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A Study of Menstrual Disorders in Reproductive Age Group and Its Correlation with Biological Variables

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ABSTRACT

The present study was a cross sectional design based on the structured questionnaire on a sample size of 384. The self-reported information about the menstrual cycles can be influenced by subjective bias related to the memory and recall of all the events that have happened earlier. In the present study, we attempted to correlate various lifestyle factors like BMI, Consumption of Junk Food and Physical Exercise with the menstrual problems experienced by the females. In this study, 52% of the participants had regular/fairly regular menstrual cycles, whereas 11.5% had irregular cycles and 35.7% had nearly always regular cycle. Dysmenorrhea and premenstrual mood swings were experienced by significant number of students with normal body weight is 14.84%. Dysmenorrhea, premenstrual mood swings and heavy flow were the main cause for absence from class/college/workplace. We come to know that association between life style and menstrual disorder. Infrequent cycles were associated with being over weighted and consumption of junk food, p-value for H01 is 0.032 < 0.05, so there is association between BMI and Irregular menstrual cycle. However, p-value for H02 is 0.000094 < 0.05, so there is association between junk food and irregular cycle. Whereas p-value for H03 is 0.119 > 0.05 so there is no association between exercise and irregular cycle. Many other association we made in this paper.

Keywords: Life style, Stress, Menstrual Disorders, Descriptive Statistics, Chi – Square test

I. INTRODUCTION

Menstruation is a normal physiological phenomenon in a woman indicating her capability for procreation. However, this normal phenomenon is not an easy one and is often associated with some degree of suffering and embarrassment. Almost every woman does experience one or the other type of menstrual problem in her life time. The prevalence of menstrual disorders has been recorded as high as 87% [1]. The list of menstrual disorders may range from amenorrhea, irregular cycles and abnormal flow to dysmenorrhea and premenstrual symptoms. Dysmenorrhea is the commonest gynaecological disorder among women, with a prevalence of 60% to 93% [2]. Dysmenorrhea is pain perceived before or during menstruation, confined to lower abdomen, back and thighs, and of varying severity, ranging from mild, moderate to severe. Regular menstrual cycle occurs every 28-35 days ±2-3 days in which the menstrual flow lasts for 3-5 days with an average loss of 30-80 ml of blood. Irregular menstrual cycle is any deviation from normal duration. Menorrhagia denotes regular cycles with bleeding either excessive in amount (>80ml) &/or, in duration with flow lasting >7 days. Hypomenorrhoea is scanty menstrual flow which lasts for <2 days. Inpolymenorrhoea, the interval between two consecutive cycles is <21 day and in oligomenorrhea, this interval may extend to >35 days. Pre-menstrual syndrome encompasses a wide variety of cyclic, recurrent, physical, emotional and behavioral symptoms occurring during lateluteal phase of

menstrual cycle and subsiding with the beginning of menses. These symptoms include weight gain, headache, fatigue, nervousness, irritability and mood swings [3, 4].

The definition of 'disorder' as a transitive verb means "to disturb the regular or normal functions of", as a noun it means an "abnormal physical or mental condition" (MedlinePlus Medical Dictionary, Merriam-Webster, 2005). The question of whether menstrual pain/dysmenorrhea is a considered to be a menstrual disorder is probably governed by its severity, requirements for medication and interference on life activities. The word 'dysmenorrhea' seems to imply more than just 'menstrual pain'.

Participants are at high risk for developing menstrual irregularities due to stressed lifestyle, irregular food and exercise habits. Menstrual irregularity over prolonged periods of time can cause an ovulation, endometrial hyperplasia and infertility as well as deterioration in the quality of life. Dysmenorrhea and PMS are most commonly related to absence from class/college, limitation in social, academic, sports and daily activities [5, 6].

Many studies have been conducted earlier to address the problems related to menstrual abnormalities in young students, yet few reports are available on effect of stress on menstrual patterns in medical students in India as well as in different parts of the world [5-12].

A number of medical conditions can cause irregular or missed menses which can be diagnosed and treated at early stage. However, this part of women's health is mostly neglected by primary health care. More than 90% of menstrual problems are preventable just by early detection and appropriate treatment. An etiological relationship between menstrual disorders, body mass index (BMI), dietary habits, physical exercise and psychological stress may be sought for early prevention.

Menstrual bleeding patterns are characterized by:

- Cycle length and regularity of occurrence – number of days from the first day of bleeding from one menstruation to the first day of bleeding at the next menstruation;
- Duration of bleeding – the number of days that menstrual bleeding occurs;
- Heaviness of bleeding – usually varies between mild-moderate-heavy during each day of menstruation.

