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Physiology

EFFECT OF DIETARY HABITS ON MENSTRUAL DISTRESS IN EUMENORRHEIC YOUNG ADULTS: A CROSS SECTIONAL STUDY

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KEYWORDS :

INTRODUCTION:

Menstruation is a periodic and cyclical shedding of pro-gestational endometrium accompanied by loss of blood and which involves many hormonal changes. It is a normal physiological process that begins during adolescence and may be associated with the various symptoms occurring before or during the menstrual flow.1 This monthly experience by females adds a powerful tool to the assessment of normal development and the exclusion of pathological conditions among them, and it is one of the determinants of a woman's reproductive health. The problems related to menstruation impose high costs to the societies and affect not only the women's health but also their quality of life, body image, pregnancy, mood, as well as social economy and efficiency.[2]

Dietary habits are fundamental factors that influence human life styles and individual Quality of Life (QOL). Dietary-habits and choices play a significant role in the quality of life, health and longevity.[3]

Many females during their lifetime had reported some degree of distress with menstruation with frequency and severity of symptoms, such as dysmenorrhea, change in dietary habits, headaches, backaches, and fatigue. Several studies have shown that the impact of menstrual distress can be seen in the interruption of a female's day-to-day activities. With regard to the importance of diet in adolescent period and its long-term effects that can influence menstruation signs in young women, a bulk of research has been conducted on the association between lesser or highly consumed nutritional elements and the common signs of menstruation. For instance, shortage of calcium and non-saturated fatty acids is associated with dysmenorrhea and dietary changes during menstrual cycle.4 It has been recently observed that young women who ignore eating breakfast significantly suffer from dysmenorrhea more, compared to those who eat breakfast, and a high-fiber diet is inversely associated with dysmenorrhea.

As studies show the positive role of different diets on dysmenorrhea, recognition of their role is essential.5 The American Psychiatric Association published criteria for a severe clinical syndrome, premenstrual dysphoric disorder (PMDD), in its Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (American Psychiatric Association, 2013).6 In these references, menstrual symptoms such as irritability, anger, depressed mood, anxiety, insomnia, change in appetite, overeating and specific food craving and physical symptoms such as breast tenderness, muscle pain and bloating are stated. Menstrual distress symptom includes pain, water retention, autonomic reactions, mental distress, impaired concentration, behaviour changes and arousal and interference with normal physical activity. Dysmenorrhea aka painful menstruation is the most familiar menstrual distress syndrome and one of the most common problems in women of all ages.7 In Japan, it has been reported that 70- 80% of women at reproductive age had menstrual distress symptoms (Japan Society of 3Obstetrics and Gynaecology, 2019).[8]

In the present set up in our hospital it is a necessity that such a study needs to be conducted so as to understand how menstrual distress causes changes in dietary habits and how skipping of meals contributes to menstrual distress as entailed in the previous studies.

ADULT: According to the World Health Organization (WHO), an adult is a person older than 19 years of age unless national law delimits an earlier age, and an adolescent someone aged 10 to 19 years.[9]
Eumenorrhea: Eumenorrhea is a healthy, normal menstrual bleeding. People who have periods are said to have eumenorrhea when:

Cycles last for 21-35 days
Volume of blood loss: 30-80 ml
Bleeding lasting 3-7 days
Change of sanitary products 3-4 times daily.10

AIMS AND OBJECTIVES:

1. To determine the prevalence of menstrual distress on unhealthy dietary habits.
2. To determine the prevalence of menstrual distress on healthy dietary habits.
3. To compare the prevalence between the above two.

METHODOLOGY:

Study Design: Observational cross-sectional study. Study Period: One month

Study Population: Eumenorrheic adult female students (second year, third year, fourth year and interns) in MIMS, Mandya.

Sample Size: Taking from a previous study the proportion of hand grip strength fatigue rate of women in India was found to be 64%2.

The formula used here is $n = Z2\ \alpha/2pq/d2$
where n= sample size, Zα/2= level of confidence; taken as 1.96, p= proportion, q= 100-p, d= relative error which is taken as 10% of proportion. The sample size was calculated as 250.

Sampling Method: Purposive sampling
Inclusion Criteria: Eumenorrheic8 adult females in the reproductive age group of 19- 40 years.

Exclusion Criteria:

1. Females with a previous history of menstrual abnormality due to various causes eg. PCOD, thyroid disorders and other endocrine abnormalities.

