Prevalence of premenstrual symptoms among college students

Selvalakshmi S¹, Lakshmanan S²*

1. Research Scholar, Department of Zoology, Poompuhar College (Autonomous), (Affiliated to Bharathidasan University), Melaiyur, SirkaliTaluk, Mayiladuthurai, Tamilnadu, India .

2. Associate Professor, Department of Zoology, Poompuhar College (Autonomous), (Affiliated to Bharathidasan University), Melaiyur, SirkaliTaluk, Mayiladuthurai, Tamilnadu, India

*Corresponding author:

slzoopoompuhar@gmail.com

ABSTRACT:

Objective: Most menstruate women experience discomfort during the pre-menstrual stage of their menstrual cycle. The premenstrual symptom is the one of severe problems among adolescents. The majority of women around the world experience physical and psychological symptoms associated with menstruation, known as premenstrual symptoms. The objective of the study is to estimate the severity of premenstrual symptoms among college students in Dindigul District, Tamil Nadu.

Methods:

A cross-sectional study was conducted among 300 college students of the 18–28 years age group at Arts and Science colleges of Dindigul district, Tamil Nadu. In order to gather the general data of the participants prior to the survey, questionnaires were distributed.

Findings: The median age of the menarche participants was 13.03 ± 1.38 years. The mean age of the participants was 21.09 ± 2.3 . The prevalence of PMS was 86%. Approximately 40.5% participated in some form of physical activity, while 59.5% abstained from physical activity. The most common psychological symptoms included depressed mood, irritable mood, mood swings, and poor concentration. The most common physical symptoms were general body aches, headaches, backaches, fatigue, joint aches, and joint pain. The most common behavioral symptoms were a short temper, food cravings, and sleepiness. The conclusion of this study is that PMS is ubiquitous among adolescents and that there is a need for awareness programs at the school, college, and community levels to raise awareness of PMS and its treatment.

Conclusion:

The prevalence of PMS among adolescent girls was found to be very high in this study. Creating awareness programs need to be implemented in schools and colleges.

Keywords: Premenstrual symptom, PMDD, Menstrual cycle, Adolescent, Awareness.

1. Introduction:

Adolescence period is a transitional period between childhood and adulthood. During this transitional period, children experience a variety of physical (1) and psychological changes⁽²⁾. In women's life menarche⁽³⁾ is the first period of their reproductive age. Normal menstrual cycle is a good indicator of reproductive health and as well as general health ^{(4).} Before menstruation, women commonly experience Premenstrual Symptoms in luteal phase ⁽⁵⁾. Premenstrual Syndrome (PMS) is a condition in which a significant proportion of women of reproductive age exhibit one or more of the emotional ⁽⁶⁾, behavioral and physical symptoms associated with the menstrual cycle prior to the onset of menstruation. PMDD is a more serious form of PMS and is classified as a psychiatric condition in DSM-5 (Diagnostic and Statistical Manual of Mental Disorders (7). While the exact causes of PMS are unknown, as its symptoms appear at the same time as hormonal changes ⁽⁸⁾ during the menstrual

period, it is believed to be linked to hormonal imbalance such as excess estrogen and lack of progesterone, certain neurotransmitters (serotonin, GABA, opioid, catecholamine), age, and genetic factor^{. (9).} Premenstrual Disorders include Premenstrual Syndrome, Premenstrual Dysphoric Disorder, and Premenstrual Worsening their day-to-day life activity (10). While the causes of these conditions are still being studied, an abnormal response to hormonal changes that occur during the natural menstrual cycle, as well as serotonin deficiency, have been identified as contributing factors (11). There are more than 200 different PMS symptoms., More than a hundred different physical and mental signs have been reported. PMDD is the most severe type of PMS⁽¹²⁾. Severity may vary⁽¹³⁾ PMDD is a psychiatric condition characterized by changes in mood, mood instability, irritability, depression, and anxiety (14). In a study of Indian college students, found that the most common symptoms were "irritability" and "tiredness" and "lack of energy" for those without any

impairment ^{(15).} The women with Premenstrual syndrome also have other emotional disorder⁽¹⁶⁾.

2. Methodology:

A cross-sectional survey was conducted in Dindigul District. A random sampling method was adopted for this study. Semi structure questionnaires were given to the college students in age between 18-28 with regular menstrual cycles. Data collected from March 2023 to May 2023.

