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A CROSS-SECTIONAL STUDY TO ESTABLISH THE EFFECT OF STRESS ON MENSTRUATION AMONGST MEDICAL UNDERGRADUATES

Community Medicine

Kevin Thomas Edassery	Medical Intern, Jawaharlal Nehru Medical College, Sawangi, Maharashtra, India
Aksah B. Paul	Medical Intern, Jawaharlal Nehru Medical College, Sawangi, Maharashtra, India
Akshita Mohan	Medical Intern, Jawaharlal Nehru Medical College, Sawangi, Maharashtra, India
Shreya P. Joseph	Medical Intern, Jawaharlal Nehru Medical College, Sawangi, Maharashtra, India
Sruthi George Cherian	Medical Intern, Jawaharlal Nehru Medical College, Sawangi, Maharashtra, India
Shreya Kulwal	Medical Intern, Jawaharlal Nehru Medical College, Sawangi, Maharashtra, India
Dr. Shashank Gotarkar*	Assistant Professor Department of Community Medicine, Jawaharlal Nehru Medical College, Sawangi, Maharashtra, India *Corresponding Author

ABSTRACT

Introduction: In this fast paced world, medical students are under constant stress due to academic encumbrance. Researches have proved that neuroendocrine system has an imperative role to play during stress. Thus, the endeavor of this research was to study the effect of stress on menstrual cycle and thereby creating awareness among the medical undergraduates.

KEYWORDS

Stress, Menstrual cycle, Alteration, Medical undergraduates.

INTRODUCTION :

Menstrual cycle is the series of cyclic changes that a woman's body undergoes every month in preparation for a possibility of a pregnancy. The menstrual cycle occurs due to the rise and fall of estrogen which results in the thickening of uterine lining and the growth of an egg which is necessary for pregnancy. If pregnancy does not occur, the lining is released in what is known as menstruation(Menstrual Cycle | womenshealth.gov, n.d.)[1]. The menstrual cycle is controlled by hormones. Therefore, an intact hypothalamo-pituitary axis is essential for a normal menstrual cycle. The duration of a normal menstrual cycle is 21 to 35 days with a menstrual flow ranging from 2 - 6 days, and average blood loss of 20 - 80 ml. However, certain other parameters such as genetics, diet and overall health can also affect the menstruation. In this fast paced world, medical students are under constant stress due to academic encumbrance. Researches have proved that neuroendocrine system has an imperative role to play during stress'——'——*(Miller and OCallaghan2002Neuroendocrine aspects of the response to stress.pdf, n.d.)*.

Stress places demands on the body that are met by the activation of 2 systems, the hypothalamic - pituitary - adrenal (HPA) axis and the sympathetic nervous system (SNS). The activation of the HPA axis and also the SNS leads to a series of neural and endocrine diversifications called the "stress cascade", that is chargeable for permitting the body to form the physiological and metabolic changes required to address the stress of a equilibrium challenge.

A challenge to homeostasis initiates the release of corticotrophin - releasing hormone (CRH) from the hypothalamus, which in turn results in release of adrenocorticotropin hormone (ACTH) into general circulation. ACTH then acts on the adrenal cortex ensuing in unleash of a species - specific adrenal cortical steroid into blood. Glucocorticoids through a negative feedback mechanism terminates the release of CRH. The body strives to maintain adrenal cortical steroid levels inside bound boundaries and interference at any level of the axis can influence the opposite elements via feedback loops. Over or underproduction of cortisol can result in the devastating diseases of Cushing's and Addison's, respectively, but less severe dysregulation of the HPA axis can still have adverse health consequences'——'——*(Miller and OCallaghan 2002 Neuroendocrine aspects of the response to stress.pdf, n.d.)*. Thus, the endeavor of this research was to study the effect of stress on menstrual cycle and thereby create awareness among the medical undergraduates.

AIM :

To study the effect of stress on menstrual cycle.

MATERIAL AND METHODOLOGY:

Study Setting - A study was conducted on 75 female medical undergraduates of Jawaharlal Nehru Medical College, Sawangi.

Study Design - Descriptive Cross-sectional Study

Exclusion Criteria - Students with previously known medical and gynecological condition known to have a role in menstrual irregularities.

Inclusion Criteria - Medical undergraduates in Jawaharalal Nehru Medical College.

The students were given an elaborative understanding regarding the research and their consent was taken. A questionnaire along with the PSS (Perceived Stress Score) was circulated amongst students.

The questionnaire included information concerning their menstrual pattern such as cycle length, duration of flow, amount of flow, premenstrual symptoms (PMS), dysmenorrhea, incidents of spotting and missed menses and some additional factors like dietary habits and sleeping pattern.

