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Physiology

ASSESS EFFECT OF PERCEIVED STRESS ON MENSTRUAL ABNORMALITY IN HEALTHY FEMALE AGE GROUP 18 TO 35 YEARS OLD.

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ABSTRACT **Background:** Abnormal Uterine Bleeding may be defined as any variation from the normal menstrual cycle such as changes in regularity and frequency, duration of flow or amount of flow. Aim of the present study to assess effect of perceived stress on menstrual abnormality in healthy female age group 18 to 35 years old. **Methods:** Observational study was conducted on 135 healthy female subjects. A Perceived Stress Scale (PSS) along with the Pictorial Blood Assessment Chart (PBAC) was provided to the subjects. The menstrual blood loss and menstrual irregularities was then correlated with the PSS using the Pearson Correlation test for statistical analysis. **Results:** Out of 135 subjects nine subjects (n=9) were having mild stress (0-13), one hundred twenty two subjects (n=122) were having moderate stress (14-26) and four subjects (n=4) were having sever stress (27-40). Pictorial blood assessment out of 135 subjects 2 subjects found to be ≤ 20 ml blood loss; 125 subjects found 20-65 ml blood loss; 6 subjects found to be 66-80 ml blood loss and 2 subjects found to be 81-100 ml blood loss. 90% subjects found to be normal blood loss 20-65 ml; 6% found to be excess blood loss; 2% found to be less than normal and 2% found to be heavy blood loss. **Conclusion:** significant positive correlation was found between perceived stress score (PSS) and menstrual blood loss.

KEYWORDS : Irregular menstrual cycle, menstrual irregularities

INTRODUCTION

The normal menstrual cycle indicates the proper functioning of hormones, having a normal menstrual cycle signifies a healthy hypothalamo-pitutary axis with a normal uterus.[1] AbnormalUterine Bleeding may be defined as any variation from the normal menstrual cycle such as changes in regularity and frequency, duration of flow or amount of flow and it accounts for one third of patients to visits gynecologists.[2] It occurs in 9-14% of women between menarche to menopause, significantly impacting quality of life and imposing financial burden. However, a number of conditions such sudden weight loss, over-exercising, medical conditions and even stress can interfere with a woman's ability to experience a normal menstrual cycle. Both longer duration of menstrual bleeding and cycle irregularity are associated with major depression. It has been defined as excessive menstrual blood loss more than 80ml and it significantly interferes with the woman's physical, social and emotional status. It can occur alone or in combination with other symptoms.[3, 4] This study was planned to study a correlation between the levels of perceived stress and its effect on the menstrual cycle.

METHODS AND MATERIALS

It is observational study. The present study was carried out in 135 healthy female between the aged groups of 18-35 years with normal regular menstrual cycle were selected. The duration of the cycle was 28±2 days. Subject with irregular cycles, pregnant female, gynecological disorders like endometriosis, fibroids, anemia, cancer, history of drug intake affecting menstrual cycle or history of chronic disease were excluded from the study. Institutional ethical committee clearance was obtained before start. The participants were given liberal verbal explanations plus description letters about the topic and the aim of the study with attached consent forms. After the students had duly signed the consent form, a questionnaire along with the PSS (available freely online) and PBAC (prior permission taken) was provided to them. The menstrual blood loss and menstrual irregularities was then correlated with the PSS using the Pearson Correlation test for statistical analysis. Anthropometric measurements was calculated age, height weight and body mass index (BMI). The students were then asked to record their menstrual pattern on the PBAC for the next menstrual cycle and fill the PSS for the month. Based on the answers, PSS was calculated for each participant.

The PSS is the most widely used psychological instrument for measuring the perception of stress.[5] The questions in the PSS ask about feelings and thoughts during the last month. In each case, respondents are asked how often they felt a certain way. 0 = Never, 1 = Almost Never, 2 =Sometimes, 3 = Fairly Often, 4 = Very Often. PSS scores are obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) to the four positively stated items (items 4, 5, 7, & 8) and then summing across all scale items. Range of perceived stress scale are- Individual scores on the PSS can range from 0 to 40 with higher scores indicating higher perceived stress. Scores ranging from 0-13 would be considered mild stress, Scores ranging from 14-26 would be considered moderate stress and Scores ranging from 27-40 would be considered high perceived stress.

