OVERVIEW OF ADOLESCENT MENSTRUAL PROBLEMS AND ITS RELATION TO BMI, EATING HABITS AND PHYSICAL ACTIVITY

Gauri Raghunath Shinde[1], Manisha Laddad[2]

[1]Assistant Professor, Department of Obstetrics and Gynaecology, KIMSDU, Karad.
[2]Associate Professor, Department of Obstetrics and Gynaecology, KIMSDU, Karad.

ABSTRACT

BACKGROUND

Purpose of this study is to overview adolescent menstrual problems and its relation to BMI, eating habits and physical activity.

MATERIALS AND METHODS

Present study carried out in Obstetrics & Gynaecology Department, KIMSDU, Karad. In this study, 624 adolescent age group girls 11 to 19 yrs. who visited outpatient department were studied from Jan. 2013 to Dec. 2015. All these girls were asked for detailed history regarding age of menarche, menstrual pattern, any associated menstrual problems like dysmenorrhoea, pre-menstrual symptoms, history of passage of clots, menstrual irregularities. BMI of all these girls were calculated and categorised in to normal (18.5-24.99 kg/m^2), underweight (14-18.49 kg/m^2), and overweight & obese (>25 kg/m^2). All these girls were asked regarding their diet habits. Frequency of eating junk food (categorised into <3 days per week and > 3 days per week). After all these detailed history collections, each girl underwent detailed general, per abdominal and local examination. All these girls underwent pelvic ultrasound to rule out major pelvic organic pathology. All these girls were further studied for the relation of dietary habits, BMI with the menstrual disorders. The girls diagnosed with menorrhagia were treated with Tab. Sylate 1 g tds for 5 days, haematinics or blood transfusion according to haemogram reports. Occasionally, few girls out of these required admission for acute events of menorrhagia & treated accordingly. Statistical analysis was done to know the % of menstrual problems in these girls and these results were compared with different study results.

RESULTS

In present study, 14.42% girls were obese/overweight, 16.34% were underweight. 32.85% girls were with habit of eating junk food >3 days a week. 57.69% girls giving history of physical activity <3 days a week. Dysmenorrhoea (66.34%) was a commonest problem. Incidence of irregular cycles was 30.76%, menorrhagia was 16.98%, PMS was 48.71%, abnormal duration of cycle in 14.42% and 16.34% girls were diagnosed as PCOD on USG. Overweight/obese and underweight girls had majority of menstrual problems (Dysmenorrhoea 76.66% vs. 40.19%, irregular cycles 16.66% vs. 21.56%, menorrhagia 16.66% vs. 21.56%, PMS 41.11% vs. 53.92%, abnormal duration of menses 13.33% vs. 14.70%, PCOD 75.55% vs. 9.8%). Maximum girls with dieting habits, less physical activity and habits of eating junk food were having multiple menstrual problems.

CONCLUSION

Changing lifestyle has increased incidences of bulimia nervosa, obesity, sedentary life style. All these things have an effect on developing adolescent girl. This is a vicious cycle of overeating/malnutrition adding to abnormal BMI which has an effect on physical activity of these girls which leads to menstrual problems. To overcome these problems in adolescent girls, awareness regarding physical activity, healthy eating habits, personal hygiene, counselling regarding diet to avoid increasing slim/plum body trends in adolescents should be done.

KEYWORDS

Adolescent Girl, Menstrual Problems, Adolescent Menstrual Problems.

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BACKGROUND

Adolescence, the period between childhood and adulthood, is usually defined by the rapid onset of biological growth and development before or end of 2nd decade of life.[1] There are many factors which influence adolescent growth such as social, environmental, etc. Adolescent age group comprises of girls from 10 to 19 yrs. Menstrual disorders are common in this age group. Many of these problems are minor and can be resolved with education and reassurance about wide variation inherent in normal pubertal development. But some menstrual problems should be properly termed, investigated and treated. This article will discuss the current scenario of incidence of adolescent menstrual problems.

Over the past two decades, changing lifestyle, change in expectation of women in our society has presented adolescent girls with number of new challenges as well as new opportunities. Increasingly intense academic, social, athletic pressures create a stressful environment for these teenagers. This leads to eating disorders, anorexia nervosa, bulimia nervosa, increased incidences of PCOD and menstrual

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Corresponding Author:
Dr. Gauri Raghunath Shinde,
C/o. Dr. Raghunath Shinde,
C/s. No. 1549, Opp. Swimming Tank,
Ganesh Nagar, Sangli-416416,
Maharashtra.
E-mail: drgauri8@gmail.com
DOI: 10.14260/jemds/2016/1526

problems in adolescents. This article also focuses on effects of physical activity, nutrition, eating habits on menstrual cycle.

