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Premenstrual Dysphoric Disorder: Prevalence and Its Impact on Quality of Life Among Female Nursing Students in a University in Kanpur

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ABSTRACT

Background: Premenstrual Dysphoric Disorder (PMDD) is a severe form of premenstrual syndrome characterized by significant mood disturbances and physical symptoms that occur in the luteal phase of the menstrual cycle. PMDD affects a notable proportion of menstruating women and has a profound impact on their quality of life.
Aims: This study aims to determine the prevalence of PMDD and its impact on quality of life among nursing students in a medical university in Kanpur.
Methods: A cross-sectional study was conducted among 600 female students from a nursing college in Uttar Pradesh. Participants were selected using convenience sampling. The Premenstrual Symptoms Screening Tool (PSST) was used to diagnose PMDD, and the The World Health Organization Quality of Life (WHOQOL)-BREF questionnaire was employed to assess Quality of Life.
Results: Total 600 nursing students were approached, among them, 429 students completed the form. On screening with PSST, out of 429 participants 19 (4.43%) were screened as having PMDD. The most common symptom in PMDD were anger (100%) and fatigue (100%) followed by Difficulty in concentrating (94.74%) and least common symptom is Over- eating (63.16%). Functional impairment among students having PMDD according to PSST mostly effects the Education (94.74%) and having least effect on house/hostel responsibilities (63.16%). PMDD have comparatively moderate Quality of Life.
Conclusion: The findings highlight the need for effective management strategies and interventions to improve quality of life in this population. Future research should focus on longitudinal studies to better understand the causal relationships and develop targeted interventions.

Keywords*: Premenstrual Dysphoric Disorder, Quality of Life, World Health Organization, Premenstrual Symptoms Screening Tool, Mental Health.*

INTRODUCTION

Menstruation is a normal part of every woman's life and is necessary for the renewal of the uterine lining to prepare for potential pregnancy. Premenstrual mood and somatic symptoms are common and can have a significant impact on women's lives. PMS and PMDD occur during the luteal phase of the menstrual cycle and resolve with menstruation.

For most women, the severity of PMS symptoms is mild and does not impair daily functioning. However, it is estimated that twenty percent of women experience severe symptoms of PMS that are clinically relevant.[1]

Premenstrual dysphoric disorder (PMDD) is considered a severe form of PMS that impairs quality of life to a similar extent as other depressive and anxiety disorders do.[2] Furthermore, the burden of PMS/PMDD and the impact on disability-

adjusted life years is comparable to major psychiatric disorders, yet it remains largely underrecognized.[3] Based on strong scientific evidence, PMDD has been moved from the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) Appendix B, "Criteria Sets and Axes Provided for Further Study," to the main body of DSM-5.[4]

Despite the long-standing recognition of premenstrual symptoms, specific diagnostic criteria have only been established recently. The terminology associated with premenstrual disorders has undergone significant changes throughout history, transitioning from "menses moodiness" in the 18th century to "premenstrual tension" in the 1930s, and eventually settling on "premenstrual syndrome" in the 1950s. It was subsequently renamed as late luteal phase dysphoric disorder (LLPDD) and is now known as premenstrual dysphoric disorder (PMDD). It was initially listed as a psychiatric disorder in the DSM-III but was later moved to the section on conditions requiring further study (also known as the "appendix"). In the DSM-5, PMDD was returned to the main section of the manual devoted to depressive disorders as a diagnosis approved for routine clinical use. [5]

They must begin in the final week before menstruation, start to improve a few days after menstruation begins, and be absent in the weeks following menstruation over the course of a year. At least one of the required symptoms must be present, such as mood swings, irritability, anger, interpersonal conflicts, depressed mood, hopelessness, self-deprecation, anxiety, tension, decreased interest in usual activities, difficulty concentrating, lethargy, fatigue, lack of energy, changes in appetite (overeating or food cravings), insomnia, hypersomnia, feelings of being out of control, and somatic symptoms like bloating, weight gain, breast tenderness, and joint or muscle pain (American PsychiatricAssociation, 2013).

