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DYSMENORRHOEA AMONG ADOLESCENT GIRLS: ROLE OF BMI

Biochemistry

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ABSTRACT

Introduction: Dysmenorrhoea is a very common problem in adolescent girls and it is also related with body weight. **Aim & Objectives :** Determine the relation between the severity of dysmenorrhea and body mass index in adolescents**. Material & Methods:** It is a observational study among 150 adolescent girls in Lucknow district. **Results:** Prevalence of dysmenorrhea was found to be around 81.3% and is maximum in underweight girls (39.3%) and minimum in overweight girls (27.04%). Severe dysmenorrhea is present mainly in underweight girls (33.3%). **Conclusion:** In this study dysmennorrhoea show a link with BMI and it is more severe in underweight adolescent girls.

KEYWORDS

Dysmenorrhoea, Body mass index (BMI), adolescent

INTRODUCTION:

Dysmenorrhea is a periodical lower abdominal pain radiating to back and thighs, during menstruation. It is a common health issue in 50-90% of young adolescent girls. **(1)** It is reported that the frequency of pain during menstruation was 82.2% among secondary school adolescents in India **(2)** There are many risk factors , associated with severe episodes of dysmenorrhea (eg. earlier age at menarche, heavy menstrual flow, smoking, positive family history, obesity and alcohol consumption**. (3,4)** Dysmenorrhea is divided into two categories: Primary dysmenorrhea and secondary dysmenorrhea. In primary dysmenorrhea lower abdominal pain appears at onset of menstruation with no identifiable pelvic disease but in secondary dysmenorrheal painful menstruation is associated with pelvic pathology (eg. fibroid, adenomyosis, pelvic inflammatory disease etc.) **(5).**

The symptoms in dysmenorrhoea is supposed to be due to increased levels of prostaglandins in the endometrium following the fall of progesterone in the late luteal phase which increases myometrial tone and excessive uterine contraction which causes pain. The levels of PG - F2 α, vasopressin and leukotrienes are found to be higher in women with severe menstrual pain compared to women with no or little menstrual pain **(6,7)** . Some other studies also reported that increased levels of leukotrienes and vasopressin in dysmenorrhoea cases, but these connections are not well established **(8,9).**

Body mass index (BMI) is commonly used tool to identify obesity problems in all age groups within a population. BMI is defined as the individual's bodyweight divided by the square of his/her height. Various researchers reported the relationship between body mass index (BMI) and dysmenorrhea **(10,11)**. Pain is very difficult to measure due to its subjective nature. There are various tools to measures the grades of pain and one of them is Multidimensional Scoring System of Andersch and Milsom (1982) which defines pain as follows**:** Grade 0- No pain, Grade 1-Mild Grade 2-Moderate Grade 3 –Severe **(12).** Verbal multidimensional pain scoring system measures pain severity on the basis that how pain impacts on daily activities, systemic symptoms and requirement of analgesic.

(A) Mild dysmenorrhea is defined as painful menstruation with no limitation of normal activity, with infrequent requirement of analgesics and no systemic problems. (B) Moderate dysmenorrhea is defined as menstrual pain affecting daily activities, with requirement of analgesics for pain relief and few systemic complaints. (C) Severe dysmenorrhea is defined as menstrual pain with severe limitation of daily activities, poor response to analgesics, and apparent systemic complaints like vomiting, fainting etc.

MATERIALAND METHODS

The study was conducted among 150 healthy adolescent girls who were willing to participate in study. Written consent were taken from adolescent girls and their parents also. Detailed history regarding dysmenorrhoea and other associated symptoms during menstruation were recorded and also enquired about age at menarche, family history, dietary history, medical history, personal history. BMI were recorded by dividing individual's weight from square of her height . Pain was categorized by Verbal multidimensional pain scoring system .

Results:

Table 1: Menstrual irregularities and age distribution

Age	No. of cases	Menorrhogia	Prolonged cycles	Normal cycle
13-16	60	22 (36.6%)	18 (30%)	20 (33.3%)
17- 19	90	27 (30%)	18 (20%)	45 (50%)
Total	150	49 (32.6%)	36 (24%)	65 (43.3%)

Table 1 showed that total number of cases were 150, out of which 60 girls were in the age group of 13-16 years and 90 girls were in the age group of 17-19 years . Out of total 150 cases 32.6% (n=49) had problem of menorrhogia, 24% (n=36) had prolonged cycles and 43.3% (n=65) had normal cycle.

Table 2: Dysmenorrhoea and number of cases

Age	No. of cases	Dysmenorrhoea	% of cases
13-16	60	48	80%
17- 19	90	74	82.22%
Total	150	122	81.33%

In 13-16 years 80% (n=48) of girls had dysmenorrhoea and in 17-19 years of age 82.2% (n=74) had dysmenorrhoea with overall dysmenorrhoea in 81.33% (n=122) cases.

