

## **Original article**

### **A study of prevalence of primary dysmenorrhea in young students - A cross-sectional study**

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#### **Abstract**

**Background:** Menstrual pain without organic pathology is considered to be primary dysmenorrhoea. The onset of primary dysmenorrhoea is usually at or shortly after (6 to 12 months) menarche, when ovulatory cycles are established. The true incidence and prevalence of primary dysmenorrhea are not clearly established in India. A dysmenorrhea incidence of 33.5% among adolescent girls in India was reported by some researchers.

**Objective:** to find out prevalence of primary dysmenorrhea in young females.

**Methods:** This cross sectional study was conducted at Nursing College, situated in campus of largest tertiary care hospital in central and south Gujarat. Study was conducted by Department of Obstetrics and Gynecology of the institute. All students of first year (n=116) were selected and asked about their menstrual history, menstrual pain and associated symptoms through written questionnaire. Per abdomen and ultrasonographic examination was carried out for those having dysmenorrhea by gynecologist. Any abnormal finding was noted and that student was excluded.

**Statistics:** chi square, chi square for trends, fisher exact test and prevalence rate.

**Results & Conclusion:** out of 116 students, 52 (45%) had primary dysmenorrheal and majority (46) of these, had regular menstrual cycles. BMI and ovarian volume did not demonstrate any significant association with presence of dysmenorrhea and regular menstrual cycles.

**Keywords:** primary dysmenorrhea, young girls, prevalence rate, India

#### **Introduction:**

Exact origin of the word dysmenorrhoea is not known, but it has been mentioned in the ancient literature world-wide<sup>1</sup> Vivid description and social stigma associated with menstruation related mood and behavioural changes date back to Hippocrates, the Talmud and the Bible. In spite of the fact of existence of painful menstruation in ancient literature, it was only in the last half of past century when dysmenorrhea has been accorded impartial scientific evaluation.

Dysmenorrhoea refers to the occurrence of painful menstrual cramps of uterine origin. It is a common gynaecological condition with considerable morbidity. The aetiology of primary dysmenorrhoea has been the source of debate<sup>2</sup>. Primary dysmenorrhea refers to dysmenorrhea without evident pelvic pathologies<sup>3,4</sup>. The initial onset of primary dysmenorrhoea is usually at or shortly after 6 to 12 months of menarche, when ovulatory cycles are established. Duration of the pain is usually 8 to 72 hours and is usually associated with menstruation. Identification of dysmenorrhoea and associated features like vomiting, giddiness, mood changes was done around middle of 19<sup>th</sup> century<sup>5</sup>. The true incidence and prevalence of primary dysmenorrhea are not clearly established in India. A dysmenorrhea incidence of 33.5% among adolescent girls in India was reported by Nag<sup>6</sup> George and Bhaduri found dysmenorrhea to be a common problem in India with prevalence

of 87.87%<sup>7</sup>. Prevalence of dysmenorrhea among the students in a college in western Turkey was found to be 72.7% (n = 453)<sup>8</sup>. Thus we conducted the study to find out prevalence rate of primary dysmenorrhea in young females and to study associated clinical markers of dysmenorrhea.

#### **Materials and Methods:**

This cross-sectional study was conducted by the Department of Obstetrics and Gynaecology, Sir Sayajirao General Hospital (SSGH), Vadodara, Gujarat, India for a period of six months. The study proposal was cleared from Institutional Review Board (IRB) of the institute.

The age group of these students varied from 18 to 21 years. After obtaining consent, all the female students (total 116) in first year of the School of Nursing (in the SSGH) were given an open-ended questionnaire regarding their menstrual history. All the items in the questionnaire were first explained by the researcher conducting the study in local language.

Then they were asked to respond to it in a given time period. Their Body Mass Index (BMI) was measured by formula  $\text{Weight (Kg) / Height}^2 \text{ (meter)}^2$ . Asian criteria for BMI have been taken in analysis. <18, 18-22.99 and >23 were taken as cut off for underweight, normal and overweight (9).

They were also asked about presence of any associated symptoms like nausea/vomiting, headache, dizziness or diarrhoea. Severity of pain and other associated symptoms were noted on 3 point scale as mild, moderate or severe. Privacy and confidentiality was maintained throughout the study.

Per abdominal examination and trans-abdominal ultrasound (USG) was done for those having dysmenorrhea. Ovarian volume was noted for all of them. Four students with ovarian volume >10cc were excluded and finally 52 students were labelled as cases of primary dysmenorrhea. The details were entered into Microsoft excel spread sheet (version 2007) and data

was statistically analysed using Epi Info software (version 6.04) (10).