In a significant decision made in May 2019, the World Health Organization (WHO) officially included Premenstrual Dysphoric Disorder (PMDD) in the International Statistical Classification of Diseases and Related Health Problems, Eleventh Revision (ICD-11). This recognition is marked by the assignment of a dedicated ICD code (GA34.41) to PMDD, confirming its status as a globally recognized medical diagnosis. It also highlights the progress made in understanding and recognizing this often overlooked but debilitating condition. Although PMDD is primarily classified within the ICD-11's chapter on diseases of the genitourinary system, its classification extends to the subgrouping of depressive disorders due to the prominent mood-related symptoms[6].

The new ICD-11 diagnosis accurately describes premenstrual dysphoric disorder (PMDD) as a pattern of mood symptoms (depressed mood, irritability), somatic symptoms (lethargy, joint pain, overeating), or cognitive symptoms (difficulty concentrating, forgetfulness). These symptoms begin several days before menstruation, improve a few days after menstruation starts, and then become minimal or absent within about one week after menstruation begins.

According to a systematic review and meta-analysis conducted in India, the estimated prevalence of premenstrual dysphoric disorder (PMDD) is 8% [7]. Another study conducted on medical students residing in the hostel of an Indian medical college found the prevalence of PMDD to be 12.22% [8]. However, reported prevalence estimates of premenstrual syndrome (PMS) in India have ranged from 14.3% to 74.4% [9].

Premenstrual symptoms can cause a variety of difficulties for women, including physical and psychological health issues, as well as significant impairment in social and occupational areas. In young adolescents, these symptoms may have a particularly negative impact on college functioning and social interactions. Additionally, they can lead to low self-esteem, feelings of dissatisfaction, inadequacy, and an unhealthy lifestyle. Previous research has demonstrated that women with premenstrual disorders have a poor quality of life related to their health. In a comprehensive literature review, Parkin and Winer found that PMDD symptoms can greatly impair quality of life, especially in terms of interpersonal relationships with family members and partners. For women with premenstrual dysphoric disorder, the symptoms can be as disabling as those of major depressive disorder.[10]

In conservative societies like India, where menstruation is often considered taboo and traditional gender roles for females are still prevalent, there is a lack of awareness and a tendency to seek help for premenstrual disorders is low. Recognizing that these disorders are treatable, it is important to develop and implement effective health policies that can help bridge the treatment gap. However, in order to formulate appropriate policies, it is crucial to have access to high-quality information. PMDD, a common menstrual disorder, particularly affects college-going girls, impacting their relationships, daily activities, academics, and cognitive functions.[7]

REVIEW OF LITERATURE

Numerous studies have investigated the link between PMDD and different aspects of quality of life, such as mental health, work productivity, and social functioning. These findings highlight the importance of recognizing and addressing PMDD to enhance the overall well-being of affected individuals.

Studies that assess the prevalence of Premenstrual Dysphoric Disorder (PMDD) play a crucial role in understanding the extent of this condition and its impact on individuals' lives. By determining prevalence rates, researchers can allocate healthcare resources more effectively, develop targeted interventions, and raise awarenessabout PMDD.

In one study, a cross-sectional survey was conducted in Anand district, Gujarat, to assess the prevalence and severity of premenstrual syndrome and PMDD. The study included 1702 girls aged 8 to 23 years who had reached menarche. The researchers used a self-administered Premenstrual Symptoms Screening Tool for Adolescents (PSST-A), which revealed a prevalence of moderate to severe PMS of 19.3% and PMDD of 4.6%. Almost all (94.8%) of the girls experienced at least one PMS symptom, with 65.7% experiencing moderate to severe symptoms.[11]

Another study examined the prevalence of premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD), as well as their relationship with academic performance among female university students in Jordan. The study included 858 university students. Data was collected on a daily basis regarding signs of PMDD and PMS, academic motivation, and student involvement. The results showed that the prevalence of PMS was 92.3% and PMDD was 7.7%. There were significant differences in self-determination levels between students with PMS and those with PMDD, as the symptoms had a negative impact on female students' academic performance.[12]

