To study the impact of lifestyle over menstrual pattern in medical students

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Abstract

Introduction: Stress is an integral part of medical profession. Sedentary lifestyle has a great impact over many health problems. Reproductive health is one of the contributing factor to overall female health. Reproductive health problems have significant role in woman's total life. These problems also increases stress further & have major effect over psychosocial health. All are intermingled with each other. The purpose of the study is to see the effect of life style over the menstrual pattern & so on to the reproductive health.

Materials and Methods: This is a cross sectional study conducted in DR. D. Y. Patil Hospital in January 2019 in Female Medical Students (n=159).They were provided with prevail dated questionnaire which included various aspects of lifestyle and menstrual pattern. Data collected was analysed analysed by using SPSS (version 23.0).

Results: In present study 82% & 81.7% of students were facing stress & dysmennorhoea respectively. Hypothyrodism percentage is 21.3% i.e. quite high. All participants were doing yoga but frequency of doing being varied. All were junk food eater but percentage of occasional eaters was only 18%. In present study, 76% participants were having premenstrual symptoms.

Conclusion: There is no significant association of life style over menstrual disorders except dysmennorhoea. In present study incidence of PCO and Hypothyroidism was quite high which is worry some. Both have got significant association with junk food and stress. Yoga is found to improve blood flow during menstruation. Still to come on concrete opinion we need more studies from India including other field also.

Keywords: Menstrual pattern, Junk food, Yoga, stress.

Introduction

Menstruation is the integral part of women's life in reproductive age group. Though its physiological phenomenon, it may not be so easy to go through it. Menstrual disorders may be in the form of dysmenorrhoea, polymennorhea, menorrhagia, irregular and scanty menses and premenstrual symptoms. Prevalence of menstrual disorders related health issue are regarded as high as 87%[1] of them dysmenorrhoea is commonest with prevalence of up to 90%.[5-7] Severe dysmenorrhoea curtails their physical activity. It may be spasmodic after onset of menses or congestive prior to menses.

Normal menstruation is regular cyclical bleeding occuring after every 21 to 45 days for 3-5 days with an average loss of 20-80ml.[4] If blood loss occurs >80ml in amount and in duration > 7 days, it is called menorrhagia. Passage of clots is also taken as s/o menorrhagia. Hypomennorhea is scanty menses <2 days. If duration is <21 days, it is called polymennorhea and if it is >35 days, it is called oligomennorhea. Premenstrual Syndrome comprises of psychological ill health leading to anxiety, depression, irritability, mastalgia which affects behavioural factors. The hormones which regulate cyclical endometrial changes are based on ovarian condition. Disorders of menstruation can be caused by emotional stress, significant weight fluctuation, endocrine disorders (hypo/hyperthyroidism), disorders of hypothalamo-pituitary ovarian axis and other metabolic disorders.[14]

Various studies has been conducted to find out that dysmenorrhoea is the most prevalent menstrual problem during adolescence.[5,7]

Singh A, Sood M has shown that dysmenorrhoea and premenstrual symptoms are most commonly related to absence from academic curriculum and there is limitation for daily activities.[2,3] Menstrual patterns can be affected by many factors including age, ethnicity, family history, smoking, physical activity and dietary habits.[8] Association between stress and menstrual disorders has been documented.[10] Medical students are reported to be under constant academic stress due to vast curriculum[13] resulting in menstrual disorders in female medical students[11,12]

The associated medical conditions like hypothyroidism and PCO if diagnosed and treated early, many menstrual disorders can be corrected. But there are other variables like BMI, dietary habits, physical exercises and psychological stress which can affect the menstrual pattern. These factors need to be studied which may modify the risk of developing menstrual irregularities.

Materials and Methods

The present study was conducted at Dr. D.Y. Patil Hospital, Kolhapur, Maharashtra, India. This is cross sectional study conducted in undergraduate female medical students in the month of January 2019. About 159 undergraduate female students willingly enrolled in the study. They were provided with a prevalidated questionnaire which included various aspects of lifestyle and menstrual pattern. The students filled the questionnaire without disclosing their names. The filled

questionnaire was collected immediately to prevent the bias. The collected data was analysed by using SPSS (version 23.0). Association between all qualitative variables is observed by using chi-square test of association ($p<0.05$) is considered statistically significant at 5% level of significance.