With this backdrop, across-sectional study was conducted in West Zone of Rajkot City, India to determine average age of menarche, the patterns of menstrual cycles, prevalence and types of menstrual disorders and their association with family history, body mass index (BMI), dietary habits, physical exercise, stress and college absenteeism.

II. OBJECTIVE

As now-a-days menstruation is very burning question of females. So, the study was aimed to evaluate about the prevalence of menstrual disorders in reproductive age group in females and to compare about its correlation with biological variables and its effects on the life style, psychological stress and school/college/workplace absenteeism, etc. in females.

III. METHODOLOGY

A cross sectional prospective study was conducted at West Zone of Rajkot City, India on 384 female reproductive age group. Informed consent was obtained from all the participants.

All the participants willing to participate in the proposed study were explained about the purpose of the study and were given information on the questionnaire (Based on Primary Data). Participants who were willing and had attained menarche were included in the study.

Background information of the participants regarding age, religion, social status, family history of related menstrual abnormality, dietary habits, physical exercise and stress was collected. Anthropometric measurements including weight, height and body mass index were collected from all the subjects. Details of menstrual history including age at menarche, average length of menstrual cycle, duration of flow, presence of dysmenorrhea or any preceding symptoms like headache, weight gain, water retention, mood swings and irritability suggesting premenstrual symptoms were also collected from the individuals. Subjects were also evaluated for any known cause of their menstrual disorder. We also recorded the number of students with menstrual abnormalities severe enough to warrant skipping of classes and needing medication.
Any known causes for menstrual disorder was also recorded. Any menstrual disorder, which was severe enough to warrant skip of class or required to administer medications (like analgesics or antispasmodic) were also recorded.

The self-explanatory questionnaire was distributed to the participants. Any difficulty/clarifications related to the questionnaire were attended by me. Prevalence of each menstrual abnormality was calculated and expressed as proportions. **Data were analysed by Chi-square test.** Statistical significance of differences between groups was tested. **Statistical analysis was done using Statistical Package for Social Sciences (SPSS 23.0) Software, Microsoft Excel and p-value <0.05 was considered as statistically significant.**

IV. DATA ANALYSIS

In the present study, 384 females of West Zone of Rajkot City, aged between 15 – 45 years were interviewed through a structured questionnaire. All females belonged to middle or upper class of social strata, from which 207 females were from Joint Family & 177 females were from Nuclear Family. Overweight and obesity was found in 22.4% of the cases, 23.7% were underweight and 53.9% were of normal weight.

Data was entered into SPSS (Statistical Package for Social Sciences) database by me. An analysis of data entry was done by myself. The data set was also visually examined by myself for errors and inconsistent and missing data. Each questionnaire (N=384) was scrutinized and entered into an excel database. The database fields were based on respondent reports of work absence, pain and medication use, number of symptoms experienced, interference with life activities, etc.

The most commonly listed symptoms were frustration, anger, irritability, tired and tensed in premenstrual mood swings.

Table 1. Demographic and Lifestyle Characteristics of the Participants

Character	No. of Subjects	Percentage (%)
BMI GROUP		
Lower Weight	91	23.7
Normal	207	53.9
Over Weight	69	18.0
Obese	17	4.4
Total	384	100
Junk Food Consumption		
1 day/Week	192	50.0
2-3 day/Week	122	31.8

4-7 day/Week	70	18.2
Total	384	100
Junk Food Consumption Increased During Stress		
Yes	54	14.1
No	330	85.9
Total	384	100
Addiction Increased During Stress		
Yes	78	20.3
No	306	79.7
Total	384	100
Exercise		
Daily	45	11.7
2-3 days/Week	87	22.7
4-5 days/Week	37	9.6
Never	215	56.0
Total	384	100

Table 2. Menstrual patterns and abnormalities among the Participants

Variables	No. of Subjects	Percentage (%)
Age group(Age at Menarche)		
1-10	1	.3
11-13	103	26.8
14-16	263	68.5
17-20	17	4.4
Total	384	100
Amount Of Flow		
Mild (<= 2 pads/Day)	211	54.9
Moderate (3-5 pads/Day)	150	39.1
Heavy (>= 6 pads/Day)	23	6.0
Total	384	100
Menstrual Cycle Length		
<= 20 days	17	4.4
21-35 days	348	90.6
>= 35 days	19	4.9
Total	384	100
Dysmenorrhea		
Yes	157	40.9
No	227	59.1
Total	384	100
Premenstrual Mood Swings		
Yes	158	41.1

No	226	58.9
Total	384	100
Take Any Analgesic Or Other Medication		
Yes	111	28.9
No	273	71.1
Total	384	100

Association between Lifestyle and menstrual cycle Disorder (Irregular Cycle)

H_{01}: There is no association between BMI and Irregular cycle.

