out of 128 girls who had BMI <18.5, it was observed that 115 girls complained of dysmenorrhea, which was around 89.84%. It was observed less in adolescent girls who had normal BMI 26 (30.95%). This difference was statistically significant. Similarly, other symptoms of menstrual problems such as oligomenorrhea, menorrhagia, irregular cycles, were seen more in girls who had BMI <18.5 or >25 when compared with who had normal BMI.

### **Discussion**

Menstruation is one of the most important changes during adolescent years. It occurs once a month as a regular rhythmic period and remains as a

normal physiological phenomenon from menarche to menopause. It is considered as an indicator of women's health, so adolescent girls need to have an understanding of menstruation pattern and the factors that may attribute in menstrual irregularities. It is essential to increase their understanding of menstruation, appropriate management for it, and clarify the ignorance of menstruation issues.<sup>13</sup>

**Menarche:**In this study, two-third of the adolescent girls had age of menarche ranged from 13 to 14 years, with the mean age at menarche of 13.45 years. Studies conducted in India have reported an average age at menarche to be 13.4, 13.5, and 13.6 years, which are similar to this study<sup>14,15,16</sup>. Slight variations in the age of menarche may occur based on their hereditary pattern and nutritional status.<sup>17</sup> whereas one study reported that the delayed of menarche was present in girls with poor nutrition and earlier in girls with high-energy intake.<sup>18</sup>

**Menstrual irregularities:** In this study, 104 (45%) of adolescent girls had irregular menstrual cycle and 121 (52%) had oligomenorrhea. When assessed for interval of period 116 (50.21%) had cycles after 21-35 days. The finding is in congruence with the other study where the prevalence of irregular menstrual cycle, oligomenorrhea, was 59.4%, 37.5% respectively.<sup>19</sup>

**Variation with BMI:** statistical significant difference was observed between menstrual irregularities and underweight and overweight adolescent girls who had BMI <18.5 and >25 as compared with adolescent girls who had normal BMI. The similar findings was seen in others studies.<sup>20, 21, 22, 23</sup>

### **Conclusion**

Dysmenorrhea was found the most common menstrual problem seen in half of the adolescent girls. BMI plays a very vital role for menstrual cycle regularity. Therefore, adolescent girls have to be given healthy and balance nutrition, which leads to maintenance of their normal BMI and regulate their menstrual cycle.

### **Conflict of Interest**

The authors declare that there is no conflict of interests regarding the publication of this manuscript.

### **Source of Funding**

Researchers have used own finance to complete research study.

### **Ethical Clearance**

Approval of Institutional Ethics Committee & Principals of selected higher secondary schools was obtained prior to the conduction of the study. Privacy and confidentiality of collected information were ensured throughout the process.

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