Furthermore, research has indicated a link between PMDD and lifestyle factors. This study aimed to assess symptoms of PMS in medical students and examine the association of sociodemographic variables and lifestyle factors with PMDD. The study included a total of 179 medical students residing in a hostel at an Indian medical college. The Shortened Premenstrual Assessment Form was used to diagnose PMDD. The study found a higher rate of PMDD in older and postgraduate students. PMDD was significantly associated with lifestyle factors such as sleep, physical activity, total tea/coffee intake, and changes in tea/coffee and food intake under stress. The most common physical and psychological symptoms reported were body ache/joint pain and feeling depressed/blue [13].

In a cross-sectional study conducted in Gujarat, the prevalence of Premenstrual Dysphoric Disorder (PMDD) and its impact on quality of life and disability due to illness were assessed among medical and paramedical students. A total of 661 female medical and paramedical students participated in the study. The Premenstrual Symptoms Screening Tool (PSST), Daily Record of Severity of Problems form (DRSP), World Health Organization Quality of Life (WHOQOL)-BREF, and Sheehan disability scale (SDS) were administered. The results showed that 5.04% of students screened positive for PMDD according to PSST, and the prevalence of PMDD was 4.43% according to DRSP. PMDD had a significant impact on all areas of functioning, with work/school efficiency or productivity being the most affected (70.33%), followed by social activities (36.23%) [8].

Another cross-sectional study was conducted in Iran among schoolgirls aged 14 to 19 years. The study aimed to evaluate health-related quality of life (HRQOL) in a sample of 602 female Iranian adolescents with premenstrual disorders. HRQOL was measured using the Short Form Health Survey (SF-36). All students reported at least one premenstrual symptom, and 37.2% met the diagnostic criteria for PMDD. Comparing the SF-36 scores between students with and without PMDD, significant differences were found in all measures. The differences were particularly evident in role emotional, role physical, social functioning, and bodily pain. The study confirmed that adolescents with premenstrual disorders experience poor health-related quality of life [14].

A descriptive cross-sectional study was conducted among 266 healthy young females in a medical college in Nepal from June 21, 2021, to August 31, 2021. The self-rated Premenstrual Symptoms Screening Tool questionnaire was used to evaluate PMDD. Out of the 266 female students, theprevalence of PMDD was found to be 10 (3.8%) (95% confidence interval: 1.50-6.10). The study concluded that the prevalence of PMDD was higher in their study compared to similar studies [15].

In Nepal, a cross-sectional study was conducted to assess Premenstrual Syndrome (PMS) and PMDD in medical and nursing students at a Tertiary Care Teaching Hospital. The study included 382 participants, of which 113 (61.1%) medical students and 126 (64%) nursing students met the ACOG criteria for PMS. PMDD was diagnosed in 78 (39.6%) nursing students and 72 (38.9%) medical. students. The most common somatic symptom reported was headache (77%), and the most common behavioral symptom was irritability (81.2%) [16].

MATERIAL AND METHODS

Study Design

A Cross-Sectional Study analytical study was carried out by the Department of Psychiatry of Rama Medical College, Hospital and Research Centre

Source of Data

This study was conducted at nursing college at Rama university, Mandhana, Kanpur, Uttar Pradesh.

Study Population: All the college going girls were included in this study. The girls were selected using convenient sampling technique.

Sample Size: 400

Inclusion criteria
1. Female students who are willing to participate in the study by signing informed consent.

Ethical consideration
Ethical clearance was obtained from Rama university, Mandhana, Kanpur, Uttar Pradesh. Permission for data collection from the college girls was obtained from the principals of the respective colleges. Written inform consent was obtained from participants.

Confidentiality
Superior care was taken to maintain the privacy and confidentiality of the study participants.

