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RELATIONSHIP OF MENSTRUAL CYCLE WITH DIETARY PATTERN AMONG ADOLESCENTS AND YOUNG ADULTS IN URBAN AREA OF KANCHEEPURAM DISTRICT

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ABSTRACT

Background: Adolescence is the transitional stage of physical and psychological development that generally occurs during the period from puberty to adulthood. Menstrual irregularities are mainly caused by hormonal imbalance. Lifestyle modifications are the main reason behind irregular menstrual cycle.Extreme weight loss and extreme weight gain, emotional stress, endurance exercise can also cause menstrual irregularities. Food habits of the adolescents and young adults have changed in the recent past in their nutrient intake and needs such as high intake of junk foods and fast foods and absence of required energy rich extra nutrients.

Method: A cross sectional comparative study was carried out by convenient sampling technique among 200 women (15 to 35 years) in Kancheepuram district. The study is based on questionnaire and the women were divided into two groups based on regular and irregular menstrual cycle. Data analysis was performed on the results obtained.

Results: It shows that women who have junk foods and sweetened soft beverages often have irregular periods. Hence lifestyle modifications play a major role in menstrual irregularities

and hormonal imbalance. Passage of clots were also significantly high in women who have low intake of green leafy vegetables

Conclusion: Life style modifications in the urban population lading to lack of exercise, high intake of junk foods and low intake of fibre rich vegetables and iron rich green leafy vegetables cause hormonal imbalance leading to menstrual irregularities and infertility.

Keywords: Lifestyle modifications, Hormonal imbalance, Junk foods, vegetables

INTRODUCTION

Menstruation is a vital part of reproductive health of women, and its irregularities could interfere in the normal life of menstruating women and girls **[1]**. Menstrual irregularities impact on the quality life of menstruating girls and women. Genetic, socio-economic, and nutritional elements as well as psychosocial status, and reproductive problems determine the regularity of menstruation and menstrual issues **[2]**. Menstruation is the regular discharge of blood and mucosal tissue from the inner lining of the uterus through the vagina **[3]**. The length of time between the first day of one period and the first day of the next period is between 21 to 45 days in young women. The menstrual cycle is governed by hormonal changes. Bleeding usually last for 3 to 7 days **[4]**.

A number of factors increase the chances of irregular menstruation especially hormonal imbalance. The hormones that impact menstruation are oestrogen and progesterone.These are the hormones that regulate menstrual cycle. Extreme weight loss and extreme weight gain, emotional stress, endurance exercise can also cause menstrual irregularities **[5]**. Hence, it is important to evaluate the present situation of eating habits and sedentary lifestyle in adolescent girls and estimate their influence on menstrual disorders. The mean age of menarche is between 13 to 14 days. However it may start as early as 8 years of age. Due to change in diet, lifestyle, habits, the age of attaining menarche has been decreased **[6]**. Food habits of the adolescents and young adults have changed in the recent past in their nutrient intake and needs such as high intake of junk foods and fast foods and absence of required energy rich extra nutrients.

Socioeconomic studies have observed that lifestyle modifications which lead to polycystic ovarian disease (PCOD) are highly prevalent among high and middle income populations of urban populations compared to rural populations. PCOD is a common disorder among women of reproductive age presenting major clinical symptoms of menstrual irregularities, hirsutism, acne and infertility **[7]**. Associated conditions include Type II Diabetes mellitus, obesity, mood disorders,

and endometrial cancer. It is a heterogeneous condition with uncertain cause. When PCOD is associated with obesity or overweight, weight loss can help in restoring normal ovulation or menstruation **[8]**. WHO has estimated that about 116 million women are affected worldwide in 2012 **[7]**.

METHODS

A Cross sectional comparative study was carried out by convenient sampling technique among 200 women (15 to 35 years) in kancheepuram district. The purpose of the study was clearly explained to the volunteers. The consent was taken from each volunteer before participating in the study. The study was based on questionnaire and the women were divided into two groups based on regular and irregular menstrual cycle. The structured questionnaire is used which includes anthropometric measurements like height, weight and demographic details, age of attaining menarche, details of menstrual history including menstrual cycle length, number of days of bleeding, presence or absence of clots, abdominal cramps, irritability and angry outburst, and nutritional details like frequency of intake of milk products, green leafy vegetables and junk foods. Data analysis was performed in SPSS software. The study was approved by institutional ethical committee.

RESULTS

A total of 200 women participated in the study belonging to the urban population between the age group of 15 to 35 years. Out of 200 volunteers, 22 of them were married and 78 of them were single

MENARCHE: About 82% of the girls had their first menstrual period by 12 to 15 years of age.