2.1 Inclusion and Exclusion Criteria:

Students who have regular menstrual cycle and age between 18-28 were included.

Pregnant women, hormonal issue, and any other pathological condition female were excluded.

All participants were verbally informed about the study goals and given written consent. Participants who completed the consent were enrolled in this study.

2.1.1 Sample size:

Population size was 1200 (N=1200), Confidence level 95%, 5% marginal error, by using qualtrics site, the sample size was calculated. The sample size is 291. The sample size was rounded off to 300.

2.1.2 Statistical Analysis:

Participants' details were analysed by using SPSS 25.0 version and Excel. Descriptive statistical methods including frequency, percentage, mean and standard deviation were used for data analysis.

3. Ethical consideration: The researcher informed all participants of the purpose and objectives of the study. The researcher obtained written consent from the subject and verbal informed consent from all participants prior to their participation.

4.Result and Discussion:





 Table 2. Menstrual cycle characteristics of study participants









5. Result and Discussion:

In this study students were between 18-28 years, mean age of participants were 21.09 ± 2.3 , similar study was conducted in UAE ⁽⁵⁾ India ⁽⁷⁾.

More than half (63%) of the participants resided in urban areas and only 37.6 % resided in rural areas. Other research studies, in Mysuru⁽¹⁸⁾, (76.9%), Malaysia studies ⁽²⁰⁾, it showed correlation between socio economic status ⁽²¹⁾ ⁽²³⁾ In this study the prevalence of premenstrual syndrome (PMS) was found to be 85%, while studies conducted in Present study 85% of the students had premenstrual symptoms ,Other studies show prevalence between 14% to 100%, In Palestine (100%), Madurai, Tamilnadu undergraduate medical students and students ,have premenstrual Engineering symptom(14.3%), Mysuru(46.1%), Indonesia health science students (60.8%), Ethiopia (81.3%) Malaysia (63.9%) the prevalence was found to be Brazil (46.9%) ^{11,17,18,19,22, 24,25} respectively.

The average age of menarche in this study was 13.03 ± 1.38 years, these findings are more or less similar to a former study conducted by Ethiopia (<12) ⁽²²⁾ which showed the mean age of menarche of 12.35 ± 1.174 years.

In majority of the participant's length of the cycle normal 78.3% and had blood flow for 3–7 days and amount of blood flow was moderate in 73% participants, these results

are similar to a study conducted in Ethiopia. Other studies shows positive relation between menstrual pattern and PMS $^{\rm (22)}$

Out of 300 participants, 80.6% didn't do any physical activity, and 80.6 % had PMS. Only 3 participants smoked, but the percentage of participants with PMS among them was high at 85 %, Gujarat (26) and 15 participants had the habit of consuming alcohol, and tobacco consuming among which 85 % had PMS. These findings suggest that PMS can be related to lifestyle characteristics. Many studies have shown that lifestyle characteristics are related to PMS and few have shown no association. The difference between studies may be due to socio-demographic factors, cultural factors, and religious beliefs. The study did not control for any kind of association between PMS and different characteristics. 2.6 % of participants have no PMS, those who were doing exercise or voga.⁽²⁷⁾ (28) (29) (30) study showed that diet and exercise reduce PMS. The most common PMS symptoms reported were fatigue (31.2%), general body pain (34%), back pain (37.3%), abdominal cramps (37.3%), and headache (27.6%). Similar (Bianchin L, et al. 2019)(31) in Egypt. (32) (33) (34)(35)(36) In this study Stress and depression(70%), similar studies , (37) , In Iran study showed that female are more prevalence to stress ,and behavior problem than male (5), Palestine studies (87%) (11) ,Riyadh stress and depression (11.8% and 3.4%) (38) similar study also showed the increased psychological

symptom it may be due to hormonal imbalance ⁽³⁹⁾, Psychotherapy and counseling will help them to recover from Premenstrual symptoms ⁽⁴⁰⁾ Therefore symptoms described in this study are less or more correspondent with the other studies. Adolescents have a lack of knowledge of menstrual health. Quality health services to Adolescents suggested by WHO. There is a requirement of awareness: ⁽⁴¹⁾

6.Conclusion:

This study 85% of college students had Premenstrual symptoms. Prevalence of premenstrual symptoms higher than the previous study in Kochi (36%)⁽⁴²⁾. The main signs of PMS included depression, pains in the body, feeling tired, irritable, having lack of concentration, losing interest, mood swings, having cramps, and having a short temper. Participants were not aware of premenstrual symptoms. They need to be educated about menstruation health. This study helps to understand menstrual health and related issues.