Aim of the Study

1. Overview of adolescent menstrual problems.
2. Relation of BMI, eating habits and physical activity to menstrual problems.

MATERIALS AND METHODS

Present study carried out in Obstetrics & Gynaecology Department, KIMSDU, and Karad. In this study, 624 adolescent age group girls 11 to 19 yrs. who visited outpatient department were studied from Jan. 2013 to Dec. 2015. All these girls were asked for detailed history regarding age of menarche, menstrual pattern, any associated menstrual problems like dysmenorrhoea, premenstrual symptoms, history of passage of clots, menstrual irregularities. BMI of all these girls were calculated and categorised in to normal (18.5-24.99 kg/m^2), underweight (14-18.49 kg/m^2), and overweight & obese (>25 kg/m^2). All these girls were asked regarding their diet habits. Frequency of eating junk food (categorised into <3 days per week and > 3 days per week). After all these detailed history each girl underwent detailed general, per abdominal and local examination. All these girls underwent pelvic ultrasound to rule out major pelvic organic pathology. All these girls further studied for the relation of dietary habits, BMI with the menstrual disorders.

The girls diagnosed with menorrhagia were treated with Tb. Sylate 1 g tds for 5 days, haematinics or blood transfusion according to haemogram reports. Occasionally few girls out of these required admission for acute events of menorrhagia & treated accordingly.

Inclusion Criteria

1. Girls who have attained menarche.
2. Girls from age group 11-19 yrs.
3. Girls with menstrual problems.

Exclusion Criteria

1. Girls already on hormonal line of treatment.
2. Girls with diagnosed cases of bleeding disorders.
3. Girls > than 19 yrs.

RESULTS

This study was carried out in Obstetrics & Gynaecology Dept., KIMSDU, Karad. In this study, 624 adolescent girls fulfilling above-mentioned inclusion criteria visited to OB/GY OPD were studied. Out of these 624 girls, 22 girls required admission for acute episode menorrhagia. All these 22 girls were treated accordingly as mentioned in methodology.

In present study, 230 (36.85%) girls were from age group 11-14 yrs. and 394 (63.14%) from 15 to 19 yrs. age group.

BMI	n=624	%
Normal (18.5 – 24.99 kg/m^2)	432	69.23
Underweight (14 -18 .49 kg/m^2)	102	16.34
Overweight/obese (>25 kg/$m^{2)}$	90	14.42

Table 1. Categorised According to BMI

In present study, 506 (81.08%) girls were from Urban residential area and 118 (18.91%) were from Rural.

In present study, 175 (28.04%) girls had habits of dieting & remaining 449 (71.95%) had no habits of dieting.

In present study, out of 624 girls, 419 (67.14%) girls were having habit of eating junk food <3 days a week & 205 (32.85%) girls were having habit of junk food >3 days a week.

In present study, 360 (57.69%) girls were having a habit of exercise <3 days a week and remaining 264 (42.30%) girls were having a habit of daily exercise.

Menstrual Problems in Adolescent girls		%
Dysmenorrhoea	414	66.34
Irregular cycles	192	30.76
Menorrhagia	106	16.98
Premenstrual symptoms (PMS)	304	48.71
Abnormal duration of menses	90	14.42
Diagnosis of polycystic ovarian disease(PCOD)	102	16.34

Table 2. Menstrual Problems in Adolescent Girls

In present study, commonest menstrual problem was dysmenorrhoeal (66.34%), incidence of menorrhagia was 16.98%. Many of the girls were having combination of menstrual problems mentioned above.

BMI	Dysmenorrhoea	%	Irregular Cycles n=192	%	Menorrhagia n=106	%
Normal	304	70.37	155	35.87	69	15.97
Under-weight	41	40.19	22	21.56	22	21.56
Over-weight/ obese	69	76.66	15	16.66	15	16.66

Table 3. Relation of BMI with Adolescent Menstrual Problems

In present study, incidence of dysmenorrhoea (76.66) was highest in overweight girls while irregular cycles (35.87%) were more in normal BMI girls and menorrhagia in underweight girls.

BMI	PMS n=304	%	Abnormal Duration of Menses n=90	%	PCOD n=102	%
Normal	212	49.07	63	14.58	24	5.55
Under-weight	55	53.92	15	14.70	10	9.8
Over-weight /obese	37	41.11	12	13.33	68	75.55

Table 4. Relation of BMI with Adolescent Menstrual Problems

Incidence of PMS (53.92%) was highest in underweight girls, PCOD (75.55%) highest in overweight girls.

