Original Article

Comparative study to Evaluate the Relationship of Dysmenorrhoea and Body Mass Index in Medical Students


ARTICLE INFO

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ABSTRACT

Primary dysmenorrhoea is one of the most common medical disorder in young females that affects their quality of life and it is one of the leading causes of repeated absenteeism. Because of the high prevalence of dysmenorrhoea in females in our society, this study was taken up. Ninety age (18-20yrs) and sex matched medical students of same ethnic group and socio-economic status were selected. Demographic data were collected through a standard questionnaire. BMI was calculated from height and weight. The subjects were divided into six groups depending on their BMI values. Control group consisted of group I (BMI<18.5) and II (BMI 18.5-24.9). The data of overweight subjects (BMI=25-30, Group III) and obese subjects (BMI>30, Groups IV –VI) were pooled together as obese group. Data were statistically analyzed by Pearson Chi-square test and Analysis Of Variance (ANOVA). The mean age at which menarche was attained by the subjects was 12+2 yrs. Many (75%) of the subjects experienced dysmenorrhoea and majority (60%) of the subjects with dysmenorrhoea had normal menstrual cycles and 85% of them had no physical activity. A significant positive correlation between dysmenorrhoea and physical inactivity was obtained (p<0.05) and there was no significant correlation between BMI and dysmenorrhoea in both the groups (p>0.05).

INTRODUCTION

Dysmenorrhoea can be classified into two types: Primary dysmenorrhoea and Secondary dysmenorrhoea. Primary dysmenorrhoea or painful menstruation in women with normal pelvic anatomy usually a common medical disorder in young females that affects their quality of life and if severe can lead to disability and inefficiency(1,2). Secondary dysmenorrhoea is menstrual pain associated with underlying pathology and its onset may be years after menarche. Dysmenorrhoea is one of the leading causes of repeated absenteeism in girls from schools and work(3,4,5). Data from various studies conducted earlier show that absenteeism from school due to primary dysmenorrhoea is 34-50%(6,7). Although the aetiology and pathophysiology of primary dysmenorrhoea is not fully known, there is evidence that primary dysmenorrhoea is due to increased concentration of prostaglandins especially PGF2 alpha which is a potent myometrial stimulant and vasoconstrictor(8). In overweight and obese females, there is increase in biosynthesis of prostaglandins that in crease the severity of dysmenorrhoea. Hence, use of prostaglandin synthesis inhibitors gives some pain relief. Many other drugs like non-steroidal anti-inflammatory drugs (NSAIDS), herbal, dietary therapies, yoga, meditation are being used to reduce the symptoms of dysmenorrhoea. Participation in regular physical activity is another way which decreases the symptoms of dysmenorrhoea. Research findings indicate that regular physical activity or exercise can affect menstruation in many ways including inducing amenorrhea in athletes and it may decrease symptoms of premenstrual syndrome and dysmenorrhoea(8,9).

Shavandi et al(2009) studied the effects of 8 weeks of isometric exercise on primary dysmenorrhoea and reported that intensity and duration of pain induced by primary dysmenorrhoea are reduced but has no effect on amount of bleeding(8,9).

Because of the high prevalence of dysmenorrhoea in females in our society and based on the findings of many studies dysmenorrhoea is one of the most common health issue in young adolescent girls as it affects 50-90% of general population(10,11). This study was taken up to find out relationship between incidence of dysmenorrhoea and 1. Body Mass Index (BMI)

2. Physical activity
3. Family history
4. Parental Obesity

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Materials and methods

Ninety female medical students of 18-20 yrs age of same ethnicity and socio-economic status were selected. Participation by subjects was strictly voluntary. Informed consent was taken from all the students prior to their participation in the study. Demographic data were collected through standard questionnaire. The questionnaire addressed detailed menstrual history- age at menarche, duration of menstrual cycle, quantity of menstrual flow, severity of pain (dysmenorrhea) and associated symptoms, family history of dysmenorrhea etc and detailed H/o of physical exercise and dietary habits.

BMI was calculated from height and weight using standard formula. The subjects were divided into two groups: obese and non-obese depending on their BMI values. Subjects with BMI< 18.5 were considered as under weight and with BMI 18.5-24.9 were considered non-obese or normal and subjects with BMI= 25 -29.9 were considered overweight and BMI>30 as obese as per the standard protocol used by WHO for measuring obesity statistics since 1980. Data were statistically analysed by Pearson Chi-Square test and analysis of variance (ANOVA). The subjects were further sub-divided into six groups (I-VI) for convenience depending on their BMI values. Control group consisted of group I (BMI<18.5) and II (BMI=18.5-24.9), N=66.

The data of overweight subjects group II (BMI=25-29.9) and obese subjects group IV -VI (BMI≥ 30) were pooled together as obese group, N=24.

Exclusion criteria

- Below 18 yrs age
- With previous H/O polycystic ovarian diseases (PCOD) and pelvic inflammatory diseases
- With previous H/O Diabetes, Hypertension, Hormonal imbalance

Results

The mean age at which menarche was attained by the subjects was 12±2 yrs.

Many (64%) of the subjects experienced dysmenorrhea. Majority (88%) of the students having dysmenorrhea and (81%) students having no symptoms of dysmenorrhea did not do any regular physical exercise. The main findings of this study showed that there is significant association of dysmenorrhea and physical inactivity (p<0.05) (Table 1). Only 7 students with symptoms of dysmenorrhea did regular physical exercise. Majority of the students (86%) lacked regular physical exercise.