7.Limitation: This study conducted to selected Arts and Science college students those who were willing to participate, so the result cannot be generalized.

8. Recommendation:

Healthy lifestyle adaptation will improve the menstrual health of adolescent.

Similar study should conduct in large size population with control group.

Menstrual health education could be included in curriculam.

Funding: This research did not receive any fund.

Declaration of competing interest: No conflict of interests

Reference:

- Cheng, T. S., Brage, S., van Sluijs, E. M., & Ong, K. K. (2023). Pre-pubertal accelerometer-assessed physical activity and timing of puberty in British boys and girls: the Millennium Cohort Study. International Journal of Epidemiology, dyad063. https://doi.org: 10.1093/ije/dyad063
- Eisenberg, J. A., Felleman, S. M., Short, V., Schwartz, B. [2] I., Bear, B., & Kazak, A. E. (2023). 3. Psychological Symptoms and Service Utilization in Prepubertal and Pubertal Transgender and Gender Diverse Patients. Journal of Pediatric Adolescent and Gynecology, 36(2), 224-225 https://doi.org 10.1016/j.jpag.2022.01.015
- [3] Kim Y, Je Y. 2019. Early menarche and risk of metabolic syndrome: a systematic review and meta-analysis. J Womens Health (Larchmt)28(1):77–86, PMID: 30285527, https://doi.org 10.1089/jwh.2018.6998.

- [4] Wilson LC, Rademacher KH, Rosenbaum J, Callahan RL, Nanda G, Fry S, et al. Seeking synergies: understanding the evidence that links menstrual health and sexual and reproductive health and rights. Sex Reproductive Health Matters. 2021;29(1):1882791 https://doi.org:10.1080/26410397.2021.1882791
- [5] Hashim MS, Obaideen AA, Jahrami HA, et al. Premenstrual syndrome is associated with dietary and lifestyle behaviors among university students: a crosssectional study from Sharjah, UAE. Nutrients. 2019;11(8):1939. https://doi.org:10.3390/nu11081939.
- [6] Beddig T, Reinhard I, Ebner-Priemer U, Kuehner C (2020) Reciprocal effects between cognitive and affective states in women with premenstrual dysphoric disorder: an ecological momentary assessment study. Behav Res Ther 131:103613. https://doi.org/10.1016/j.brat.2020.103613
- Bhuvaneswari K, Rabindran P, Bharadwaj B. Prevalence of premenstrual syndrome and its impact on quality of life among selected college students in Puducherry. Natl Med J India. 2019 Jan-Feb;32(1):17–9. https://doi.org: 10.4103/0970-258X.272109
- [8] S.H. Choi, A. Hamidovic ,Association between smoking and premenstrual syndrome: a meta-analysis Front Psychiatr, 11 (2020 Nov 26) https://doi.org/10.3389/fpsyt.2020.575526
- [9] Shrestha DB, Shrestha S, Dangol D, Aryal BB, Shrestha S, Sapkota B, Rai S. Premenstrual syndrome in students of a teaching hospital. Journal of Nepal Health Research Council. 2019 Aug 9;17(2):253-7. doi: 10.33314/jnhrc.v0i0.1213.
- [10] Roomruangwong C, Sirivichayakul S, Matsumoto AK, Michelin AP, de Oliveira Semeão L, de Lima Pedrão JV, Barbosa DS, Moreira EG, Maes M. Menstruation distress is strongly associated with hormone-immune-metabolic biomarkers. Journal of Psychosomatic Research. 2021 Mar 1;142:110355.doi: 10.1016/j.jpsychores.2020.110355.
- [11] Abu Alwafa R, Badrasawi M, Haj Hamad R. Prevalence of premenstrual syndrome and its association with psychosocial and lifestyle variables: a cross-sectional studyfrom Palestine. BMC Womens Health 2021; 21(1):233. doi: 10.1186/s12905-021-01374-6.
- [12] Thakrar P, Bhukar K, Oswal R. Premenstrual dysphoric disorder: Prevalence, quality of life and disability due to illness among medical and paramedical students. Journal of Affective Disorders Reports. 2021 Apr 1;4:100112 https://doi.org/10.1016/j.jadr.2021.100112
- [13] Nuriyeva R, Bachmann A. Prämenstruelles Syndrom und prämenstruelle dysphorische Störung. Gynäkologische Endokrinologie. 2022 May;20(2):125-34.
- [14] Dubol M, Epperson CN, Lanzenberger R, Sundström-Poromaa I, Comasco E. Neuroimaging premenstrual dysphoric disorder: a systematic and critical review. Frontiers in neuroendocrinology. 2020 Apr 1;57:100838. doi: 10.1016/j.yfrne.2020.100838