Adolescent menstrual problems were mainly due to premature HPO (Hypothalamo–pituitary- Ovarian Axis),

added to it BMI also play a role in these menstrual problems in adolescent girl as shown in above tables 3-4.

Dieting Habits	Dysmenorrhoea n=414	%	Irregular Cycles n=192	%	Menorrhagia n=106	%
Yes	136	71.71	99	56.57	35	20
No	278	61.97	93	20.71	71	15.81

Table 5. Relation of Dieting Habits to Adolescent Menstrual Problems

Dysmenorrhoea (71.71%), irregular cycles (56.57%), menorrhagia (20%) were more in girls with dieting habits.

Dieting Habits	PMS n=304	%	Abnormal Duration of Menses n=90	%	PCOD n=102	%
Yes	115	65.71	23	13.14	13	7.42
No	189	42.90	67	14.92	89	19.82

Table 6. Relation of Dieting Habits to Adolescent Menstrual Problems

PMS (65.71%) was more common in girls with dieting habits while PCOD (19.82%) was more in in girls without dieting habits.

Frequency of Eating Junk \Food	Dysmenorrhoea n=414	%	Irregular Cycles n=192	%	Menorrhagia n=106	%
<3 days a week	289	68.97	157	37.47	65	15.51
>3 days a week	125	60.97	35	17.07	25	12.19

Table 7. Relation of Frequency of eating Junk Food & Adolescent Menstrual Problems

Dysmenorrhoea (68.97%), menorrhagia (15.51%) were more in girls with habit of eating junk food < 3 days a week.

Frequency of Eating Junk Food	PMS n=304	%	Abnormal Duration of Menses n=90	%	PCOD n=102	%
<3 days a week	202	48.21	66	15.75	42	10.02
>3 days a week	102	49.75	24	11.70	60	29.26

Table 8. Relation of Frequency of Eating Junk Food & Adolescent Menstrual Problems

PMS (49.75%), PCOD (29.26%) were more in girls who were frequently (>3 days a week) eating junk food.

Frequency of Physical Exercise	Dysmenorrhoea n=414	%	Irregular Cycles n=192	%	Menorrhagia n=106	%
<3 days a week	298	82.77	157	43.61	70	19.44
>3 days a week	116	43.93	35	13.25	36	13.63

Table 9. Relation of Frequency of Physical Exercise & Adolescent Menstrual Problems

Girls with less frequency of physical exercise had a more incidence of dysmenorrhoeal (82.77%), irregular cycle (43.61%) and menorrhagia (19.44%).

Frequency of Physical Exercise	PMS n=304	%	Abnormal Duration of Menses n=90	%	PCOD n=102	%
<3 days a week	157	43.61	51	14.16	69	19.16
>3 days a week	147	55.68	39	14.77	33	12.5

Table 10. Relation of Frequency of Physical Exercise & Adolescent Menstrual Problems

DISCUSSION

Purpose of present study was to take an overview of adolescent menstrual problems and their relation to physical exercise, BMI and habit of eating junk food. In present study, mean age was 14.20 yrs., mean age of menarche was 12.5 yrs. Majority of girls, 69.23% were with normal BMI, 81.08% were from urban area, 71.95% girls were with no dieting habits, 32.85% girls with habit of eating junk food >3 days a week and only 42.30% girls with habit of physical exercise >3 days a week.

Adolescent Menstrual Problems	Present Study	Nag et al[2]	George & Bhadhuri et al[3]	Anil Agarwal et al[4]	Saira Dars et al[5]	Franco Rigon et al[6]	Rupa Vani et al[7]	Rama Ravi et al[8]
Dysmenorrhoea	66.34%	33.5%	87.87%	79.67%	62%	6.2%	73%	72.6%
Irregular length of cycles	30.76%	-	-	-	24%	9%	17%	31.7%
Menorrhagia	16.98%	-	-	-	17%	19%	37%	45.7%
Abnormal duration of menses	14.42%	-	-	-	29%	-	10%	-
PMS	48.71%	-	-	-	38%	-	51%	-
PCOD	16.34%	-	-	-	-	-	-	-

Table 11. Incidence of Adolescent Menstrual Problems in Different Studies

Present study observations were nearly correlating to Saira Dars et al[5], Rupa Vani etal[7], and Rama Ravi et al[8] Difference in observations in present study and Nag et al[3],
George et al[3], Anil Agarwal et al[4], Franco Rigon et al[8] may be because of difference in socioeconomic status of population included in study and number of girls involved in study.

