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Pre-Menstrual Dysphoric Disorder: Systemic Review for the Contribution of Stress and Association Between Physical and Behavioral Symptoms

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ABSTRACT: Background: Pre-menstrual dysphoric disorder (PMDD) is a severe form of premenstrual syndrome (PMS). More than 80% of young girls report to be suffering from PMS, 12-32% of women report moderate to severe symptoms while 8-10% of women report being suffering from PMDD.

Aim: The objective of this survey-based study is to determine the prevalence of PMS and PMDD in young girls and determine the association between physical and behavioral symptoms. The survey is designed to investigate 300 girls aged between 13-18 years and inspect the severity of their symptoms of PMDD and PMS.

Methods: Few biostatistical investigations like Chi-square analysis, correlation analysis, T-test were performed to get accurate results.

Discussions: Scrutinizing the causes and reasons for severity, a few preventive measures like practicing yoga, the effect of oral contraceptive pills are suggested according to the latest research in this regard.

Conclusions: A direct association between physical and behavioral symptoms is noticed ($r=0.99$, $p < 0.0001$, $T\text{-test}=29.26$) and an association of stress with physical symptoms ($r=0.73$, $p < 0.0001$, $T\text{-test}=1.06$) and behavioral symptoms ($r=0.75$, $p < 0.0001$, $T\text{-test}=1.14$) are also noticed.

KEYWORDS: PMDD, Pre-menstrual dysphoric disorder, physical symptoms, behavioral symptoms, stress, survey, biostatistics

I. INTRODUCTION

Pre-menstrual syndrome is said to be an assembly of physical, behavioral, and cognitive symptoms that take place in women cyclically. The symptoms are usually seen during the luteal phase of the menstrual cycle and usually resolve with the onset of menstruation. The most common physical conditions or symptoms include headache, fatigue, abdominal bloating, breast tenderness, acne, and sleep disturbances and the behavioral symptoms include mood swings, anxiety, irritation, lack of confidence, and emotional outburst.¹

The PMS is the term first described in the year 1931 as a "state of unbearable tension".² According to a study, more than 30% of women with moderate symptoms of PMS and 6-7% of women with PMDD have shown a decreased quality of life.³ A study has proved that 50% of females with PMS and 23% of females with PMDD have attempted suicide during to the increased intensity of behavioral symptoms.⁴ Physical and emotional stress could be one of the major reasons for severe behavioral symptoms. The symptoms can arise due to various reasons like change in lifestyle, hormonal imbalance, low estrogen, sleep disturbances, lack of exercise, and stress.

The research was done to analyze the treatments that can overcome PMDD include regular and exercise and the use of oral contraceptives with novel progestin.⁵ In a study, the use of combined oral contraceptives has shown positive results to cure acne vulgaris (acne), menstrual issues like dysmenorrhea, and menstrual pain.⁶ Another study was conducted to



analyze the effect of an oral contraceptive on quality of life and the oral contraceptives are cost-effective, reliable, and have shown to increase the quality of life.⁷ According to a study, practicing yoga regularly has shown proven results to reduce PMDD and PMS.⁸ Regular exercise and yoga, meditation, balanced diet are some of the suggested ways to overcome PMDD. In research comparing the effect of yoga and exercise, it was noticed that compared to aerobic exercises, yoga is said to be more effective.²

This study focuses on the relationship between how the physical symptoms affect the behavioral symptoms and the association between the physical and behavioral symptoms. This study also focuses on the association and the effect of stress on physical and behavioral symptoms. This study analyzed the effect of various aspects like the menstrual cycle, the number of working hours, sleeping hours on PMDD.

II. LITERATURE REVIEW

A research was conducted by the Adnan University, Turkey, that performed a study to analyze the relationship between personality traits and pre-menstrual syndrome.¹⁰ According to this study, the students living in the rural areas suffered from severe menstrual pain, as well as showed severe symptoms of PMDD. The more the physical symptoms of the students get worse, the more is an increase in the behavioral symptoms, and the students are affected emotionally too.