The objectives of the present study are: 1) To determine average age of menarche. 2) To study pattern of menstrual cycle in medical students. 3) To study prevalence and types of menstrual disorders. 4) To find out association of menstrual disorders with life style and stress.

Menstruation is an integral part of every woman in her reproductive life irrespective of fields they are working. Women have to stay away from her home to achieve the goals in her life. It may be professional education, jobs and business. She has to do multitasking including managing her home & outside activities. Medical profession is highly stressful. The society looks towards this profession with great expectation and demands. To pursue a medical degree, student have to study hard & so they are at high risk for stress (2). This stress ultimately affects their life & so on to their menstrual pattern. Hypothalamo-pituitary axis has to be properly functioning for physiology of menstruation. This may get affected by all the biological variables. These factors can be modified.

The impact of lifestyle and physical activities like exercise, yoga, academic stress on menstrual pattern have been studied in various parts of countries including India. In present study, we tried to find the association of various lifestyle patterns, behavioural patterns, diet, physical activities and environmental impact and heavy burden of academic strees on their menstrual pattern.

Observations and Results

Table 1: Demographic Characteristics of the patients

Characteristics	Percentage	No. of Subjects (n=159)
Age group of medical students		
<22yrs	2.13	03
22-25yrs	63.52	101
>25yrs	34.35	55
Address		
Rural	12.57	20
Urban	87.43	139
Marital Status		
Married	13.2	21
Unmarried	86.8	138

The above table shows demographic data. Average age of participants is 24.68+- 2.07 years. Out of 159 students. (87%) were from urban area.13% of them were married.

Table 2: Lifestyle chartacteristics of the participants

Characters	Percentage	No. Of subjects (n=159)
Food habits		
Mix	52.8	84
Non veg	20.1	32
Veg	27.1	43
Frequency of eating junk food		
1/wk	59	94
2-3/wk	23	37
Occasional	18	28
Dieting		
No	74.8	119
Yes	25.2	40
Yoga		
Daily	16.3	26
Occasional	58.4	93
Weekly	25.3	40
Stress		

No	14.4	23
Yes	85.6	136
Addiction		
Tea	34	54
Coffee	20	32
Chocolate	66	73

The above table elaborates lifestyle characteristics of the participants.27% were pure vegetarian. All participants were doing yoga but frequency varied. More than half i.e. 58.4% were doing it irregularly and occasionally. High percentage (85.5%) was experiencing stress of various types. About 25.1% were on diet. Approximately 59% were eating junk food, 2-3 times/week which is quite high. There was no association of yoga with amount of menstrual cycle irregularity..

Table 3: Menstrual pattern among medical students

Characters	**Percentage**	**No. Of subjects (n=159)**
Age of menarche		
11yrs	23	37
12yrs	41	65
13yrs	32	50
14yrs	4	7
Duration of flow		
<2 days	8	13
2-5 days	81	129
5-7 days	11	17
Amount of flow		
<2 pads/day	74.8	119
2-4 pads/day	23.9	38
4 pads/day	1.25	2
Cycle regularity		
Irregular	36	58
Regular	64	101
Dysmennorhoea		
Yes	82	130
No	18	29
Pms		
No	24	38
Yes	76	121

Above table shows that the average age of menarche was (12.1+/_ 1.22). About 81% of participants had normal duration of flow. Approximately 74.8% participants were changing less than 2 pads per day. Only 36% participants showed irregular cycles. Dysmenorrhoea and premenstrual symptoms were the complaints in 82% and 76% respectively

Table 4: Medical disorders among medical students

Characters	**Percentage**	**No. of subjects (n=159)**
Family history of menstrual disorders		
No	66.1	105
Yes	33.9	54
History of hypothyroidism		
No	78.7	125
Yes	21.3	34
History of pcos		
No	63.5	101
Yes	36.5	58
Investigations		
HB	72.3	115
USG	38.3	61
TFT	32.7	52

The above table shows about 21.3% had hypothyroidism for which 32.7% had undergone thyroid function test. The incidence of PCOS was about 36.4% for which 38.3% were investigated for ultrasonography