DATA COLLECTION TOOL
1. The baseline assessment questionnaire included items related to PMS/PMDD, such as menstrual status (age of menarche, number of menstrual days, and cycle days).

2. **The Premenstrual Symptoms Screening Tool (PSST)** [17]. It was developed by Steiner et al. in 2003 as a screening tool for PMS and PMDD. It consists of 19 items divided into two domains: manifestations and functional impact of PMS. Each item is scored on a 4-point Likert scale (0 = absent; 1 = mild; 2 = moderate; 3 = severe). The first domain includes 14 symptoms, including four core symptoms and ten other symptoms related to decreased interest in daily activities, behavioral signs, and physical symptoms. The second domain consists of five variables related to interference with daily activity. For a participant to be considered positive for PMDD, they must meet the following criteria: (i) have at least five symptoms from the first domain with a score of 2 or higher, (ii) have at least one of the first four core symptoms rated as severe (score = 3), and (iii) have at least one of the five variables rated as severe (score = 3) in the second domain. Positive screening for PMS requires the same criteria as PMDD, but the severity level for the four core symptoms and functional impacts in the second domain can range from moderate to severe. When compared to the diagnostic criteria of the DSM-V, PSST showed high sensitivity and varying specificity.

3. **The World Health Organization Quality of Life (WHOQOL)-BREF** [18]. It is a comprehensive instrument developed by the WHO to assess quality of life. It consists of 26 items and measures an individual's perception of quality of life in four domains: (a) physical health (seven items), (b) psychological health (six items), (c) social relationships (three items), and (d) environmental health (eight items). The scale also includes two questions about overall quality of life and general health factors. The domain scores are scaled in a positive direction, with higher scores indicating higher quality of life. The range of scores for each domain is 4-20. The scores can be transformed using two methods: the first method converts scores to a range between 4 and 20, and the second method converts domain scores to a 0-100 scale.

India is presently in the midst of a major health crisis with the second wave of corona virus spreading at an alarming rate and claiming more lives than ever before [19].

RESULT
For the study, total 600 nursing students were approached, among them, 434 students were present 323 on the day of data collection and gave consent to participate in study. Out of these 434, 429 participants returned completed forms whereas 5 forms were incomplete.

Out of 429 participants, 323 (75.29%) belongs to age group of 22 or less and 106 (24.71%) belongs to age group more than 22. Among 429 participants, 146 (34.03%) had their menarche at <12 years of age, 245 (57.10%) had their menarche at 12-15 years of age and 38 (8.87%) had menarche at more than 15 years of age. Out of 429 participants, 346 (80.65%) are having a menstrual cycle of ≤ 28 days and 83 (19.35%) are having a cycle duration of more than 28 days. According to the duration of flow, 385 (89.74%) are having a flow < 6 days and 44 (10.26%) having ≥ 6 days.

On screening with PSST, out of 429 participants 19 (4.43%) were screened as having PMDD while 242 (56.41) were having Moderate to severe level PMS and remaining 168 (39.16%) Participants were having no or mild PMS.

Out of 323 participants who belong to the age group of ≤ 22 years, 127(39.32%) are having no or mild PMS, 182 (56.36%) are suffering from moderate to severe level of PMS and remaining 14 (4.33%) are having PMDD. Another 106 participants

from >22 years age group, 41 (38.68%) belongs to no or mild PMS, 60 (56.6%) belongs to moderate to severe PMS and remaining 5 (4.72%) belongs to PMDD group.

Out of 146 participants who belong to the Menarche age group of <12 years, 50 (34.25%) are having no or mild PMS, 88 (60.27%) are suffering from moderate to severe level of PMS and remaining 8 (5.48%) are having PMDD. Another 245 participants from menarche group of 12-15 years age group, 103 (42.04%) belongs to no or mild PMS, 133 (54.29%) belongs to moderate to severe PMS and remaining 9 (6.67%) belongs to PMDD group. The remaining 38 people who belong to menarche age group of >15 years, 15 (39.47%) belongs to no or mild PMS group, 21 (55.27%) having moderate to severe PMS and 2 (5.26%) are having PMDD.