MENSTRUAL PATTERN: Out of 200 participants, 62 had irregular pattern of menstrual history, 138 participants had regular menstrual periods. 78% of them had normal menstrual length (21 to 35 days). 19% (37) had periods more than 35 days. 147 participants (73.5%) had 3 to 5 days of menstrual flow, 30 participants had 6 to 8 days of menstrual flow, 21 participants had less than 3 days. 108 women had mild flow (3-4 pads per day), 57 women had scanty flow (1-2 pads per days), 32 women has moderate flow (5-6 pads per day), 2 of them had heavy flow. **Figure 1** depicts the nature of flow in the participants. 50% of them have passage of blood clots in bleeding.

FAMILY HISTORY OF MENSTRUAL IRREGULARITY: Out of 62 women who has irregular periods, 21 (33.8%) of them has positive familial history of menstrual irregularity. **Table 1** depicts the details of premenstrual symptoms experienced.

BMI AND MENSTRUAL PATTERN: Out of 35, whose BMI status is overweight, 11

of them have irregular cycles, 127 had normal BMI and 39 had irregular pattern, 18 were obese and 7 of them had irregular cycles. Table 2 depicts the details about dietary intake of the participants. Out of 200 participants 45 were vegetarians, 155 were non vegetarians. Out of 62 women who has irregular menstrual cycle only 3 (4.8%) of them never takes junk food and 21 (33.8%) of them takes it on alternate days. About 23 participants take sweetened soft drinks on alternate days.

Totally 79 (39.5) participants takes green leafy vegetables once a week, out of which 23 has irregular periods and 56 has regular periods. Women who has frequent intake of green leafy vegetables have regular periods **(Figure 3)**.

Similarly in about 52 participants who takes one serve of fibre rich vegetables per day, 32 (61.5%) of them have regular periods, 20 of them have irregular periods. 4(7.6%) women takes two serves per day have regular periods and 0% of them who have irregular periods take two serves per day **(Figure 4)**. Only 13 participants take multivitamin tablets daily and 156 of them have daily intake of milk and milk products.

PCOD AND NUTRITIONAL PATTERN: About 20% (n=40) of the volunteers were diagnosed with PCOD through ultrasound. Among 40, 13 of them were in obese and overweight category in BMI status and only 11 participants takes fibre rich vegetables daily.

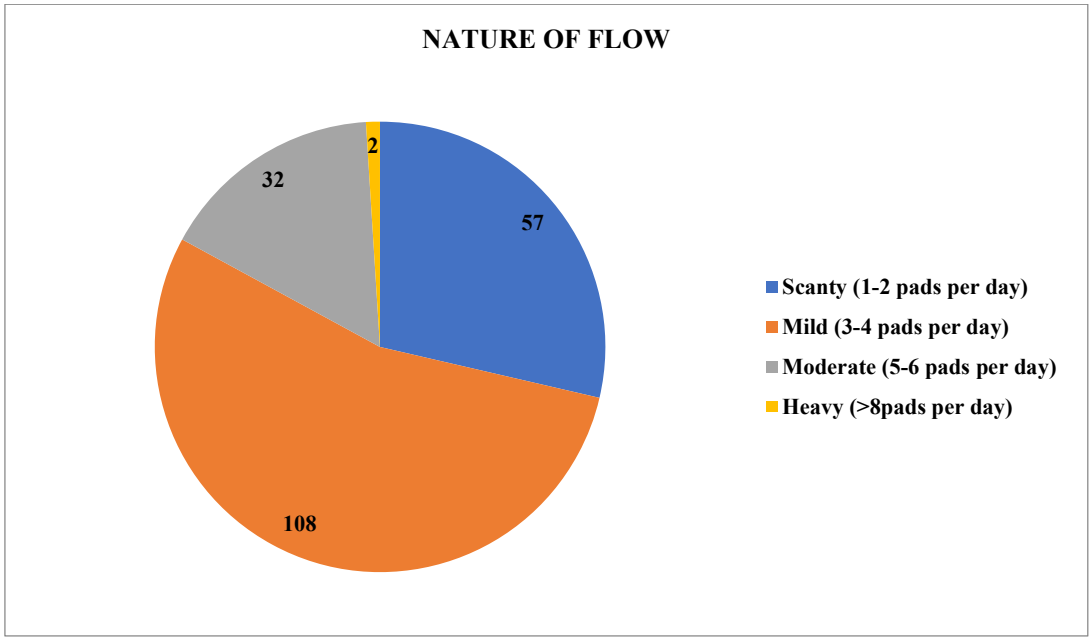

Figure 1: Nature of Flow In The Participants (n=200)