Table 3: Relationship of cases with Body Mass Index

Age	No. of cases	Over weight	Normal	Underweight
13-16	60	14 (23.3%%)	25 (41.6%)	21 (35%)
17- 19	90	24 (26.6%)	35 (38.8%)	31 (34.4%)
Total	150	38 (25.3%)	60 (40%)	52 (34.6%)

Out of 150 cases 25.3% cases (n=38) were obese, 40% (n=60) had normal weight and 34.6% (n=52) were underweight.

Table 4: Correlation between dysmenorrhoea and BMI

	Number of cases	Over weight	Normal	Underweight
Dysmenorrhoea (13-16 years)	48	11 (22.9%)	19 (39.5%)	18 (37.5%)
Dysmenorrhoea (17-19 years)	74	22 (29.7%)	22 (29.7%)	30 (40.5%)
Total	122	33 (27.04%)	41(33.6%)	48 (39.3%)

Dysmenorrhoea is maximum in underweight girls (39.3%) and minimum in overweight girls (27.04%).

Table 5: Correlation between BMI and degree of dysmenorrhoea

	Mild dysmenorrhoea	Moderate dysmenorrhoea	Severe dysmenorrhoea
Over weight (n=33)	11 (33.3%)	14 (42.4%)	08 (24.2%)
Normal weight (n=41)	22 (53.6%)	13 (31.7%)	06 (14.6%)
Underweight (n=48)	13 (27.08%)	19 (39.5%)	16 (33.3%)
Total (n=122)	46 (37.7%)	46 (37.7%)	30 (24.5%)

Table 5 showed that mild and moderate dysmenorrhea is present in equally in 37.7% cases and severe dysmenorrhea in 24.5% cases. In overweight and underweight category most of the girls had moderate dysmenorrhoea, Mild dysmenorrhoea is common in normal weight girls. Severe dysmenorrhea is present mainly in underweight girls (33.3%).

Table 6: Common symptoms during menstruation

Common problems during menstruation	Number of cases	% of cases
Lower abdominal pain	122	81.3%
Headache	39	26%
G.I. Disturbances	49	32.6%
Breast heaviness	46	30.6%
Malaise	74	49.3%
Sleep disturbance	68	45.3%
Mood swing	55	36.6%
Decreased appetite	70	46.6%

Beside dysmenorrhoea other commonest clinical symptoms during menstruation was malaise in 49.5% case and it is followed by sleep disturbances in 45.3% cases and decreased appetite in 46.6% cases.

DISCUSSION

The pathophysiology of primary dysmenorrhea is considered due to raised PGF2α, which are released from the disintegrated endometrial cells and stimulates myometrial contractions. We found different types of menstrual irregularities with 32.6% had menorrhogia, 24% had prolonged cycles and dysmenorrhoea in 81.3% adolescent girls.

A study conducted in Nepal found that 87.9% of the participants had menstrual problems during their menstrual cycle and lower abdominal pain was present in 80.7% of the participant.**(13)** Sharma et al found that 71.5% cases had dysmenorrhoea, with 53.2% had mild, 37.6% had moderate and 17 (9.1%) had severe dysmenorrhea, in a study done in Pokhara. **(14).** A comparative study in rural and urban area found that dysmenorrhea was very high with 81.5 % in rural and 76 % in urban girls. **(15)**

In our study we found that 25.3% cases were obese, 40% had normal weight and 34.6% were underweight and dysmenorrhea is maximum of 39.3% (n=48) underweight girls and minimum of 27.04% (n=33) in overweight girls. Mild and moderate dysmenorrhoea is present in equal number of cases (37.70%) and severe dysmenorrhoea in 24.5% cases.

Singh et al. reported that prevalence of dysmenorrhea was 73.83 %, with mild dysmenorrhea in 63.29 %, moderate dysmenorrhea in 30.37 %, and severe dysmenorrhea in 6.32 % girls. **(16)** Study by Nagata et al. found that prevalence of dysmenorrhea was 83.3 %, with 40.2 % mild, 34.4 % moderate, and 8.76 % severe dysmenorrhea cases. **(17)** Gurdip kaur et al reported in their study that maximum (58.89 %) adolescents had mild dysmenorrhoea followed by moderate dysmenorrhea (34.44 %) and severe dysmenorrhea (6.67%) **(18)** The frequency of primary dysmenorrhea in underweight, normal-weight and overweight groups was 20.3%, 66.73% and 12.93%, respectively; the frequency of primary dysmenorrhea was higher in normal-weight students. **(19)** Various other studies also observed that dysmenorrhea is significantly associated with low BMI **(20,21)**

CONCLUSION:

As we all know that BMI plays a significant role in etiology of various diseases and in this study dysmennorrhoea also showed link with BMI. So it is important that the weight of adolescent girls has to be maintained within normal range by advising them to take balanced diet and proper physical activity is must and these measures improves their overall quality of life.

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