Out of 346 participants who are having duration of menstrual cycle ≤28 days, 140 (40.46%) are having no or mild PMS, 189 (54.62%) are suffering from moderate to severe level of PMS and remaining 17 (4.91%) are having PMDD. Another 83 participants from duration of menstrual cycle >28 days, 28 (33.73%) belongs to no or mild PMS, 53 (63.96%) belongs to moderate to severe PMS and remaining 2 (2.41%) belongs to PMDD group.

Out of 346 participants who are having duration of menstrual cycle ≤28 days, 140 (40.46%) are having no or mild PMS, 189 (54.62%) are suffering from moderate to severe level of PMS and remaining 17 (4.91%) are having PMDD. Another 83 participants from duration of menstrual cycle >28 days, 28 (33.73%) belongs to no or mild PMS, 53 (63.96%) belongs to moderate to severe PMS and remaining 2 (2.41%) belongs to PMDD group.

Table 1 : frequency and percentage wise distribution and association of PMS and PMDD with various demographic variables

N=429

Factors	**Total No of Participants**	**No/Mild PMS**	**%**	**Mod/Severe PMS**	**%**	**PMDD**	**%**	**X^2**	**p value**
Your Age<=22	323	127	39.32	182	56.35	14	4.33	0.035653	0.982331
Your Age>22	106	41	38.68	60	56.6	5	4.72		
Age at Menarche (Years)<12	127	47	37.01	76	59.84	4	3.15	1.766306	0.778641
Age at Menarche (Years)12 to15	262	107	40.84	142	54.2	13	4.96		
Age at Menarche (Years)>15	40	14	35	24	60	2	5		
Duration of menstrual cycle (Days)<=28	346	140	40.46	189	54.62	17	4.91	2.732327	0.255084
Duration of menstrual cycle (Days)>28	83	28	33.73	53	63.86	2	2.41		
Duration of flow (Days)<6	385	146	37.92	221	57.4	18	4.68	2.640863	0.26702
Duration of flow (Days)>=6	44	22	50	21	47.73	1	2.27		

Table 1 shows there are significant association between Duration of menstruation and duration of flow with PMDD as the calculated chi square value is higher than tabular value. It also states that there is no significant association between age and age of menarche with PMDD.

Table 2 : Frequency and percentage wise distribution of Pre Menstrual Symptoms among 3 groups according to PSST

Symptoms	**No/Mild PMS(N=168)**	**PMS (N=242)**	**PMDD(N=19)**
Anger/irritability	156 (92.86%)	235 (97.11%)	19 (100.0%)
Anxiety/tension	146 (86.9%)	214 (88.43%)	15 (78.95%)

Tearfulness	108 (64.29%)	169 (69.83%)	17 (89.47%)
Depressed mood	133 (79.17%)	200 (82.64%)	16 (84.21%)
Decrease interest in academic work	126 (75.0%)	190 (78.51%)	14 (73.68%)
Decrease interest in home	129 (76.79%)	179 (73.97%)	16 (84.21%)
Decrease interest in social activities	129 (76.79%)	180 (74.38%)	15 (78.95%)
Difficulty in concentrating	141 (83.93%)	225 (92.98%)	18 (94.74%)
Fatigue/lack of energy	164 (97.62%)	230 (95.04%)	19 (100.0%)
Over eating/food craving	119 (70.83%)	180 (74.38%)	12 (63.16%)
Insomnia	113 (67.26%)	188 (77.69%)	15 (78.95%)
Hypersomnia	97 (57.74%)	162 (66.94%)	15 (78.95%)
Feeling overwhelmed	115 (68.45%)	194 (80.17%)	17 (89.47%)
Physical symptoms (breast tenderness/swelling, headache, joint/muscle pain, bloating, weight gain)	144 (85.71%)	211 (87.19%)	16 (84.21%)

The most common symptom in PMDD were anger (100%) and fatigue (100%) followed by Difficulty in concentrating (94.74%) and least common symptom is Over-eating (63.16%)