#### **Results:**

Total 56 out of all 116 students, had complaint of menstrual pain. Out of these, 52 had primary dysmenorrhea (Table-3). So prevalence of primary dysmenorrhea in our study was 45%.

Table 1 shows clinical characteristics of the study population. Mean age of menarche was 13 and 13.5 years, which were almost similar in the students of both groups (With and without primary dysmenorrhea respectively). Similarly, mean BMI was 21 and 21.5 kg/m<sup>2</sup> which were almost similar in the students of both groups.

Figure 1 shows that out of 100 students with regular menstrual cycle, 48 had dysmenorrhea and 52 hadn't. It also shows that out of 16 students with irregular menstrual cycle, 8 had dysmenorrhea and 8 hadn't. By applying chi square test (Chi square value = 0.0221), it can be concluded that there is no relationship between dysmenorrhoea and menstrual cycle regularity (p=0.88).

Table 2 shows that 2, 48 and 6 students who were suffering from dysmenorrhea were underweight, normal weight and overweight respectively. Table 2 also shows that 3, 50 and 7 students who weren't suffering from dysmenorrhea were underweight, normal weight and overweight respectively. Thus there is no relationship between BMI and presence of dysmenorrhoea (p= 0.86) by applying Chi square for trends= (chi square value = 0.029).

Table 3 shows that 46 and 2 students who had regular menstrual cycle had normal (10 cc or less) and high (>10 cc) ovarian volume respectively. It also shows that 6 and 2 students who had irregular menstrual cycle had normal (10 cc or less) and high (>10 cc) ovarian volume respectively. By applying Fisher exact T test, it was found that there isn't any relationship between ovarian volume and menstrual cycle regularity (p=0.119).

Figure 2 shows the distribution of students on 3 point Scale for Pain in the two groups. It shows that in 18% of students dysmenorrhoea was mild, moderate in 40% and 42% of students suffered from severe dysmenorrhoea.

Table 4 shows presence of other symptoms in the study population. Nausea/vomiting, Headache, Dizziness/Giddiness, Diarrhoea were found in 5, 3, 7 and 2 students.

### **Discussion:**

Mean age of menarche in our study was 13 years in students having dysmenorrhea. Similar findings were observed in study conducted by Gulsen Eryilmaz et al, Demr SC et al; Vicdan K et al in Turkey<sup>11,12,13</sup>. Dambhare DG et al found that Mean ages of menarche were 13.51 years in their cross sectional study conducted on 1100 school adolescent girls in district Wardha, Central India<sup>14</sup>.

In our study, dysmenorrhoea occurred in students with both regular and irregular cycles (figure 1). In a recent study Begum J et al found no association between menstrual cycle regularity and presence of dysmenorrhoea<sup>15</sup>. Hong-Gui Zhou et al in a study of 2640 students found that dysmenorrhoea was unrelated to the irregularity of menstrual cycles<sup>16</sup>. In another study, Sundell et al found that severity of dysmenorrhoea was not associated with length of menstrual cycles<sup>17</sup>. Tomoko et al found that dysmenorrhoea scores in students with irregular menstruation were significantly higher than those with regular menstruation<sup>18</sup>. Thus findings of this one study did differ from that of ours.

Table 1 and 2 shows that dysmenorrhoea is not affected by height and weight of the subjects. Our results are supported by Anil K Agarwal and Anju Agarwal. They found a negative correlation between dysmenorrhoea and the general health status as measured by body surface area in a study conducted in nine hundred and seventy adolescent girls

of high schools of Gwalior<sup>19</sup>. Sundell et al also found that severity of dysmenorrhoea was not affected by height and weight of subjects.<sup>17</sup>

Table 3 shows that there is no relationship between ovarian volume and menstrual cycle regularity. K Lakhani et al found that increased ovarian volume is associated with Polycystic Ovarian Syndrome but it can be found in asymptomatic women with regular cycles<sup>20</sup>.

Prevalence of dysmenorrhea in our study was 48%. There had been few studies in India. A study from New Delhi, India showed that premenstrual syndrome and dysmenorrhea were perceived as the most distressing symptoms associated with menstruation by 67% and 33% unmarried undergraduate medical students respectively (21). Dambhare DG et al found that prevalence of dysmenorrhea and PMS was 56% in their cross sectional study conducted on 1100 school adolescent girls in district Wardha, Central India (11). Unsal A et al had found out that prevalence of dysmenorrhea among college going students in western Turkey was 72.7% (n = 453). Prevalence rates of dysmenorrhea were found to be 72.7% in Turkey, 74.5% in Malaysia, 72% in Ethiopia and 53.3% in Nigeria (8, 22-24). Thus, in a nutshell, prevalence of dysmenorrhea in young female students is high and this finding of our study is in concordance with others.

