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Prevalence of Menstrual Disorders among the Adolescent Girls and Its Correlation with Body Mass Index

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Abstract:
Background: *Menstrual irregularity is the most common gynaecological disorder in all age group. Adolescence is a transitional period between childhood and adulthood and involves physical, biological and psychosexual changes and is characterized by hormonal changes. Aim of this study was to find out the prevalence of menstrual abnormality in college girls in tirupati and their association with their Body mass Index (BMI).*
Methods: *A observational study was conducted among 500 girls of age group 16-20 years in a private junior girls college in tirupati after getting their consent from college authorities and students and their parents. All details regarding their age of menarche, type of menstrual disorder and their BMI were collected. The results were compared using chi square test and the pattern of menstrual abnormality and its relation with BMI was obtained.*
Results: *The average age of menarche was 13.38 years in our study, obese adolescents are of 42% among 500 girls, among them dysmenorrhoea was present in 20% students, Poly menorrhoea was present in 7.6%, menorrhagia was present in 7.6%of adolescents. 26% of students has normal BMI. Among them poly menorrhoea was seen in 4.6%, menorrhagia was seen in 4.6% of students. In rest of the students no menstrual disorders are seen.Overweight students are 30%,among them 10% had poly menorrhoea, 10% had menorrhagia, dysmenorrhoea is seen in 25.3%*
Conclusions: *Many students in our study was under obese category, lifestyle modification like regular exercise, avoiding junk food and promoting healthy eating habits should be emphasised among students to have a healthy life. Students should also be informed about menstruation, physiological changes and its importance.*
Keywords: *Adolescence, BMI, Menstrual disorder*

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I. Introduction

Menstrual irregularity is the most common gynaecological disorder in adolescent group. Adolescence is a transitional period between childhood and adulthood and involves physical, biological and psychosexual changes and is characterized by hormonal changes. Hormone imbalance is due to immature Hypothalamic-pituitary-ovarian axis, thyroid dysfunction, and polycystic ovarian syndrome. Some of the common problems that the adolescent girls encounter are dysmenorrhoea, menstrual flow disorder and premenstrual symptoms. 75% of the adolescent girls encounter some problems associated with menstruation[1]

1) Dysmenorrhoea is the most common in young girls which is defined as painful menstrual flow.
2) Pre- menstrual syndrome (PMS) is defined as collection of physical and psychological symptoms that the girl experience during luteal phase of the menstrual cycle. More than 90% of these problems are preventable by early diagnosis and proper treatment[2]
3) An etiological relationship exists between menstrual problems, BMI, dietary habits, exercise.
4) The aim of the study is to find out the prevalence of menstrual abnormality in college girls in tirupathi and their correlation with their BMI

II. Materials And Methods

This is a cross sectional study done at chaithanyagirls college in tirupathi belonging to 16-20 years after taking consent from the college authorities and ethical committee of our hospital. Students and college authorities were explained about the purpose of the study and questionnaires were distributed to those willing to take part in the study. Details regarding their age of menarche, menstrual disorder (dysmenorrhoea, menorrhagia, polymenorrhoea, oligomenorrhoea, pre-menstrual syndrome). Anthropometric data (height and weight was measured). BMI was calculated by the formula weight in kilogram divided by height in metres squared (kg/m2)[3]. Students who did not attain menarche, and those not willing for the study were excluded from the study.

Regular menstrual cycle is prior 3 cycles regular with normal flow (3-5 days) with regular cycle length (22-35 days). Irregular cycle is abnormality in length of the cycle either less than 22 days or more than 35 days cycle. Menorrhagia is defined as bleeding either more than 8 days or heavy flow with clots passage or using more than 5 pads per day. Dysmenorrhoea is painful menstrual cycle. In this study, dysmenorrhoea is considered as painful menstruation seeking medical treatment.

Premenstrual symptoms are head ache, bloating, nausea, breast tenderness, swelling of extremities or pain abdomen in the luteal phase of the cycle. Emotional symptoms like irritability, anger, depression, anxiety were also collected.

Statistical analysis

Prevalence of each menstrual disorder was calculated. Comparison between BMI and menstrual irregularity was also calculated. Statistical analysis was done using SPSS software and p value <0.05 was considered as statistically significant.

III. Results

Among 500 students participated in the study the average age of menarche is 13.38 years. Most of the students had normal menstrual cycle 218 students (43.6%%), 128 students (25.6%) had dysmenorrhoea which is the most common disorder presented. 136 students (27.2%) had irregular cycles with or without dysmenorrhoea and 150 students (75%) had regular cycles. Among irregular cycles 46 students (9.2%) had oligomenorrhoea, 48 students (9.6%) had menorrhagia and only 18 students (3.6%) complained of pre-menstrual syndromeand 42 students(8.4%) has polymenorrhoea.