For the measurement of stress, PSS is the most commonly used scale. It is the measure of the degree to which situations in one's life are appraised as stressful. . In each case, respondents are asked how often they felt a certain way——*(CohenPERCEIVED STRESS SCALE.pdf, n.d.)*.The scale additionally includes variety of direct queries concerning current levels of stress.

The queries within the PSS raise concerning feelings and thoughts throughout the last month.

PSS SCORING
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 (4, 5, 7, and 8) and then adding it. Subjects who scored ≤20 on the PSS were categorized to have low stress levels, while subjects who scored >20 were categorized to have high stress.

The menstrual pattern was then correlated with the PSS using chi-square test for statistical analysis. Odd's ratio ≥1 and p value <0.05 were used to establish an association and statistical significance respectively.

OBSERVATION AND RESULT :

Table 1: Alterations in the Cycle Length

PSS SCORE	PRESENT	ABSENT
<20	8	4
≥20	27	7
p value = 0.37 Odd's ratio = 1.92		

An association was observed with no statistical significance.

Table 2: Alterations in intensity of PMS

PSS SCORE	PRESENT	ABSENT
<20	8	4
≥20	25	9
p value = 0.64 Odd's ratio = 1.38		

An association was observed with no statistical significance.

Table 3: Incidence of Dysmenorrhea.

PSS SCORE	PRESENT	ABSENT
<20	7	5
≥20	23	11
p value = 0.56 Odd's ratio=1.49		

An association was observed with no statistical significance.

No association was established between HPS and clots, missed periods, average blood loss or spotting. Although our data set showed some association between HPS and cycle length, PMS and dysmenorrhea, this was not statistically significant (p value is more than 0.05).

DISCUSSION :

A study conducted in a private medical college in Tamil Nadu using the PSS 14 score showed that the median PSS score observed was 26 indicating an increase in stress levels(PubMed Central Link, n.d.). In a cross- sectional study conducted in health colleges of Dammam, Saudi Arabia; HPS was found to have a strong association with dysmenorrhea, missed periods and premenstrual symptoms (PubMed Central Full Text PDF, n.d.). However, the data collected in our study showed no such relation with amenorrhea , whereas an association was established with dysmenorrhea and PMS.

Studies conducted on Taiwanese nurses showed that 72.3% had a high level of job stress which was significantly related to irregular menstrual cycles and longer menstrual bleeding periods. Similarly, our study showed an association with irregular menstrual cycles, but not with bleeding periods——*(Lin et al. - 2007The Impact of Self-perceived Job Stress on Menstru.pdf, n.d.)*. This could be due to the different working hours of our study group and that of the nurses who work odd hours like night shifts.

HPS was associated with passing of clots, dysmenorrhea and presence of PMS in another study conducted between medical and non medical students(Full Text, n.d.). Although the latter two conditions were seen to have an association with stress, no correlation could be established with passage of clots in this study. This could be mostly because of certain selection biases such as responder biases (possibly being the ones who had pre-existing menstrual issues).

CONCLUSION :

In this research, we could only establish an association between HPS and cycle length, premenstrual syndrome and dysmenorrhea, but the association was not statistically significant. This may indicate that psychological stress alone may not be responsible for menstrual abnormalities that are commonly thought to be accompanying stress but it could be other factors like fluctuations in weight, change in diet, sleep pattern etc. that contribute to it. This may imply that not all people with HPS may experience menstrual changes to the same extent, therefore further studies should be conducted looking into other external factors in combination with psychological stress giving a much broader and conclusive view on the matter.

REFERENCES

1. Cohen—PERCEIVED STRESS SCALE.pdf. (n.d.). Retrieved January 7, 2020, from http://www.mindgarden.com/documents/PerceivedStressScale.pdf
2. Full Text. (n.d.). Retrieved January 7, 2020, from https:// www. jstage. jst.go. jp/article/indhealth/45/5/45_5_709/_pdf
3. Lin et al. - 2007—The Impact of Self-perceived Job Stress on Menstru.pdf. (n.d.). Retrieved January 7, 2020, from https: //www. jstage. jst.go. jp/ article/ indhealth/45/5/45_5_709/_pdf
4. Menstrual Cycle | womenshealth.gov. (n.d.). Retrieved January 7, 2020, from https://www.womenshealth.gov/menstrual-cycle
5. Miller and O'Callaghan—2002—Neuroendocrine aspects of the response to stress.pdf. (n.d.). Retrieved January 7, 2020, from https:// www. research gate. net/ profile/ James_OCallaghan/publication/11331666_Neuroendocrine_Aspects_of_the_Response_to_Stress/links/59da8a37aca272e6096becd1/Neuroendocrine-Aspects-of-the-Response-to-Stress.pdf
6. PubMed Central Full Text PDF. (n.d.). Retrieved January 7, 2020, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5885123/pdf/SaudiMedJ-39-67.pdf
7. PubMed Central Link. (n.d.). Retrieved January 7, 2020, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5682722/