2. Females on oral contraceptive pills.

3. Females on any other medication that may interfere with the normal menstrual cycle like anti-epileptics, Blood thinners, thyroid medication, anti-depressants and anti- cancer drugs.

4. Females with anatomical or genetic abnormalities of the limbs like muscular dystrophy, polio myelitis or any other debilitating traumatic injury that may interfere with the normal strength and full range of motion of the limbs.

5. Females who are breast feeding for about a year; post-partum.

6. Females who are Hypertensive and Diabetic.

7. Females with Renal disorders.

8. Females with neurological disorders like CVA, epilepsy etc.

Method of Data Collection (study tools): Study was conducted on

250 eumenorrheic adult female bystanders of medicine, surgery and gynecology OPDs in MIMS, Mandya after obtaining approval from the Institutional Ethics Committee, Mandya Institute of Medical Sciences, Mandya. Informed written consent was taken from the patients after explaining to them the plan and intention of the study in the language understandable to them.

Eumenorrheic adult females in Mandya will be selected for the study based on inclusion and exclusion criteria. A detailed history of menstrual status was taken from all patients with emphasis on usage of any medication that may interfere with the regularity of the monthly cycles.

A detailed history of menstrual status for the past six months was obtained with emphasis on medication that may interfere with the menstrual cycle.

Eating scores based on HEAT SCORE was done when the subjects are menstruating and while free of menstruation.

The two fifty females were assessed based on
1. Verbal multidimensional scoring system (VMSS)11 for assessment of dysmenorrhea severity.
2. The eating pattern of the females was assessed based on Healthy Eating Assessment Tool (HEAT)12.

Data Analysis
Data was entered in Microsoft Excel software. Analysis was done using descriptive statistics like mean, standard deviation, proportion etc., Inferential statistics like chi-square test for association, t-test to know the difference between mean and other relevant statistical tests was also used.

RESULTS AND DISCUSSION:
Verbal multidimensional scoring system (VMSS)11 for assessment of dysmenorrhea severity.

TABLE 1:

Grade	Working Ability	Systemic Symptoms	Analgesics
Grade 0: Menstruation is not painful, and daily activity is not affected	Unaffected	None	Not Required
Grade 1: Menstruation is painful but seldom inhibits the woman's normal activity. Analgesics are seldom required — mild pain.	Rarely Affected	None	Rarely required
Grade 2: Daily activity affected. Analgesics required and gave relief so that absence from work or school is unusual. Moderate pain.	Moderately affected	Few	Required
Grade 3: Activity inhibited. Poor effect of analgesics. Vegetative symptoms, Eg. headache, dizziness, nausea, vomiting and Diarrhea. severe pain.	Inhibited	Apparent	Poor effect

TABLE 2: On assessment of the subjects with VMSS score[11]

GRADE	No of Subjects out of 250	% of the subjects in each grade
0	6	2
1	67	27
2	92	37
3	85	34

The HEAT score12 in the grades that are
1. GRADE 1----10-19 is POOR
2. GRADE 2----20-29 is FAIR
3. GRADE 3----30-39 is GOOD
4. GRADE 4----40-50 is EXCELLENT

TABLE 3:

HEAT score during menstrual bleeding	No of subjects of 250	HEAT score while free of menstrual bleeding	No of subjects of 250
GRADE 1	147	GRADE 1	110
GRADE 2	86	GRADE 2	54
GRADE 3	17	GRADE 3	78
GRADE 4	0	GRADE 4	8

Grade 1is poor so those subjects with grade 1 can be considered having unhealthy eating habits:

The prevalence of subjects with unhealthy eating habits during menstrual bleeding is 58.8%.

Whereas the prevalence of subjects with unhealthy eating habits while free of menstrual bleeding is 44%.

BMI CHART: TABLE 4:

CATEGORY	RANGE	No of subjects out of 250	% of the subjects
Underweight	< 18.5	0	0
Normal	18.5—24.9	141	56
Overweight	25-----29.9	100	40
Obese	30-----34.9	9	4

Correlation of the results with Pearson Correlation:

On correlation between HEAT score and BMI of the subjects it seems to be statistically significant and shows negative correlation which means that as BMI increases HEAT score decreases during menstrual bleeding as well as while free of menstrual bleeding.

TABLE 5: BMI Vs Heat Score during menstrual cycle:

		BMI(kg/m2)	HEAT SCORE DURING MENSTRUAL BLEEDING(10-19/20-29/30-39/40-50)
BMI(kg/m2)	Pearson Correlation	1	-.620**
	Sig. (2-tailed)		.000
	N	250	250
HEAT SCORE DURING MENSTRUAL BLEEDING(10-19/20-29/30-39/40-50)	Pearson Correlation	-.620**	1
	Sig. (2-tailed)	.000	
	N	250	250
**. Correlation is significant at the 0.01 level (2-tailed).			