In a study by the University dormitory, Ordu investigated the contributing factors to pre-menstrual syndrome and PMDD.¹¹ In this study, it was noticed that there were severe symptoms like appetite, irritability, fatigue, as well as depression in the students. According to this study, the severity of the behavioral symptoms increased with the increase in physical symptoms. Around 5-90% of the students have shown PMDD with intense physical and behavioral symptoms.

A study by Nasim Naeimi surveyed Iran girls and around 36.3% of girls suffered from PMDD, and 85.6% of girls suffered from PMS.¹² They noticed a high prevalence of physical symptoms and increased behavioral symptoms. They noticed the effect of these symptoms on various aspects of life. They marked a significant relation of PMDD and PMS with dysmenorrhea and menstrual pain.

A study by Walton LM et al. has shown a significant relationship between the severity of the PMS symptoms and the levels of stress.¹³ The study was done on 75 females aged between 18-55 years. The results have shown a strong correlation between the stress and PMS symptoms with ($r=0.324$, $p<0.005$). More than 20% of the females have reported and met the criteria of the pre-menstrual syndrome screening tool for moderate to severe. Around 98.7% of women reported being experiencing discomfort that is associated with premenstrual syndrome symptoms and due to which a disruption in their everyday activities.

Research by Kimberly Ann Yonkers, MD et al, has shown the role of the hypothalamus-pituitary-ovary axis (HPA) as well as other targeting brain serotonergic synapses in the treatment of the pre-menstrual syndrome.¹⁴ They have analyzed that there are fluctuations in the gonadal hormonal levels that are responsible for triggering PMS and PMDD. The interventions of these fluctuations are noticed to abolish ovarian cyclicality. Around 5-8% of the women have been shown to suffer from PMDD. Behavioral symptoms like mood swings, irritability, tension, depressed mood, and physical symptoms like breast tenderness, bloating, acne are the commonly seen symptoms in women.

A study conducted by Ellen W. Freeman et al worked to discriminate the symptoms of pre-menstrual symptoms to those with the daily diary rating and the association of the symptoms with the impairment in the function.¹⁵ The survey was done on 1081 women. They have noticed that around six symptoms differentiate the PMS and non-PMS. The identified symptoms are anxiety, mood swings, aches, food cravings, cramps, and decreased interest in activities. They have noticed that the symptoms are significantly related to the impairment in function.

III. MATERIALS AND METHODS

This systemic review is based on a survey, that employed a questionnaire. The questionnaire included all the mandatory questions. The survey is conducted online as well as in an offline mode. This survey mainly focused on teenage and adolescent girls and 300 girls aged between 12-18 years responded to the survey. The girls belong to various



geographical locations. The questionnaire is framed using the pre-menstrual scanning tools (PSST), basic personality traits scale.

The questionnaire is divided into five sections. The first section includes the personal details of the respondent like name, age, BMI, marital status, number of working hours (study hours), and number of sleeping hours. In a study by Claire Hardy et al, a significant association between the severity of the PMDD and PMS with the number of working hours and poor sleep was noticed.¹⁶ The women with severe symptoms reported higher absences at work. The women were also noticed to have a low quality of sleep.

The second of the questionnaire deals with the pattern of the menstrual cycle in the girls. The menstrual associated symptoms, as well as the PMS, were proven to be more significant in the urban as well as rural areas of West Bengal.¹⁷ This section has questions like regularity and frequency of menstrual cycle, length of the menstrual cycle, the intensity of menstrual pain as severe, moderate, and mild, and the menstrual cycle associated symptoms like mood swings, food cravings, depression as yes or no. The questionnaire is framed according to the self-reporting menstrual distress questionnaire (MDQ).¹⁸