Pain is extremely subjective symptom and it has been very difficult to quantify pain (25). Researchers have, therefore, found out a way to measure pain by various scoring systems like VAS (26). Depending on pain score obtained on VAS, pain was divided into mild, moderate and severe pain and thus it is called 3 point scale. In our study, it was revealed that 18%, 40% and 42% of students had mild, moderate and severe pain (dysmenorrhoea) respectively.

In a study conducted by Ortiz MI (2010) in 1539 students of Mexican

University, they concluded that dysmenorrhoea was mild in 36.1%, moderate in 43.8% and severe in 20.1%<sup>27</sup>. Alaettin Unsal et al conducted a study on 623 female students in Turkey University and found that 66.6% of students were having moderate and severe dysmenorrhoea<sup>8</sup>.

Dysmenorrhea is usually associated with some other symptoms like nausea, vomiting, headache, dizziness, diarrhea etc. In our study, prevalence of such associated symptoms was lower. Prevalence of Nausea & vomiting, Headache, giddiness, diarrhoea was 9%, 5%, 12.5% and 3.5% respectively.

In a study conducted by Gulsen Eryilmaz et al had found out that prevalence of nausea & vomiting, diarrhea, dizziness and headache was 12.2%, 8.1%, 8.1% and 17.7% respectively among the school going students of 26 high schools located in Erzurum, Northeastern Turkey<sup>11</sup>. Dambhare DG et al found that the most common premenstrual symptom was headache (26.74% students) in their cross sectional study in district Wardha, Central India<sup>11</sup>

Thus prevalence of the dysmenorrhea is high in our study population. Such high prevalence makes dysmenorrhea a significant public health problem among young students that demands some attention from policy makers.

**Table 1: Clinical characteristics of all nursing students**

	Dysmenorrhoea	
	Present (N=56)	Absent (N=60)
Mean age of menarche(years)	13	13.5
Mean BMI (Kg/m <sup>2</sup> )	21	21.5

**Table 2: relationship between dysmenorrhoea and BMI**

BMI (Kg/m <sup>2</sup> )	Dysmenorrhoea	
	Present (N=56)	Absent(N=60)
<18	2	3
18-22.99	48	50
>23	6	7

Chi square for trends= 0.029. p value = 0.86.

**Table 3: Relationship between ovarian volume and menstrual cycle regularity among students having dysmenorrhea**

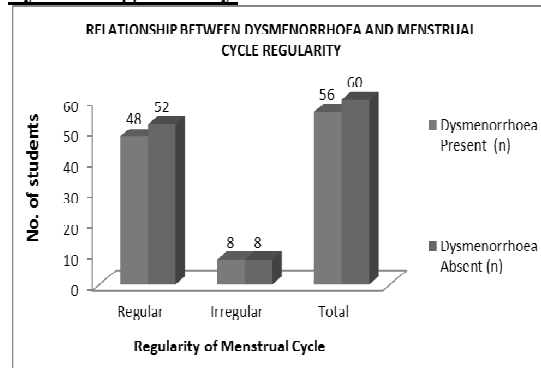
Ovarian Volume	Regular cycles (n=48)	Irregular cycles (n=8)
Normal (< or=10cc)	46	6
Increased (>10cc)	2	2

Fisher exact test. p value = 0.09.

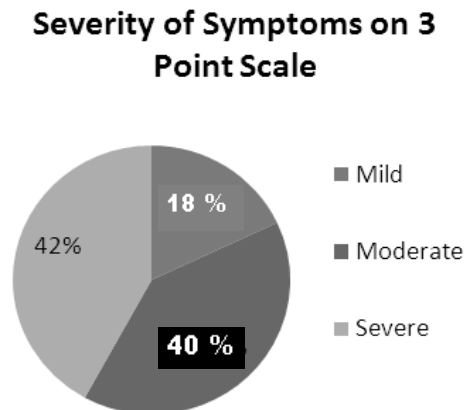
**Table 4: presence of other associated symptoms among students having dysmenorrhea**

Associated symptoms	Present	Absent
Nausea/vomiting	05	51
Headache	03	53
Dizziness/Giddiness	07	49
Diarrhoea	02	54

**Figure 1: Relationship between dysmenorrhoea and menstrual cycle regularity**



**Figure 2: Severity of Symptoms on 3 Point Scale**



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## Written permissions of persons/agency acknowledged:

Permissions from the institutional review board, head of nursing college and medical superintendent of the hospital were obtained prior to initiate the study.