- [15] Singh R, Sharma R, Rajani H. Impact of stress on menstrual cycle: a comparison between medical and non medical students. Saudi Journal for Health Sciences. 2015 May 1;4(2):115.
- [16] Cao S, Jones M, Tooth L, Mishra GD. History of premenstrual syndrome and development of postpartum depression: a systematic review and meta-analysis. Journal of psychiatric research. 2020 Feb 1; 121:82-90. doi: 10.1016/j.jpsychires.2019.11.010.
- [17] Durairaj, A., & Ramamurthi, R. (2019). Prevalence, pattern and predictors of premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) among college girls. New Indian J OBGYN, 5(2), 93-8. DOI -10.21276/obgyn.2019.5.2.6
- [18] Bansal, D., Raman, R., & Rao, T. S. (2019). Premenstrual dysphoric disorder: ranking the symptoms and severity in Indian college students. Journal of Psychosexual Health, 1(2), 159-163

https://doi.org/10.1177/2631831819827183

- [19] Kustriyanti D, Rahayu H. Prevalence of premenstrual syndrome and quality of life among health science college student. International Journal Of Public Health Science. 2020 Mar;9(1):15-9 DOI:10.11591/ijphs.v9i1.20404
- [20] Shahar S, Vanoh D, Mat Ludin AF, Singh DKA, Hamid TA. Factors associated with poor socio-economic status among Malaysian older adults: an analysis according to urban and rural settings. BMC Public Health. 2019;19(Suppl 4):549. DOI:10.1186/s12889-019-6866-2
- [21] Koganti CT, Bobba NS. A study on the prevalence of premenstrual dysphoric disorder in medical students. Acad J Med. 2020;3(1):74–7 https://doi.org/10.47008/ajm.2020.3.1.15
- [22] Abeje A, Berhanu Z. Premenstrual syndrome and factors associated with it among secondary and preparatory school students in Debremarkos town, North-west Ethiopia, 2016. BMC research notes. 2019 Dec;12(1):1-5. DOI: 10.1186/s13104-019-4549-9
- [23] R.S. Shah, D.S. Christian., Association of sociodemographic, dietary and lifestyle factors with Premenstrual Syndrome (PMS) among undergraduate medical students of a tertiary care institute in Ahmedabad, Gujarat J Fam Med Prim Care, 9 (11) (2020 Nov), p. 5719 ttps://doi.org/ 10.4103/jfmpc.jfmpc_1553_20
- [24] Mariappen U, Chew KT, Zainuddin AA, Mahdy ZA, Abdul Ghani NA, Grover S. Quality of life of adolescents with menstrual problems in Klang Valley, Malaysia: a school population-based cross-sectional study. BMJ Open. 2022;12(1):e051896. DOI: 10.1136/bmjopen-2021-051896
- [25] Rezende AP, Alvarenga FR, Ramos M, Franken DL, Costa JS, Pattussi MP, Paniz VM. Prevalence of premenstrual syndrome and associated factors among academics of a university in midwest Brazil. Revista Brasileira de Ginecologia e Obstetrícia. 2022 Apr 8;44:133-41. DOI: 10.1055/s-0041-1741456

[26] Kamat SV, Nimbalkar A, Phatak AG, Nimbalkar SM. Premenstrual syndrome in Anand district, Gujarat: a cross-sectional survey. J Family Med Prim Care. 2019;8(2):640–7.

doi: 10.4103/jfmpc.jfmpc_302_18.