The third and fourth sections of the questionnaire deal with the physical and behavioral symptoms of the PMS and PMDD. The questions are framed in yes or no questions. The physical symptoms comprise food cravings, breast tenderness or swelling, fluid retention or abdominal bloating, pre-menstrual headaches and migraine, changes in stool, cramps, weight fluctuations, acne, sensitivity to light, aversion towards work, food, or daily routine. The behavioral symptoms include mood swings, depression, anxiety, decreased interest, sleep disturbances, difficulty in concentration, appetite changes, and emotional outbursts.¹⁹

The last section deals with the stress levels of the girls. Various studies were conducted that noticed an association between stress and PMS and PMDD.^{20,21} The questionnaire is framed as yes or no. The questions include that can analyze the stress levels.

The validation of the questionnaire is done as per the norms of the pre-menstrual syndrome evaluation scale (PMSS). The evaluation is categorized as “severe”, “moderate”, and “mild”. The categorized were set as per the number of yes and no marked by the respondents. 8-10 yes by the respondents marks the category as “severe”, 4-7 as “moderate”, and 1-3 as “mild”.²²

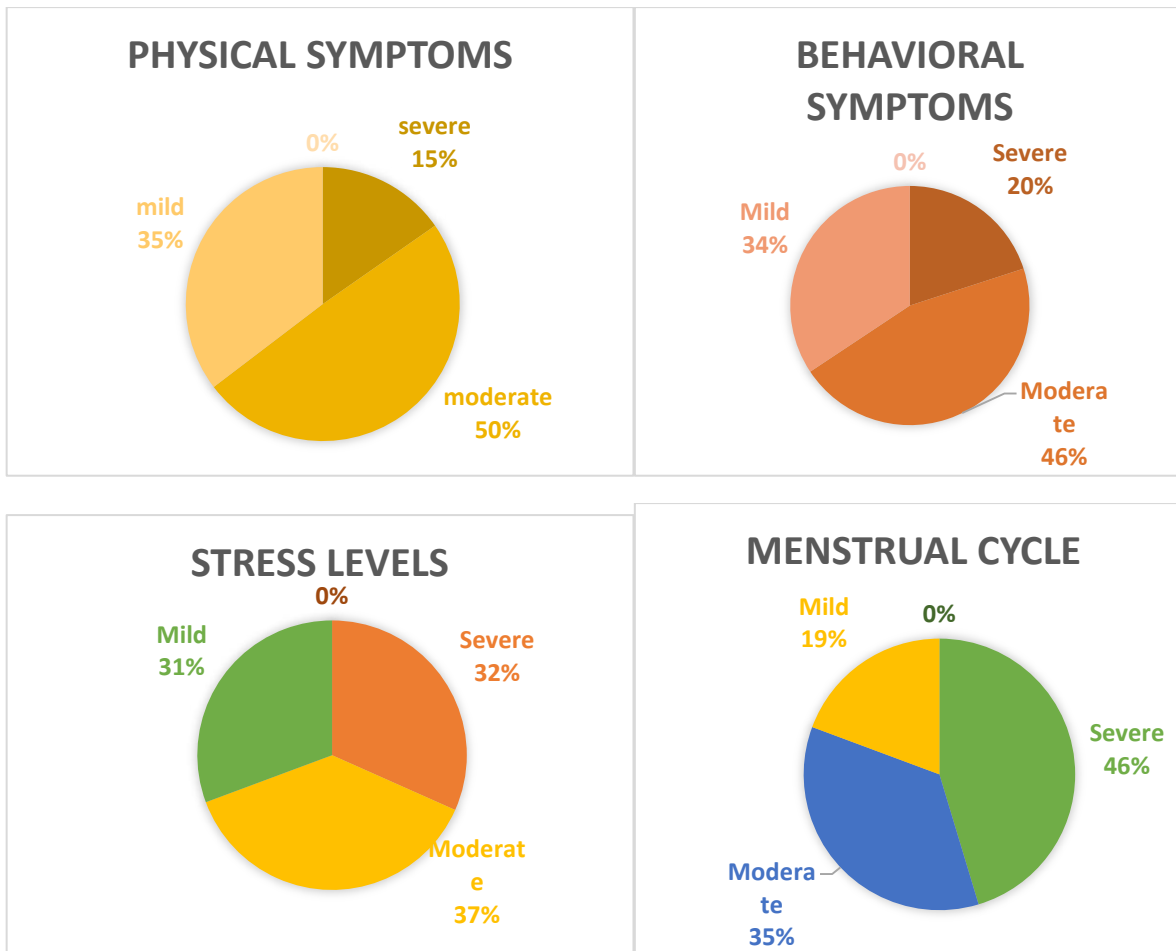
The collected responses of the respondents are subjected to biostatistical calculations like standard mean, standard deviation, chi-square analysis, correlation analysis, and T-test.