Study Population	Present Study	Anil Agarwal et al[4]	Saira Dars et al[5]	Franco Rigon et al[6]	Rupa Vani et al[7]	Rama Ravi et al[8]
	624	970	401	4892	853	350
BMI						
Normal (18.5 – 24.99 kg/m^2)	69.23%	-	69%	-	52.2%	-
Under-weight (14 -18 .49 kg/m^2)	16.34%	-	27%	-	34.5%	-
Overweight /obese (>25 kg/m^2)	14.42%	-	04%	-	13.3%	-

Table 12. R elation of BMI to Menstrual Problems in Different Studies

There was difference in number of study population in present study and above-mentioned studies. In spite of these differences; population with the normal, underweight, overweight BMI nearly correlated with Saira Dars et al[5] and with Rupa Vani et al[7] study.

Present Study					
	Dysmenorrhoea (%)	Irregular Cycles (%)	Menorrhagia (%)	PMS (%)	Abnormal Duration of Menses (%)
BMI					
Normal (18.5 – 24.99 kg/m^2)	70.37	35.87	15.97	49.07	14.58
Underweight(14 -18 .49 kg/m^2)	40.19	21.56	21.56	53.92	14.70
Overweight /obese (>25 kg/m^2)	76.66	16.66	16.66	41.11	13.33
Dieting habits					
Yes	71.71	56.57	20	65.71	13.14
No	61.97	20.71	15.81	42.90	14.92
Frequency of eating junk food					
<3 days a week	68.97	37.47	15.51	48.21	15.75
>3 days a week	60.97	17.07	12.19	49.75	11.70
Frequency of physical					
<3 days a week	82.77	43.61	19.44	43.61	14.16
>3 days a week	43.93	13.25	13.63	55.68	14.77

Table 13. Association of BMI, Dieting Habits, Junk Food eating, Physical Exercise to Adolescent Menstrual Problems in Present Study and Study by Rupa Vani et al[7]

Rupa Vani et al[7]					
	Dysmenorrhoea (%)	**Irregular Cycles (%)**	**Menorrhagia (%)**	**PMS (%)**	**Abnormal Duration of Menses (%)**
BMI					
Normal (18.5 – 24.99 kg/m^2)	69.4	17.8	33.5	52.8	24.3
Underweight (14 -18 .49 kg/m^2)	76.5	15.3	40.5	45.9	23.1
Overweight /obese (>25 kg/m$^{2)}$	76.3	21.9	41.2	58.8	27.2
Dieting habits					
Yes	78.1	18.8	43.4	67.2	26.2
No	70.5	16.	34.2	44.4	23.5
Frequency of eating junk food					
<3 days a week	71.4	18.6	36	47.7	24.7
>3 days a week	75.6	15.3	38.7	58.2	23.3
Frequency of physical					
<3 days a week	72	18.6	37.7	48.4	25.7
>3 days a week	74.8	14.6	35	56.4	20.7

Table 14

Observations in association of BMI, Dieting habits, eating Junk food, physical exercise to Adolescent menstrual problems in present study and study by Rupa Vani et al[7] were nearly correlating. This suggests that changing lifestyle, eating habits, frequency of physical activity & BMI have an effect on adolescent menstrual cycles.

In present study, incidence of diagnosed PCOD on USG was high in overweight & obese BMI girls (75.75%). 19.82% of girls without dieting history were diagnosed as PCOD on USG. 29.26% girls eating junk food >3 days a week, diagnosed as PCOD on USG. 19.16% of girls who were doing physical activity <3 days a week were diagnosed as PCOD on USG. All these girls diagnosed as PCOD were having combination of menstrual problems.

CONCLUSION

Present study is an overview of adolescent menstrual problems and its relation to BMI, eating habits, physical activity. Menstrual problems are common in adolescent girls because of premature HPO Axis physiologically. But changing lifestyle has increased incidences of bulimia nervosa, anorexia nervosa, obesity, sedentary life style. All these things have an effect on developing adolescent girl. This is a vicious cycle of over eating/malnutrition adding do abnormal BMI which has an effect on physical activity of these girls which leads to menstrual problems. To overcome these problems in adolescent girls, awareness regarding physical activity, healthy eating habits, personal hygiene and counselling regarding diet to avoid increasing slim/plum body trends in adolescent should be done.

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