The presence of dysmenorrhea in mother or sister was considered as positive family history of dysmenorrhea. There was a significant relation between family history of dysmenorrhea and prevalence of dysmenorrhea in subjects (p < 0.05)(Table 2). The subjects who had positive family history of dysmenorrhea (66%) were the ones who experienced the symptoms.

Parental obesity was not a significant cause of dysmenorrhea in the offspring, (p>0.05)(Table 3). In 69% of the subjects with symptoms of dysmenorrhea the parents were not obese and only 31% of the subjects whose parents were obese had symptoms of dysmenorrhea. There is no relation between the volume and irregularity of menstrual cycles with dysmenorrhea (p > 0.05)(Table 4) and 93% of the subjects with dysmenorrhea had regular menstrual cycles.

There was no significant correlation between BMI and dysmenorrhea in both obese and non-obese groups (p>0.05)(Table 5). The incidence of dysmenorrhea was more in non-obese subjects of group II (BMI 18.5-24.9).

Table 1: Association of Dysmenorrhea in subjects with physical exercise (p < 0.05, significant)

<table>
<thead>
<tr>
<th>Physical exercise</th>
<th>With dysmenorrhea</th>
<th>Without dysmenorrhea</th>
</tr>
</thead>
<tbody>
<tr>
<td>No physical exercise</td>
<td>88%</td>
<td>81%</td>
</tr>
</tbody>
</table>

Table 2: Association of Dysmenorrhea in subjects with positive family history (p < 0.05, significant)

<table>
<thead>
<tr>
<th>Family history</th>
<th>With dysmenorrhea</th>
<th>Without dysmenorrhea</th>
</tr>
</thead>
<tbody>
<tr>
<td>No family history</td>
<td>34%</td>
<td>47%</td>
</tr>
</tbody>
</table>

Table 3: Relation of dysmenorrhea in subjects with parental obesity (p > 0.05, not significant)

<table>
<thead>
<tr>
<th>Parental obesity</th>
<th>With dysmenorrhea</th>
<th>Without dysmenorrhea</th>
</tr>
</thead>
<tbody>
<tr>
<td>No parental obesity</td>
<td>69%</td>
<td>75%</td>
</tr>
</tbody>
</table>
Table 4: Relation of dysmenorrhea and regularity of menstrual cycle (p>0.05, not significant)

<table>
<thead>
<tr>
<th>BMI</th>
<th>With dysmenorrhea</th>
<th>Without dysmenorrhea</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP I</td>
<td>10%</td>
<td>16%</td>
</tr>
<tr>
<td>Group II</td>
<td>60%</td>
<td>62%</td>
</tr>
<tr>
<td>Group III</td>
<td>19%</td>
<td>19%</td>
</tr>
<tr>
<td>Group IV</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>Group V</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td>Group VI</td>
<td>2%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Discussion

High incidence of dysmenorrhea among subjects i.e., in our study is consistent with previous studies reporting rates between 28%-89.5%(14, 15, 16). This indicates that dysmenorrhea is still an important public health problem. As Zondervan in 1998 indicated that dysmenorrhea is responsible for school absenteeism(12) and other studies from 2000-2007 also confirm that female absenteeism in adolescent was common due to excessive pain due to dysmenorrhea(13).

The main findings of this study indicated that there is a positive impact of physical activity on primary dysmenorrhea. There was a positive association between dysmenorrhea and physical inactivity in the subjects. These results are not in agreement with findings of Shavandi et al., Shahrjerdi and Sheik Hoseini(11, 18). Research findings by Noorbaksh Mahvash et al in 2012 (14) showed that physical activity reduced the symptoms of primary dysmenorrhea. These findings are in contrast to the finding of the study done by Fatai et al in 2013(15) in adolescent girls. One possible mechanism explaining the positive effect of physical activity on primary dysmenorrhea is associated with stress. Stress causes increase in the sympathetic activity and exercise is one of the means of moderating the stress and hence exercise reduces the stress and sympathetic activity. Research findings by Warren MP in 1998 indicated that exercise can affect menstruation in many ways including inducing amenorrhea in athletes and decrease symptoms of premenstrual symptoms and dysmenorrhea(10).

In this study family history of dysmenorrhea seems to be an important risk factor for girls with dysmenorrhea. The results are consistent with findings of previous studies(12, 23).

Prevalence of dysmenorrhea showed a decrease with increasing age in previous studies conducted indicating that primary dysmenorrhea peaks in late adolescence and early twenties(24). However this study did not show any relation between age group and incidence of dysmenorrhea as the study group consisted of girls within the same age group.

In this study there was no correlation between the volume and regularity of menstrual cycle and dysmenorrhea. This is in line with the results obtained from Shavandi et al which also indicated that there is no change in the volume of bleeding in post-exercise young girls(10).

Conclusion

The results of the present study show that lack of physical exercise in girls is associated with dysmenorrhea.

Young girls are recommended to take part in physical activities in order to help them to decrease the negative impact of symptoms of dysmenorrhea in their academic, social and personal life.

As obesity especially visceral fat predisposes to various cardiovascular disorders, proper physical exercise and diet programmes are needed to overcome it.

The present study was conducted for the betterment of society for creating the awareness of physical exercise and diet.

Acknowledgement:

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References