Pictorial Blood Assessment Chart and Scoring System used for assessment of menstrual blood loss.[6] During the course of the period, use of tampons and sanitary towels was recorded by placing a tally mark under the day next to the box that represents how stained the sanitary materials were each time they are changed. Any incidence of flooding/clot was recorded by placing a tally mark in the clots/flooding row under the relevant day. Using the above records, the scores were calculated from the PBAC Scoring System and menstrual blood loss was quantified.

Scores

-A lightly stained towel scored 1 point; a moderately stained towel 5 points; a towel which was saturated with blood scored 20 points.

-A lightly stained tampon scored 1 point; a moderately stained tampon 5 points and a tampon that was fully saturated scored 10 points.

-A 50p sized clot scored 5 points and flooding also scored 5 points.

Statistical Analysis

The parameters were statistically analyzed by using descriptive statistical i.e., mean and standard deviation. The p value <0.05 was considered statistically significant and Pearson's correlation test were used to correlate perceived stress score and menstrual abnormality. After completion of data collection, the data were entered in Microsoft Excel. Data were analyzed by using SPSS 16.0 version (Chicago., USA).

RESULTS

Table 1: Base Line Parameters Of Study Population According To Demographic Parameters (Age, Height, Weight, BMI).

S.NO	Parameters	Mean ± SD (N= 135)
1.	Age (Years)	20.76 ± 2.67
2.	Weight (Kg)	55.89 ± 6.30
3.	Height (Meter)	162.1 ± 6.42
4.	BMI (Kg/M^2)	21.26 ± 1.84

Table 1: Depicts distribution of demographic parameters (Age, Height, Weight, BMI). One hundred thirty five females, aged between 18-35 years, who volunteered for the study and fits in to inclusion criteria were selected. Age group of 18-35 years with mean age of 20.76±2.67 years, mean height of 162.16±6.42 meters; mean weight of 55.89±6.30 and mean BMI of 21.26±1.84 kg/mt^2.

Table 1I: Pictorial blood assessment chart (PBAC)

Blood Loss	Amount (ml)	N=135
Less	≤ 20	2
Normal	20 – 65	125
Excess	66 – 80	6
Heavy (menorrhagia)	81 – 100	2

Table II: distribution of 135 subjects blood loss amount (ml) in menstrual phase. Out of 135 subject two subjects found to be ≤ 20 ml blood loss, one hundred twenty five subjects found 20- 65 ml blood loss, six subjects found to be 66-80 ml blood loss and 2 subjects found to be 81-100 ml blood loss. 90% subjects found to be normal blood loss 20-65 ml; 6% found to be excess blood loss; 2% found to be less than normal and 2% found to be heavy blood loss.

Table III: Subjects Perceived Stress Score Range

Perceived stress score range	Mild Stress (0-13)	Moderate Stress (14-26)	Sever Stress (27-40)
No. of total subjects (n=135)	N=9	N=122	N= 4

Table III: depicts out of 135 subjects nine subjects (n=9) were having mild stress (0-13), one twenty four subjects (n=122) were having moderate stress (14-26) and two subjects (n=4) were having sever stress (27-40).

Table VI: Pearson's Correlation Analysis Of Perceived Stress Score And Pictorial Blood Assessment.

Correlation parameters	N	p- value	r- value
PBAC with Stress score	135	.268**	.002

Table VI: Depicts Significant Weak Positive Correlation (r = 0.002) Of Pictorial Blood Loss Assessment And Stress Score.

DISCUSSION

This study was conducted in the hematology laboratory of department of Physiology, RUHS College of medical sciences, Jaipur. The population evaluated under the study was 135 healthy females of age group between 18 to 35 years. The present observational study was done to assess correlation between the levels of perceived stress and its effect on the menstrual cycle.