Chi-square analysis: The chi-square analysis is used for determining the significant association between any two attributes. The chi-square analysis with a significance level of 0.05 and degree of freedom of 4.

Correlation analysis and T-test: These tests are performed between stress- physical symptoms, stress- behavioral symptoms, physical symptoms- behavioral symptoms.

IV. RESULTS

Out of 300 girls, 15.3% of girls reported severe physical symptoms, 49.35% moderate, and 35.35% mild. 20% of girls reported severe behavioral symptoms, 45.67% moderate, and 34.33% mild. 31.68% of girls reported high-stress levels, 37.68% moderate levels, 30.69% mild levels. 45.34% of girls reported severe symptoms during the menstrual cycle, 35.33% reported moderate, and 19.33% reported mild.



Among the data collected, 65.8% of girls reported to have 28-30 days menstrual cycle, 16.3% had 30-35 days cycle, 4.7% had 40-45 days cycle, and 16.3% had an irregular cycle. Around 19.6% girls reported of suffering severe pain during periods, 41.1% suffered moderate pain, and 39.7% had no pain. Around 80.4% of girls responded of having mood swings during periods, 62.2% reported depression and 54% of food cravings.

Among the physical symptoms, the most commonly reported symptoms are weight fluctuations (41.6%), aversions towards food (41.5%), breast tenderness (46.4%), abdominal bloating (55.7%), migraine (50.5%), acne (58.6%), food cravings (42%).

Among the behavioral symptoms, the most commonly reported symptoms are mood swings-74.7%, difficulty in concentrating-65.3%, decreased interest- 63.4%, changes in sleep-60.4%, depression- 52.1%, emotional outburst-51.2%, and social withdrawl- 51.2%.

Among the stress levels, 56.6% marked themselves restless, 65.9% of girls feel irritated and angry, 58.8% girls feel lonely, 54.2% girls feel it hard to get relaxed, 53.8% of girls reported suffering from anxiety, 46.7% reported low esteem, 50% girls feel upset.

The mean the BMI of the respondents is 21.167 with a range of 26.5, variance 14.168, standard deviation(SD) 3.764, and standard error (SE) 0.218.

The mean of onset of menarche of the respondents is 11.997 with a range of 13, variance 2.363, standard deviation 1.536, and standard error is 0.0888.



The null hypothesis H_0 and alternative hypothesis H_1 for the parameters were taken as:

H_0 : No association between the attributes.

H_1 : There is an association between the attributes.

Associating attributes	Chi-square calculated value	Chi-square tabular value	Result
Menstrual cycle-Physical symptoms	114.298	18.465	Association found
Menstrual cycle-Behavioral symptoms	85.878	18.465	Association found
Menstrual cycle-Stress	82.382	18.465	Association found
Stress-Physical symptoms	81.419	18.465	Association found
Stress-Behavioral symptoms	170.294	18.465	Association found
Physical symptoms-Behavioral symptoms	77.942	18.465	Association found