- [27] Ayaz-Alkaya S, Yaman-Sözbir Ş, Terzi H. The effect of Health Belief Model-based health education programme on coping with premenstrual syndrome: a randomised controlled trial. Int J Nurs Pract. 2020;26(2):e12816. doi: 10.1111/ijn.12816
- [28] Vaghela, N., Mishra, D., Sheth, M., & Dani, V. B. (2019). To compare the effects of aerobic exercise and yoga on premenstrual syndrome. Journal of Education Health Promotion, 8, 199. Doi:10.4103/jehp.jehp_50_19
- [29] Victor FF, Souza AI, Barreiros CDT, Barros JLN, Silva FACD, Ferreira ALCG. Quality of life among university students with premenstrual syndrome. 2019 May;41(5):312–7. ttps://doi.org/ 10.1055/s-0039-1688709
- [30] Saglam, H. Y. & Orsal, O. Effect of exercise on premenstrual symptoms: A systematic review. Complement Ther. Med. 48, 102272 (2020). DOI: 10.1016/j.ctim.2019.102272
- [31] Bianchin L, Bozzola M, Pier AB, Bernasconi S, Bona G, Buzi F, et al. Menstrual cycle and headache in teenagers. Indian J Pediatr. 2019;86(Suppl 1):25–33. doi: 10.1007/s12098-018-2829-3.
- [32] Geta TG, Woldeamanuel GG, Dassa TT. Prevalence and associated factors of premenstrual syndrome among women of the reproductive age group in Ethiopia: systematic review and meta-analysis. PLoS One. 2020;15(11):1–12 doi: 10.1371/journal.pone.0241702
- [33] Grover S, Gupta M, Dua D, Kaur H. 2019. Prevalence of premenstrual dysphoric disorder among school-going adolescent girls. Ind. Psychiatry. J. Vol. 28(2):198 DOI: 10.4103/ipj.ipj_79_19
- [34] Ghaffarilaleh, G., Ghaffarilaleh, V., Sanamno, Z. & Kamalifard, M. Yoga positively affected depression and blood pressure in women with premenstrual syndrome in a randomized controlled clinical trial. Complement. Ther. Clin. Pract. 34, 87–92 (2019). doi: 10.1016/j.ctcp.2018.11.007.
- [35] Ravichandran, H. & Janakiraman, B. Effect of aerobic exercises in improving premenstrual symptoms among healthy women: A systematic review of randomized controlled trials. Int. J. Womens Health 14, 1105–1114 (2022).

doi: 10.2147/IJWH.S371193.

[36] Mizuta R, Maeda N, Komiya M, Suzuki Y, Tashiro T, Kaneda K, Tsutsumi S, Ishihara H, Kuroda S, Urabe Y. The relationship between the severity of perimenstrual symptoms and a regular exercise habit in Japanese young women: a cross-sectional online survey. BMC Womens Health. 2022 May 28;22(1):200. doi: 10.1186/s12905-022-01720-2. .

- [37] Worku D, Dirriba AB, Wordofa B, Fetensa G. Perceived stress, depression, and associated factors among undergraduate health science students at Arsi university in 2019 in Oromia. Ethiopia Psychiatry J. (2020) 2020:1–8. https://doi.org/ 10.1155/2020/4956234
- [38] Majeed-Saidan MM, AlKharraz N, Kaaki K, AlTawil N, Alenezy S, Ahamed SS. Prevalence of premenstrual syndrome levels and its management among female students of medical and non-medical colleges in Riyadh. Cureus. 2020 Nov 20;12 DOI: 10.7759/cureus.11595
- [39] L. Hou, Y. Huang, R. Zhou Premenstrual syndrome is associated with altered cortisol awakening response Stress, 22 (6) (2019 Nov 2), pp. 640-646 https://doi.org/ 10.1080/10253890.2019.1608943

- [40] Shariati K, Ghazavi H, Saeidi M, Ghahremani S, Shariati A, Aryan H, et al. Psychotherapy for depression and anxiety in premenstrual syndrome (PMS): A systematic review and meta-analysi. Int J Pediatr. 2019;7:9169–79 DOI:10.22038/ijp.2018.36729.3197
- [41] Sahu, R. , Barnwal, S. L. , & Vishvakarma, S. (2022). Prevalence and severity of premenstrual syndrome among young females in Chhattisgarh, India. Asian Pacific Journal of Health Sciences, 9(1), 120–125. ttps://doi.org/10.21276/apjhs.2022.9.1.34
- [42] Maheshwari, Prerna; Menon, Bindu; Jith, Arya; Bhaskaran, Renjitha1. Prevalence of premenstrual syndrome and its effect on quality of work life in working women in South India. Industrial Psychiatry Journal, May 19, 2023. | DOI: 10.4103/ipj.ipj_106_22