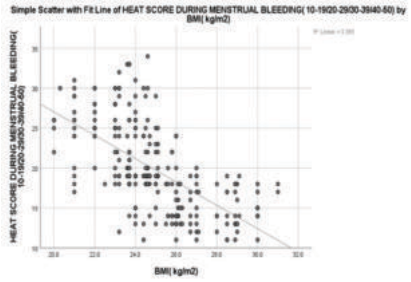
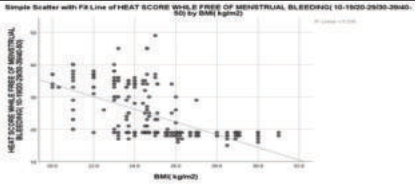


TABLE 6: BMI Vs Heat score while free of menstrual bleeding.

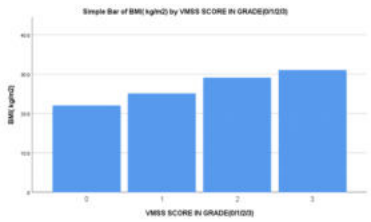
		BMI(kg/m2)	HEAT SCORE WHILE FREE OF MENSTRUAL BLEEDING(10-19/20-29/30-39/40-50)
BMI(kg/m2)	Pearson Correlation	1	-.580**
	Sig. (2-tailed)		.000
	N	250	250
HEAT SCORE WHILE FREE OF MENSTRUAL BLEEDING(10-19/20-29/30-39/40-50)	Pearson Correlation	-.580**	1
	Sig. (2-tailed)	.000	
	N	250	250
**. Correlation is significant at the 0.01 level (2-tailed).			



Correlation between BMI and VMSS score:

TABLE 7:
Correlation between BMI and VMSS score shows positive correlation meaning to say that as BMI increases the severity of Dysmensorrhea also increases and it is statistically significant.

BMI Vs VMSS score		BMI(kg/m2)	VMSS SCORE IN GRADE(0/1/2/3)
BMI(kg/m2)	Pearson Correlation	1	.754**
	Sig. (2-tailed)		.000
	N	250	250
VMSS SCORE IN GRADE(0/1/2/3)	Pearson Correlation	.754**	1
	Sig. (2-tailed)	.000	
	N	250	250
**. Correlation is significant at the 0.01 level (2-tailed).			



Discussion:

1. Results of this study indicates that unhealthy eating habits are prevalent in the subjects during menstrual bleeding and thereby contributes to increased BMI and thereby increase in the severity of Dysmenorrhea which is similar to the results of the study done by Mumal Singh, Nikita Wadhawan which states that unhealthy eating habits needs to be modified so that the subject might be able to achieve healthy menstrual cycles3.

2. Results of this study indicates that unhealthy eating habits are prevalent in the subjects during menstrual bleeding and thereby contributes to increased BMI and thereby increase in the severity of distress which is similar to the study done by Sreelakshmi U. et al which indicated that individuals with unhealthy eating habits are more prone to premenstrual and menstrual syndrome and dysmenorrhea and early menarche4.

3. Results of this study indicates that unhealthy eating habits are prevalent in the subjects during menstrual bleeding and thereby contributes to increased BMI and thereby increase in the severity of distress whereas in the study done by Yukie Matsuura et al indicated that due to the expression of certain receptors of hormones in the tongue during menstrual bleeding it lets the person to crave more for sweets or junk thereby increasing the BMI and hence increases the severity of dysmenorrhea and distress6.

Conclusion:

1. The effect of unhealthy eating habits has a profound effect on the severity of dysmenorrhea due to increase in BMI thereby needs to modified with healthy dietary lifestyle and eating choices.

2. Studies have shown that sweet cravings and junk intake may be due to expression of receptors of certain hormones during menstruation thereby paving way to unhealthy eating. Understanding one's body and thereby modifying the dietary lifestyle would help a lot with maintain BMI within normal range and also thereby reducing the severity of dysmenorrhea and distress.

3. This study throws light on the eating habits of women during different phases of menstrual cycle so that it may give information regarding the type of food that may cause maximum discomfort thereby eliminating or adding an item in diet can thereby give a smooth and pain free cycle. Hence quality of life during menstrual cycle can be uplifted.

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