Associating attributes	Correlation value $r_{(x,y)}$	Result
Menstrual cycle-Physical symptoms	-0.48	Negative correlation
Menstrual cycle-Behavioral symptoms	-0.45	Negative correlation
Menstrual cycle-Stress	0.262	Positive correlation
Stress-Physical symptoms	0.73	Positive correlation
Stress-Behavioral symptoms	0.75	Positive correlation
Physical symptoms-Behavioral symptoms	0.99	Positive correlation

Associating attributes	T-Test	Result
Menstrual cycle-Physical symptoms	-0.54	No association found
Menstrual cycle-Behavioral symptoms	-0.5	No association found
Menstrual cycle-Stress	0.271	Association found
Stress-Physical symptoms	1.06	Association found



Stress-Behavioral symptoms	1.14	Association found
Physical symptoms-Behavioral symptoms	29.26	Association found

(**)If the tabular value is greater than the calculated value, then the null hypothesis is accepted.

If the calculated value is greater than the tabular value, then the alternative hypothesis is accepted.

A negative r-value reflects a negative association and a positive r-value reflects a positive association. Higher the t-value, the stronger the association between the attributes.

The p-value for the date obtained is 0.0001. The chi-square analysis is done at a 5% significance level and degree of freedom as 4.

The calculated value of the chi-square is more than the tabular value in case of association between the menstrual cycle- physical symptoms and menstrual cycle- behavioral symptoms, yet the null hypothesis is accepted. This is because of the negative values of the correlation and t-test. This proves that the physical symptoms and behavioral symptoms are reduced with the onset of the menstrual cycle.

A positive correlation, with a good T-test value and significantly strong association, is found between menstrual cycle-stress, physical symptoms-stress, behavioral symptoms-stress.

A very high correlation and a very strong association are found between physical symptoms- behavioral symptoms with correlation (r=0.99) and t-test value (t=29.26).

V. DISCUSSION

The study that is done in West Bengal, India has shown the prevalence of premenstrual syndrome among adolescent girls residing in the urban area.²³ More than 20% of the girls reported moderate symptoms and 8% of girls have shown severe symptoms. This is a significant rise in the rate of increase of the symptoms as well as the number of girls suffering from it.

Another study that is done in Thrissur, India, where the stress levels of the girls were less reported that 75% girls reported mild symptoms, 15% girls experienced moderate symptoms, and no report of severe symptoms.²⁴ This shows how stress influences the PMS and PMDD.

A worldwide analysis of the prevalence of pre-menstrual symptoms has reported that France had the lowest rate with 12% and Iran had the highest with 98%.²⁵ A study that 874 articles of PubMed have reported that more than 50% of adolescent girls are suffering from PMS and PMDD.²⁶

A study conducted in Nigeria reported that 85.5% of women were found to be suffering from PMS and 11% suffering from PMDD.²⁷ 87% reported suffering from depression. This shows clear evidence of the prevalence of PMS and PMDD across the world. The women are prone to PMS and PMDD.

There is a slight variation in the rate but there is a clear note of the prevalence of PMS and PMDD.

VI. CONCLUSION

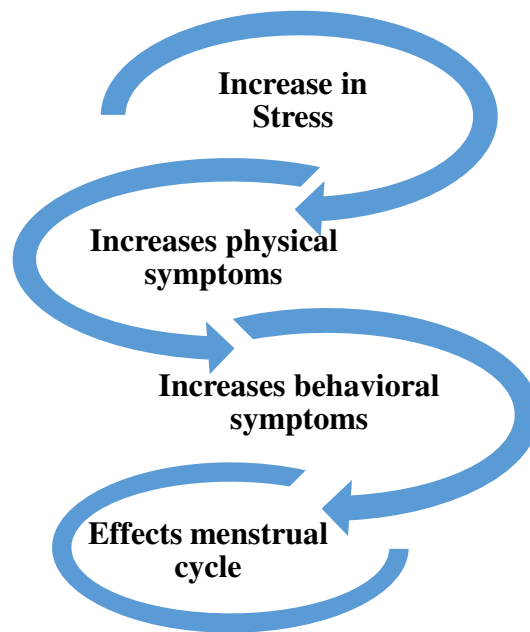
The respondent population of this study belongs to the reproductive age or adolescent group being aged between 13-18 years. Most of the sufferers from the responded girls are into the competitive world, striving for better performance, pushing themselves beyond their limits to reach the target set, reduced physical activities, and co-curricular activities.