Table 1: details about the premenstrual syndromes

PARAMETER	IRREGULAR (62)		REGULAR (138)	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
ABDOMINAL PAIN :				
NONE	9	4.5	36	18
MILD	30	15	55	27.5
MODERATE	15	7.5	31	15.5
SEVERE	8	4	16	8
LEG / BACK PAIN:				
NONE	2	1	26	13
MILD	17	8.5	46	23
MODERATE	26	13	43	21.5
SEVERE	17	8.5	23	11.5
IRRITABILITY:				
NONE	13	6.5	32	16
MILD	25	12.5	57	28.5
MODERATE	18	9	41	20.5
SEVERE	6	3	8	4

Table 2: Details about dietary intake of the participants: (n=200)

Nutrition	Frequency (n)	Percentage (%)
Junk foods		
• On alternate days	11	5.5
• Twice a week	56	28
• Once a week	91	45.5
• Never	42	21
Sweetened soft drinks		
• Daily	1	0.5
• On alternate days	23	11.5
• Not often	157	78.5
• Never	19	9.5
Green leafy vegetables		
• Once a week	79	39.5
• twice a week	100	50
• once a month	16	8
• twice a month	5	2.5
Fish / Fish oils:		
• once a week	44	22
• twice a week	78	39
• alternate weeks	23	11.5
• never	55	27.5
Fiber rich vegetables :		
• Two serves per day	4	2
• One serve per day	52	26
• On alternate days	80	40
• Not often	64	32
Intake of Multivitamin Tablets:		
• Yes	13	6.5
• No	187	93.5

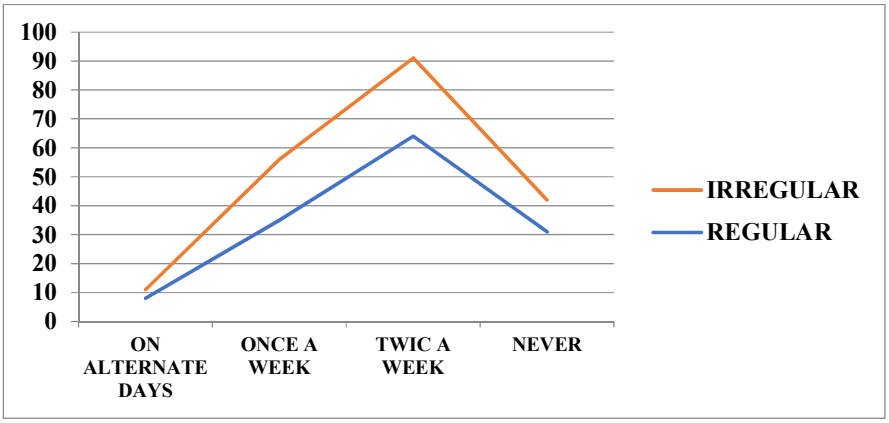

Figure 2: Frequency of junk food intake in women with regular and irregular periods