The total number of students with normal BMI was130(26%), 10 students fall underweight constituting 2%, overweight were 150 students (30%) and obese were 210 students (42%). Our aim of the study is to find the correlation between BMI and menstrual disorder. Among normal weight students 49.2% had normal cycle, 23% had dysmenorrhoea, 4.6% had menorrhagia, 13.8% had oligomenorrhoea and 4.6% had pre- menstrual syndrome and 4.6% had poly menorrhoea. Among overweight and obese group most common disorder was dysmenorrhoea which was 20% and 25.3% respectively. Among the obesestudents poly menorrhoea accounts for 7.6%, menorrhagia accounts for 7.6%, oligomenorrhoea accounts for 5.7% and premenstrual accounts for 3.8%.

Among the overweight students, poly menorrhoea accounts for 10%, menorrhagia accounts for 10%, oligomenorrhoea accounts for 14% and premenstrual syndrome accounts for 8%. Among the underweight students, 3 students has dysmenorrhoea, 1 student has poly menorrhoea, 1 student has menorrhagia.

prevalence of menstrual disorders:

Menstrual disorder	Number	Percentage
Dysmenorrhoea	128	25.6%
Polymenorrhoea	42	8.4%
Oligomenorrhoea	46	9.2%
Premenstrual syndrome	18	3.6%
Menorrhagia	48	9.6%
No menstrual disorders	218	43.6%
Total	500	

Prevalence of menstrual disorders in obese students

Menstrual disorders	Number	Frequency
Dysmenorrhoea	42	20%
Polymenorrhoea	16	7.6%
Oligomenorrhoea	12	5.7%
Premenstrual syndrome	8	3.8%
Menorrhagia	16	7.6%
No menstrual disorders	116	55.2%
Total	210	

Prevalence of menstrual disorders in over weight students:

Menstrual disorder	Number	Percentage
Dysmenorrhoea	38	25.3%
Polymenorrhoea	15	10%
Oligomenorrhoea	21	14%
Premenstrual syndrome	12	8%
Menorrhagia	15	10%
No menstrual disorders	49	32.6%
Total	150	

Prevalence of menstrual disorders in normal weight students:

Menstrual disorders	Number	Percentage
Dysmenorrhoea	30	23.07%
Polymenorrhoea	6	4.6%
Oligimenorrhoea	18	13.8%
Premenstrual syndrome	6	4.6%
Menorrhagia	6	4.6%
No menstrual disorders	64	49.2%
	130	

Prevalence of menstrual disorders among underweight students:

Menstrual disorders	Number	Percentage
Dysmenorrhoea	0 3	30%
Polymenorrhoea	0 1	10%
Oligomenorrhoea	0	0%
Premenstrual syndrome	0	0%
Menorrhagia	01	10%

No menstrual disorders	05	50%
Total	10	

Relation of menstrual disorders with food habits:

		Obese and over weight patients	Number of patients with menstrual disorders
Number of students eating junk foods	347	298	192
Number of students not taking junk foods	163	62	90

IV. Discussion

Menstruation is important part of normal sexual and reproductive health.[12] The changes in menstrual cycle in reproductive age affect physical and psychological wellbeing[4]. In obese adolescents, in the peripheral fat androstenedione get converted in to estrone. This lead to excess estrogen and this lead to anovulatory cycles and this leads to irregular cycles in adolescent girls[5]. The mean age of menarche in present study was 13.38 years (Table 1) which was consistent with study conducted by ShabnamOmidvar and Khyrunnisa begum[6] (13.4±1.2 years) and study conducted by Solanki H and Vibha G[7] (14.5 years).5,6 In another study conducted by Nirmal JL[8] it was 12.6±1.32 years which was less when compared our study. The age of menarche depends on constitutional, nutritional, socioeconomic and general health of the students.[10]

In this study, 27.2% had irregular cycle and 65% had regular cycles which were comparable with study conducted in Nigeria found to have regular cycles in 63.5% and 36.5% had irregular cycle. Another study had 34.6% with irregular cycle conducted by Ekpenyong CE[8] Whereas study conducted by Nirmala JL had on 29% students with irregular cycle.7 Dysmenorrhoea was the commonest disorder present in our study 25.6% (Table 2) which was compared with the study conducted by Solanki H, were 26.7% students had dysmenorrhoea which require medical treatment.Itwas also comparable with study conducted by Nirmala JL were 30% require medical treatment.7 Dysmenorrhoea was significantly present among students with normal body weight 23% (Table 3) which was comparable with study conducted by Begum J et al[9]. Menorrhagia was present in 9.6% of them which was compared with other studies. Other studies have a significant correlation with increased BMI and irregular cycles. Some studies have no significant correlation between BMI and menstrual irregularity.[11]

V. Conclusion

Many students in our study was under obese category, lifestyle modification like regular exercise, avoiding junk food and promoting healthy eating habits should be emphasised among students to have a healthy life.

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