Table 5: Association between lifestyle & menstrual disorder

Lifestyle	Cycle regularity		Duration of bleeding			Amount of bleeding		Dysmennorhoea	
	Regular	Irregular	<2days	2-5 days	>5 days	<4 pads/day	>4 pads/day	Yes	No
Junk food	123(77.3%)	36(22.6%)	12(7.4%)	129(81.1%)	17(10.6%)	119(74.8%)	40(25.1%)	130(81.7%)	29(18.2%)
	P = 0.58		P = 0.40			P =0.031**		P = 0.92	
Yoga	123(77.3%)	35 (22%)	12(7.4%)	129(81.1%)	17(10.6%)	119(74.8%)	40(25.1%)	130(81.7%)	29(18.2%)
	P = 0.25		P =0.81			P =0.0499*		P =0.82	
Stress	122(76.7%)	37(23.2%)	13(8%)	129(81%)	17(11%)	157(98.8)	2(1.2%)	130(82%)	29 (18%)
	P=0.62		P=.92			P=.91		P=.48	
Dieting	123(77.3%)	36(22.6%)	12(7.54%)	129(81%)	17(11%)	119(74.8%)	40(25.1%)	130 (82%)	29 (18%)
	P= 0.99		P=0.14			P=0.34		P=0.55	

The above table elaborates on association of life style and menstrual disorders. Participants consuming junk food and doing yoga, 74.8% are changing less than 4 pads per day. About 77.3% had normal cycles. Participants with stress 76.7% had regular cycles and 98.8% had normal menstri=ual flow but 82% of them had dysmenorrhoea

Table 6: Assocation between lifestyle, PCOS & hypothyroidism

Lifestyle	PCOS		Hypothyroidism	
	Yes	No	Yes	No
Junk food	58 (36.4%)	101(63.5%)	125 (78.6)	34(21.4%)
	P=0.001**		P=0.047*	
Yoga	101 (63.5%)	58(36.4%)	125 (78.6%)	34(21.4%)
	P=.60		P=0.047	
Stress	58 (36.4%)	101(63.5%)	124 (77.9%)	35(22%)
	P=.11		P=0.047*	
Dieting	43 (27%)	114(70.6%)	114 (70.6%)	45(28.3%)
	P=0.83		P=0.31	

States association between life style PCOS and hypothyroidism. There is significant correlation between consumption of junk food and incidence of PCOS (p= 0.001) and hypothyroidism (p=0.047). Strees is significantly correlated with hypothyroidism (p=0.047%) but not so with PCO (p=0.11)

Discussion

The mean age of participants was 24.68+- 2.07 years. The present study showed mean age of menarche was 12.10+/- 1.22 years. which suites to Indian standard reported by different geographical area of India and other parts of world. 12.5+/- 1.52 years (5); 12.6+/-1(24) 12.5 years (23);13.9+/- 1.8 years (25).13.57+/-1.23 years (8), 14.2 years (9); 12.4+/- years (23). Genetic configuration, environmental and socio economic factors and general health are contributing factors for age of menarche. In Medical college, 87% students were from urban area (As the study was conducted in medical college) and 86.7% were unmarried.

In present study, although high number of students (82%) were having junk food atleast once in a week, no significant association was found with menstrual irregularity and food habits(veg & non veg). Similar finding have been noticed in previous studies.[7] The present study also found significant correlation of junk food with PCOS (P= 0.001) Association of high BMI and junk food has been proved. This correlates with our finding.

Dysmenorrhoea and premenstrual symptoms are the common disorder that affects more than 50% of the menstruating women. The proposed cause of pain is

dysmenorrhoea is excess production of prostaglandins (PG) in the endometrial during the ovulatory cycle. It was shown that women with dysmenorrhoea have higher levels of PG in their plasma and menstrual discharge that women without dysmenorrhoea. Pre-menstrual symptoms are experienced prior to menstruation due to changes in blood levels of estrogens as well as progesterone. although high number of students (82%) were having junk food at least once in a week. High number (82%) of students has dysmenorrhoea but its association with junk food is not correlated in present study. This finding is contradictory to other studies which dysmenorrhoea and premenstrual symptoms (PMS) is common in junk food eaters.[7]