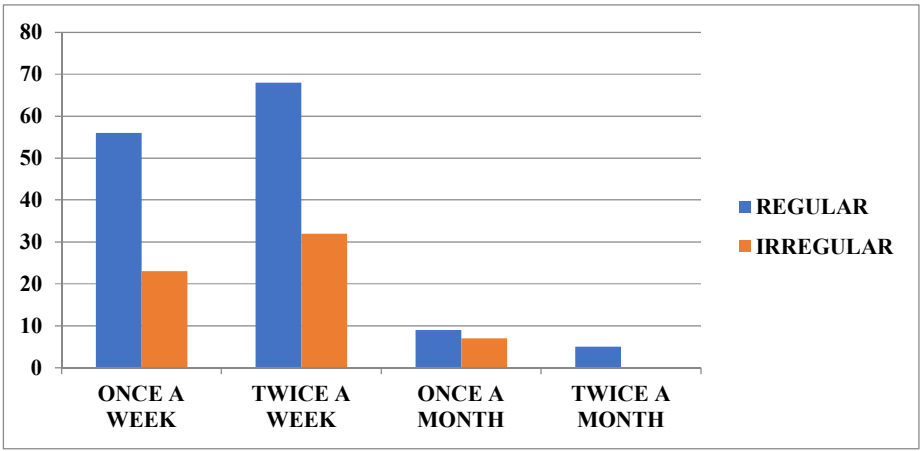

Figure 3: Intake of Green Leafy Vegetables

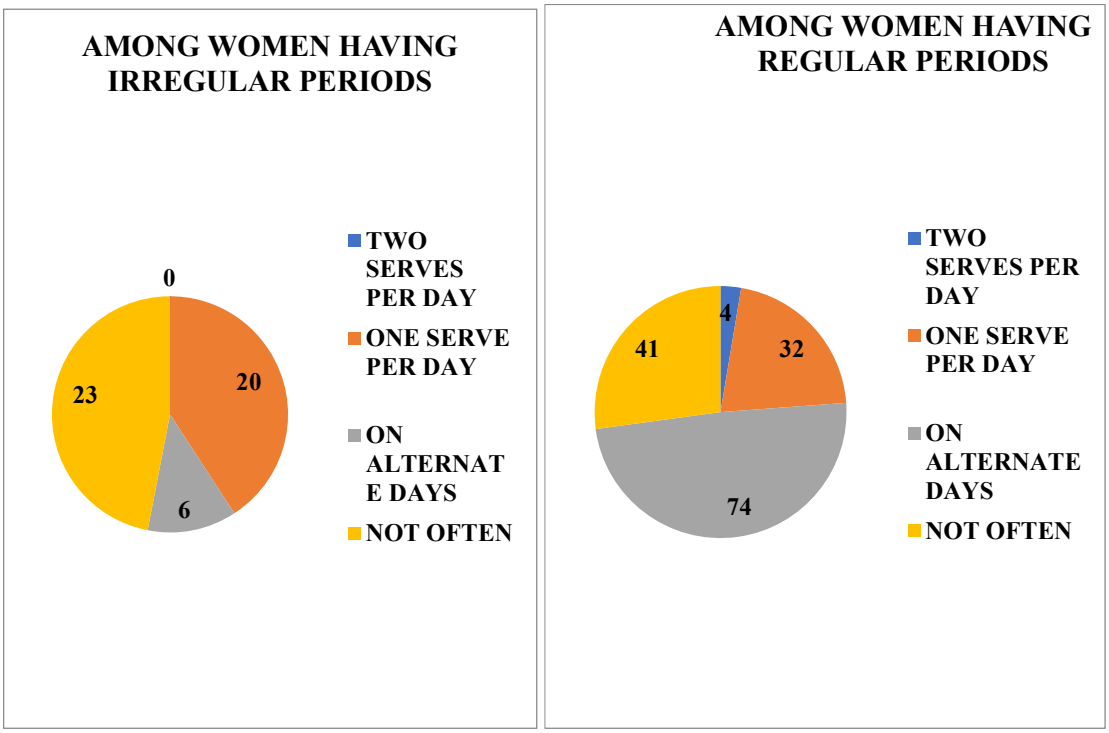

Figure 4: Depicts the intake of fibre rich vegetables (lettuce, carrot, beetroots)in the diet

DISCUSSION

The main intention of the study is to establish that nutrition and lifestyle also plays an important role in menstrual health of women in addition to hormones. In the present study, 200 women were participated out of it 139 women has regular menstrual pattern, only 61 has irregular cycles.This can also be a reason for inconsistent results. In addition the study was performed among healthy students from schools and colleges and not from those referring to health care centres. Hence almost 63.5% has normal BMI, only 17.5% were overweight.

According to eating pattern, it proves that women who has regular and frequent intake of green leafy vegetables have regular menstrual pattern.Similarly women with two or one serve of fibre rich vegetable intake have regular menstrual pattern. Women who are underweight according to BMI (20 women), about 70% (14) women experience Dysmenorrhea. According to an article published in Journal of clinical and diagnostic research, premenstrual symptoms are more common among women who are overweight, in those eating junk food regularly and those who were not doing regular physical activity[9].

Dysmenorrhea is also high in girls who are underweight. A study included urban Spanish adolescents proved that nearly 40% of them tried to lose weight for cosmetic reasons which are significantly associated with heavy bleeding and dysmenorrhea. Inadequate dietary habits can influence the gynecological health of the women both in future and present**[10]**. An article established in European journal of obstetrics and gynecology and reproductive biology proves that Lower consumption of fish,eggs, liver, and fruits is associated with dysmenorrhea in adolescent girls**[11]**. In the present study out of 56 participants who takes junk food on alternate days 23 (50%) of them experience dysmenorrhea.

Polycystic ovarian disease (PCOD) is another cause for menstrual irregularities, also leading to infertility. Studies prove that young women with PCOD have high levels of insulin in their blood and it affects in maintaining healthy weight. Carbohydrate foods rich in fibre like gains, whole wheat, fruits, and vegetables keep the insulin level low. In the present study out of 40 women who were diagnosed with PCOD, 17 (42.5%) of them has regular intake of junk foods and some of them might be trying to reduce the frequency who would have been taking it regularly before being diagnosed

CONCLUSION

To conclude, lifestyle modifications like avoiding junk foods and sweetened soft drinks and including protein and fibre rich food with regular exercise can improve menstrual health of women and prevent

developing poly cystic ovarian disease and infertility. PCOD is a lifestyle disorder. As it is commonly diagnosed, it is mandatory for health professionals to educate some knowledge about how lifestyle factors influence the disease for the patients with PCOD.

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- Conflict of interest : None declared
- Ethical approval: The study was approved by the Institution Ethical Committee, Sree Balaji Medical College.

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