Our findings clearly show how stressed students are getting, forgetting the betterment in themselves and stressing themselves to reach goals. This reflects the need for sports, co-curricular activities like painting, singing, dancing that can help beat the stress. Yoga and meditation have become the need of the hour in present-day adolescents. The student

should be regularly conducted with the adolescence education program (AEP). Counseling session to overcome stress is highly suggested.

There is a rise in the hormonal imbalance in the adolescents due to an increase in stress, this is resulting in an increase in the physical symptoms, which is affecting them mentally increasing the behavioral symptoms leading to issues and disturbances in the menstrual cycle which again lead to hormonal imbalance.

Hence, this makes a cyclic reaction as:



The progress that is made in the study of Pre-menstrual syndrome and Pre-menstrual dysphoric disorder can be credited to the surveys that are already available from various regions across the globe but there is limited data available concerning many aspects of this issue. It is necessary to put forth more such data for the qualitative as well as comparative analysis. Our study is a small attempt in this direction. The results can be more precise with greater sample size.

The prospects related to this study could involve the influence of diet on PMS and PMDD, an association of dieting, thyroid, and online mode of education with PMS and PMDD.

The data published through this study can be used for further comparative analysis by future researchers.

REFERENCES

1. Marriam Zaka, Khawaja Tahir Mahmood. Pre-menstrual syndrome. *Journal of Pharmaceutical Sciences and Research*. Vol.4(1),2021, 1684-1691
2. Frank, R.T. The Hormonal causes of pre-menstrual tension. *Archives of Neurology of Psychiatry*. 1937, 26:1053
3. M. Kathleen B. Lustyk. W.G. Gerrish. Premenstrual Syndrome and Premenstrual Dysphoric Disorder: Issues of Quality of Life, Stress, and Exercise. *Springer*, 2010 (USA).
4. Deborah Ducasse, Isabelle Jaussent, Emilie Olie, Sebastien Guillaume, Jorge Lopez-Castroman, Philippe Courtet. Personality Traits of Suicidality Are Associated with Premenstrual syndrome and Premenstrual Dysphoric Disorder in a Suicidal Women Sample. *PLOS ONE*, February 10, 2016
5. Joanne Cunningham, Ph.D., Kimberly Ann Yonkes, MD, Shaughn O'Brien, DSc, MD, FRCOG, and Elias Eriksson, MD. Update on Research and Treatment of Premenstrual Dysphoric Disorder. *Harv Rev Psychiatry*, 2009
6. Jan Brynhildsen, Combined hormonal contraceptives: prescribing patterns, compliance, and benefits versus risks. *Therapeutic Advances in Drug Safety*, 2014, Vol. 5(5)201-213.