H_{02}: There is no association between junk food and Irregular cycle.

H_{03}: There is no association between exercise and Irregular cycle.

Table 4

Variables	Irregular Cycle							
	Don't Know	Fairly Regular	Irregular	Nearly Always Regular	Regular	Total	Chi-square test	P Value
BMI								
Lower Weight	3	6	13	36	33	91	22.548	0.032
Normal	1	38	24	74	70	207		
Over Weight	0	11	8	24	26	69		
Obese	0	2	0	2	13	17		
Total	4	57	45	136	142	384		
Junk Food								
1 day/week	1	36	30	66	59	192	31.989	0.000094
2-3 day/week	3	18	8	50	43	122		
4-7 day/week	0	3	7	20	40	70		
Total	4	57	45	136	142	384		
Exercise								
Daily	1	11	7	15	11	45	17.88	0.119
2-3 days/week	0	13	13	38	23	87		
4-5 days/week	0	5	5	11	16	37		
Never	3	28	20	72	92	215		
Total	4	57	45	136	142	384		

Association between Lifestyle and menstrual Disorder (Amount of Flow)

H_{01}: There is no association between BMI and amount of flow.

H_{02}: There is no association between junk food and amount of flow.

H_{03}: There is no association between exercise and amount of flow.

Table 5

Variables	Amount of Flow					
	Mild (<=2 pads/day)	Moderate (3-5 pads/day)	Heavy (>= 6 pads/day)	Total	Chi-square test	P Value
BMI						
Lower Weight	64	27	0	91	16.002	0.014
Normal	105	86	16	207		
Over Weight	35	28	6	69		
Obese	7	9	1	17		
Total	211	150	23	384		
Junk Food						
1 day/week	100	76	16	192	5.011	0.286
2-3 day/week	73	44	5	122		
4-7 day/week	38	30	2	70		
Total	211	150	23	384		
Exercise						
Daily	23	18	4	45	3.131	0.792
2-3 days/week	46	35	6	87		
4-5 days/week	23	11	3	37		
Never	119	86	10	215		
Total	211	150	23	384		

Association between Life Style and Dysmenorrhea

H_{01}: There is no association between BMI and dysmenorrhea.

H_{02}: There is no association between junk food and dysmenorrhea.

H_{03}: There is no association between exercise and dysmenorrhea.

Table 6

Variables	Dysmenorrhea				
	Yes	No	Total	Chi-square test	P Value
BMI					
Lower Weight	39	52	91	1.656	0.647
Normal	88	119	207		
Over Weight	24	45	69		
Obese	6	11	17		
Total	157	227	384		
Junk Food					
1 day/week	86	106	192	2.497	0.287
2-3 day/week	46	76	122		

4-7 day/week	25	45	70		
Total	157	227	384		
Exercise					
Daily	19	26	45	4.47	0.215
2-3 days/week	34	53	87		
4-5 days/week	21	16	37		
Never	83	132	215		
Total	157	227	384		

Association between Life Style and Pre Menstrual Mood Swings

H_{01}: There is no association between BMI and premenstrual mood swings.

H_{02}: There is no association between junk food and premenstrual mood swings.

H_{03}: There is no association between exercise and premenstrual mood swings.

Table 7

Variables	Pre Menstrual Mood Swings				
	Yes	No	Total	Chi-square test	P Value
BMI					
Lower Weight	28	63	91	7.813	0.05
Normal	97	110	207		
Over Weight	28	41	69		
Obese	5	12	17		
Total	158	226	384		
Junk Food					
1 day/week	92	100	192	7.531	0.025
2-3 day/week	41	81	122		
4-7 day/week	25	45	70		
Total	158	226	384		
Exercise					
Daily	18	27	45	19.283	0.000239
2-3 days/week	53	34	87		
4-5 days/week	15	22	37		
Never	72	143	215		
Total	158	226	384		

Association between Life Style and Changes in Daily Activities

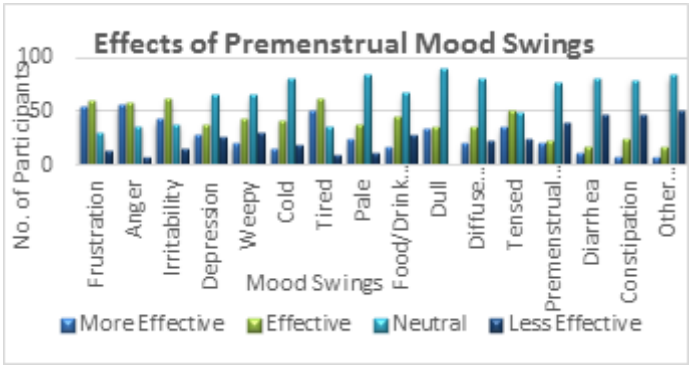
H_{01}: There is no association between BMI and changes in daily activities.