Jennifer Oates, PhD, King's College London, U.K., assessed the evidence from 15 published studies on the effects of yoga practice on problems such as amenorrhea, oligomenorrhea, dysmenorrhoea, premenstrual syndrome, and premenstrual dysphoric disorder. They reported that enhanced mood, reduced pain, increased wellbeing, and a heightened relaxation response among the improved

outcomes reported by women who participated in a yoga intervention, as reported in the article entitled "The Effect of Yoga on Menstrual Disorders: A Systematic Review." In present study 41.4% students were doing yoga regularly. The significant association with amount of flow has been found in our study. Students have high percentage of normal flow. (P = 0.0495) though there was no any correlation with improvement of dysmenorrhoea. Some studies showed that students doing regular physical activity have less menstrual abnormalities.[21]

Medical students have stressful life and menstruation related disorders commonly.[4,6,8] Bogdan F covaliu et al observed that there is statistically significant association of low intensity stress with the severity of abnormal uterine bleeding,. As the stress level increases, there is higher intensity of back pain, joint and muscle pain.[20] About 85.5% students were experiencing stress which was quite high. Psychological stress activates hypothalamo pituitary adrenal axis resulting in increased cortisol levels which is related to functional menstrual disorders. Cortisol increases brain function and slows other non essential body functions such as cellular growth, digestion and reproduction (Kalantroid et al 2004). Consequently synthesis and metabolism of gonadotrophins and estrogens are suppressed (Constantine et al 2002) that disturbs in menstrual cycle. In present study no significant association have been found with menstrual irregularities though we have not categorised stress by any standard questionnaire. Study conducted in malasya does not show any association between stress levels and menses patterns.[17] Similar findings were reported by Clarvit. In her study, she found that there was no association between perceived stress and menstrual problem. Some studies showed strong association between two,[9] On the contrary, other studies reported that stress score is a predictor for irregular menstrual cycle.[17]

About 54% students were addicted to either tea or coffee which might be associated with increased stress. This is one of the ways to cope with stressful situation. It may include tea, coffee addiction and overeating. Stressful life events with poor coping skills may impact risk of addiction through increasing impulsive responding and self medication though it may not be possible to eliminate the stress through addiction. Stress is the key factor in addiction initiation, maintenance and relapse and thus failure for deaddiction.[15] This controlled activation of the HPA axis may result in the production of an internal state of arousal or stimulation that is actually sought by the individual (i.e., the sensation-seeking hypothesis).[16]

In our study 81% have average duration of flow & 74.8% had to change (2 pads per day) which has positive correlation with yoga. According to Begum et al 100(57.5%) respondents have average, menstrual flow while > 2 (43.4%) had scanty and 2(1%) had heavy flow.

No significant association was found with irregular cycles (30%) and menorrhagia (1.25%) in the quantity with yoga in present study though we found scanty menses and irregular cycles in 74.8% of our study group. We also found hypothyroidism in 21.3% participants which quite high. The association might be because of high incidence of PCOS. In present study we have found significantly less incidence of menorrhagia in participants who are practising yoga and consuming junk food. (p= 0.0499& p=0.031).

In present study 21.3% were having hypothyroidism which is quite high, 32.7% had done their thyroid function test. The correlation between thyroid disorders and menstrual problems are well known. This coincides with the study conducted by Nangia Sangita Ajmani, et al[18] In present study we have found statistically significant correlation between hypothyroidism and junk food eaters and also students doing yoga significantly had less chances of hypothyroidism.(p=0.047)

Research suggests that selenium deficiency may be linked to developing Hashimoto's thyroiditis and hypothyroidism.[22] Some goiterogenic food like Chinese cabbage, cauliflower which are used in junk food like Manchurian are consumed more by students. The present study findings support this association.

Conclusion

The present study demonstrates that there is no any significant association between academic stress and menstrual disorder. Though we found yoga have a positive impact over menstrual flow. It improves menstrual flow. There is significant correlation of junk foods with PCOS and hypothyroidism in the medical colleges the education regarding physical, social and mental health should be given to the students. Though menstruation is a normal physiological phenomenon, some minor ailments can occur. These can lead to severe health issues like polycystic ovarian disease, obesity, psychological issues, and absenteeism in the college. The medical colleges should make committee for early detection of students with psychosocial as well as menstrual problems. The students identified should be provided psychological support and gynaecological counselling and life style modification like physical activity in the form of yoga, meditation to relieve the stress, sports activities promotion and making the campus junk food free in order to prevent further complications.

Conflict of Interest: None.

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