According to the data collected in the present study, the mean age of the total subjects was 20.76±2.67 years; mean weight of total subjects was 55.89±6.30 kg and mean height of total subjects was 1.62 ±6.42 meters. Mean Body Mass Index (BMI) of total subjects in the present study was found to be 21.26±1.84 kg/m^2, which is slightly higher than the BMI found in another study conducted by Chhabra et al in the subjects of (18-50) age group but still all the subjects are falling under normal weight category, thus there is no significant difference found in the subjects of two studies. Weight slightly higher than the BMI of Indian healthy young female subjects and still all the participants are falling under normal weight category, thus no such statistically significant difference is seen among them.[7]In the present study we assessed blood loss during menstrual phase with pictorial blood assessment chart (PBAC).[8] The pictorial blood assessment chart (PBAC) is a method for evaluation of menstrual blood loss. The pictorial blood assessment chart (PBAC) is a method for evaluation of menstrual blood loss. In our study out of 135 subjects 2 subjects found to be ≤ 20 ml blood loss; 125 subjects found 20-65 ml blood loss; 6 subjects found to be 66-80 ml blood loss and 2 subjects found to be 81-100 ml blood loss. 90% subjects found to be normal blood loss 20-65 ml; 6% found to be excess blood loss; 2% found to be less than normal and 2% found to be heavy blood loss. Correlation between stress levels and menstrual abnormalities could be established.

In the present study we assessed stress by using perceived stress score in menstrual cycle. Range of perceived stress scale are- Individual scores on the PSS can range from 0 to 40 with higher scores indicating higher perceived stress. Scores ranging from 0-13 would be considered mild stress, Scores ranging from 14-26 would be considered moderate stress and Scores ranging from 27-40 would be considered high perceived stress.[9] In our study out of 135 subjects nine subjects (n=9) were having mild stress (0-13), one twenty four subjects (n=122) were having moderate stress (14-26) and two subjects (n=4) were having sever stress (27-40).

In the present study we correlate blood loss with stress in menstruation phase we found a significant weak positive correlation of blood loss with stress (r value =0.002**). Similar study conducted by Nagma. S et al results were reported out of the 100 undergraduate medical students, 30 students had a PSS score >20 while 70 had a score ≤20. An association was established between high stress levels (PSS >20) and menstrual irregularity. No association was found in students with PSS >20 with hypomenorrhoea, menorrhagia, dysmenorrhoea, long cycle length and short cycle length.[5] In a study on Taiwanese nurses, 72.3% had a high level of self- perceived job stress, which was significantly associated with irregular menstrual cycles and longer menstrual bleeding periods, but was not related to long or short menstrual cycles.[10] Present study too showed a relation between stress levels and irregular menstrual bleeding. But no association could be established between stress levels and menstrual abnormalities.

Our study had results similar to the California Women's Reproductive Health Study of 1990- 1991. It was found that women working in stressful jobs were twice as likely to have a short menstrual cycle as women working in non-stressful jobs.[11] A study conducted at the Departmentof Nursing, Chang Gung Institute of Technology, Taiwan, ROC showed that some factors including age, marital status and perceived life satisfaction were significantly related to dysmenorrhoea. However, other life factors such as exercise, perceived life stress and perceived work stress showed no correlation with dysmenorrhoea.[12] Among the Japanese college students, the ones who reported premenstrual symptoms, menstrual pain, and the experience of irregular menstrual cycles had higher stress scores than those who did not. The results suggest that psychosocial stress is independently associated with premenstrual symptoms and the experience of irregular menstrual cycles among college students.[13] Similarly our study too could establish a relation of perceived stress score on menstrual function.

CONCLUSION

A significant weak positive correlation was found between stress and irregular menstrual bleeding. This study highlights stress may influence the normal menstrual cycle.

Study Limitations:

Study in larger sample size and by increased reproductive age group (18-45 years old) could have generated more accurate results**.**

Acknowledgments

None to declare.

Conflict Of Interest

None to declare.

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