7. Adolf E Schindler. Non-contraceptive Benefits of Oral Hormonal Contraceptives. *International Journal of Endocrinology Metabolism*. 15 January 2012.
8. Su-Ying Tsai. Effect of Yoga Exercise on premenstrual symptoms among Female Employees in Taiwan. *International Journal of Environmental Research and Public Health*. 2016.
9. Nirav Vaghela, Daxa Mishra, Maitri Sheth, and Vyoma Bharat Dani. To compare the effects of aerobic exercise and yoga on Premenstrual syndrome. *Journal of Education and Health Promotion*. 24 October 2019.
10. Sule Chinakli, Filiz Abacigil and Hulya Arslantas. The relationship between personality traits and premenstrual syndrome prevalence on students of health high schools. *J Nurs Care*, 2016
11. Nulufer ERBIL, Aysenur KARACA, Tulay KIRIS. Investigation of premenstrual syndrome and contributing factors among university students. *Turk J Med Sci*, 2010; 40 (4): 565-573.
12. Nasim Naeimi. The Prevalence and Symptoms of Premenstrual Syndrome under Examination. *Journal of Biosciences and Medicines*, 2015, 3-18.
13. Walton LM, Machamer L, Asumbrado RC, Behrens MA. Relationship between Nutrition (REAP), Exercise (VSAQ), and Stress on Premenstrual Syndrome Severity (PSST): Correlation, cross-section, Purposive Sample of 75 Female Ages 18-55. *Journal of Physiotherapy & Physical Rehabilitation*, 2018.
14. Kimberly Ann Yonkers, MD, Prof. P M Shaughn O'Brien MD, and Prof. Elias Eriksson, MD. Premenstrual Syndrome. *NIH Public Access*, 20 June 2011.
15. Ellen W. Freeman, Ph. D., Steffanie M. Halberstadt, M.S., Karl Rickels, M.D., Julie M. Legler, Sc. D., Hui Lin, M.S., and Mary D. sammel, Sc. D. Core Symptoms That Discriminate Premenstrual; Syndrome. *Journal of Women's Health*, Vol 20, 2011.
16. Claire Hardy, and Myra S. Hunter. Premenstrual Symptoms and Work: Exploring Female Staff Experiences and Recommendations for Workplaces. *International Journal of Environmental Research and Public Health*. 2021.
17. Kshitiha S Valvaikar, Hemangini K Shah. An urban-rural comparison of menstrual pattern and menstrual problems among school-going girls. *International Journal of Medical Sciences and Public Health*, 2016.
18. Rudolf H. Moos, Ph. D. the Development of a Menstrual Distress Questionnaire. *Psychosomatic Medicine*. 1968.
19. Khajehi M. Aetiology, Diagnosis, and Management of Premenstrual Syndrome. *Journal of Pain & Relief*. 2015.
20. Tamaki Matsumoto, Miho Egawa, Tetsuya Kimura, and Tatsuya Hayashi. A potential relation between premenstrual symptoms and subjective perception of health and stress among college students: a cross-sectional study. *BioPsychoSocisl Medicine*, 2019.
21. Dalia Bedewy and Adel Gabiel. Examining perceptions of academic stress and its sources among university students: The Perception of Academic Stress Scale. *Health Psychology Open*. 2015.
22. Ms. P. Padmavathi, Dr. Raja Sankar, Dr. N. Kokilavani, K. Dhanapal, B. Ashok. Validity and Reliability Study of Premenstrual Syndrome Scale (PMSS). *International Journal Of Advances in Nursing Management*, 2014
23. Ranjana Mandal, Aditya Prasad Sarkar, Supriti Ghorai. A study on premenstrual syndrome among adolescent girl students in an urban area of West Bengal. *International Journal of Reproduction, Contraception, Obstetrics, and Gynecology*. 2015.
24. Mr. Tibin Joseph, Prof, Nandini M, Ms. Sabira K. A. Prevalence of Premenstrual Syndrome (PMS) Among Adolescent Girls. *ISOR Journal of Nursing and Health Science*. 2016.
25. Ashraf Direkvand-Moghadam, Kourosh Sayehmiri, Ali Delpisheh, Satar Kaikhavandi. Epidemiology of Premenstrual Syndrome (PMS)- A Systematic Review and Meta-Analysis Study. DOI: 10.7860/JCDR/2014/8024.4021
26. Chantelle Renee Katjiukua, Naveen Simon, Apurva Chatterjee, Ajoke Akinola. Prevalence and Knowledge of premenstrual syndrome among adolescent girls in India. *International Journal of Community Medicine and Public Health*. 2020
27. Antai A.B, Udezi, A.W, Ekanem, E.E. Okon, U.J and Umoiyoho A.U. Premenstrual Syndrome: Prevalence in Students of the University of Calabar, Nigeria. *African Journal of Biomedical Research*, 2004.



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