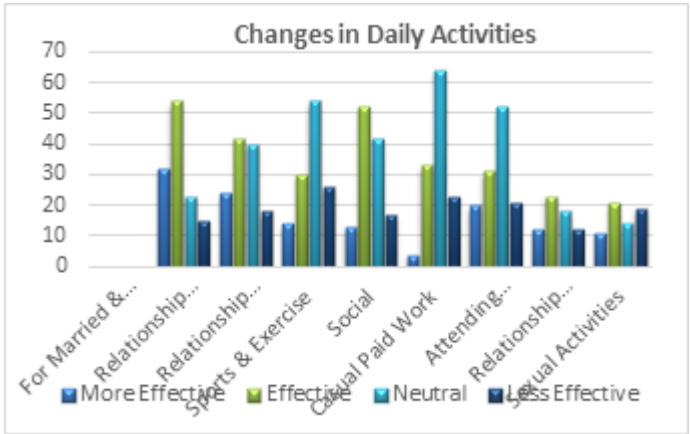
H_{02}: There is no association between junk food and changes in daily activities.

H_{03}: There is no association between exercise and changes in daily activities.

Table 8

Variables	Changes in Daily Activities				
	Yes	No	Total	Chi-square test	P Value
BMI					
Lower Weight	32	59	91	0.533	0.912
Normal	66	141	207		
Over Weight	21	48	69		
Obese	5	12	17		
Total	124	260	384		
Junk Food					
1 day/week	69	123	192	3.228	0.199
2-3 day/week	32	90	122		
4-7 day/week	23	47	70		
Total	124	260	384		
Exercise					
Daily	19	26	45	18.756	0.00031
2-3 days/week	37	50	87		
4-5 days/week	18	19	37		
Never	50	165	215		
Total	124	260	384		





V. DISCUSSION

Menstruation is an inevitable part of a woman's life and an important indicator of normal sexual and reproductive health. The changes in the normal menstrual pattern of female in the reproductive age group may affect physical, physiological and psychological well-being. However, this normal phenomenon is not associated with some degree of sufferings, inconvenience and embarrassment.

Studies on menstrual abnormalities in college students have been conducted in various parts of India and neighbouring countries in relation to the lifestyle and the types of menstrual abnormalities and their correlation with BMI, consumption of junk food and physical exercise.

In the present study, we attempted to correlate various lifestyle factors like BMI, Consumption of Junk Food and Physical Exercise with the menstrual problems experienced by the females. 52% of the participants had regular/fairly regular menstrual cycles, whereas 11.5% had irregular cycles and 35.7% had nearly always regular cycle. A study conducted among the females of west zone of Rajkot city, Gujarat, India. Dysmenorrhea and premenstrual mood swings were experienced by significant number of students with normal body weight is 14.84%. Out of 157(40.89%) cases with dysmenorrhea, 77(49.04%) experience severity that warranted medical attention. Dysmenorrhoea, premenstrual mood swings and heavy flow were the main cause for absence from class/college/workplace. We have to observed significant association between the physical exercise and menstrual abnormalities.

VI. CONCLUSION

Menstruation is a normal physiological process, however any deviation from normalcy is usually considered as minor ailment. Menstrual abnormalities can cause severe health problems like polycystic ovarian disease, hyperlipidemia, obesity, infertility, social withdrawal, psychological problems, low self-esteem and class/college absenteeism. The timely intervention after understanding the problem on individual basis can be done by conducting studies in order to provide healthy clinicians to the community, who can treat similar problems in the surrounding population and help the society on a larger scale.

Menstrual pain and symptoms in teenagers and in every female should not be ignored. Treatment is available to manage the pain and symptoms of menstruation, while ensuring normal daily functioning and minimal interruption to female's lives. Menstrual disorders, such as endometriosis, should be suspected and investigated where menstrual pain and symptoms are persistent, non-manageable and interfering in the normal healthy development and functioning to which every teenage girl is entitled.

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