The most common symptom in moderate to severe PMS was Fatigue (95.04%) followed by Difficulty in concentrating (92.98%), and lease common symptom is hypersomnia (66.94%)

The most common symptom in no to mild PMS was Fatigue (97.62%) followed by Anger (92.86%), and lease common symptom is hypersomnia (57.74%)

Table 3 : Frequency and percentage wise distribution of functional impairment among groups according to PSST

Functional impairment item	**No/Mild PMS N=168**	**Moderate to Severe PMS N=242**	**PMDD N=19**
Interferes with education	122(72.62%)	205(84.71%)	18(94.74%)
Interferes with relationship of friends	119(70.83%)	186(76.86%)	12(63.16%)
Interferes with relationship of family	105(62.5%)	182(75.21%)	13(68.42%)
Interferes with social life activities	128(76.19%)	200(82.64%)	16(84.21%)
Interferes with house/hostel responsibility	97(57.74%)	167(69.01%)	12(63.16%)

Above table 3 shows that Among all PSSD mostly effects the Education (94.74%) and having least effect on house/hostel responsibilities (63.16%). Among all Moderate to severe PMS mostly effects the education (84.71%) and having least effect on house/hostel responsibilities (69.01%). Among all No/mild PMS it has most effect on social life activities (76.19) and has least interaction with house/hostel responsibilities (57.74%).

Table 4: The World Health Organization Quality of Life (WHOQOL)-BREF

Functional impairment item	**No/Mild PMS N=168 Mean (SD)**	**Moderate to Severe PMS N=242 Mean (SD)**	**PMDD N=19 Mean (SD)**
Physical	**61.22(18.08)**	**59.40(17.02)**	**52.26(12.96)**
Psychological	**65.5(16.90)**	**61.97(15.03)**	**56.26(13.55)**
Social Relations	**60.45(22.95)**	**59.38(20.55)**	**50.21(15.44)**
Environment	**61.69(22.12)**	**58.61(20.66)**	**52.68(15.67)**

Above table 4 shows that Among all PSSD mostly effects the Psychological Physical (56.26) and having least effect on h Social Relations (50.21). Among all Moderate to severe PMS mostly effects the Psychological (61.97) and having least effect on Environment (58.61). Among all No/mild PMS it has most effect on Psychological (65.5) and has least interaction with Social Relations (60.45). PMDD have comparatively moderate Quality of Life.

DISCUSSION

The Aim of the study was Premenstrualdysphoric disorder: Prevalence and its impact on quality of life among female nursing students in a Rama university, Kanpur. For the study, total 600 nursing students were approached, among them, 434 students were present 323 on the day of data collection and gave consent to participate in study. Out of these 434, 429 participants returned completed forms whereas 5 forms were incomplete.

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The most common symptom in PMDD were anger (100%) and fatigue (100%) followed by Difficulty in concentrating (94.74%) and least common symptom is Over-eating (63.16%)

The most common symptom in moderate to severe PMS was Fatigue (95.04%) followed by Difficulty in concentrating (92.98%), and lease common symptom is hypersomnia (66.94%)

The most common symptom in no to mild PMS was Fatigue (97.62%) followed by Anger (92.86%), and lease common symptom is hypersomnia (57.74%)

Table 3 shows that Among all PSSD mostly effects the Education (94.74%) and having least effect on house/hostel responsibilities (63.16%). Among all Moderate to severe PMS mostly effects the education (84.71%) and having least effect on house/hostel responsibilities (69.01%). Among all No/mild PMS it has most effect on social life activities (76.19) and has least interaction with house/hostel responsibilities (57.74%).

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SUMMARY AND CONCLUSION

SUMMARY

A Cross-Sectional Study analytical study was carried out by the Department of Psychiatry of Rama Medical College, Hospital and Research Centre This study was conducted at nursing college at Rama university, Mandhana, Kanpur, Uttar Pradesh. Study Population: All the college going girls were included in this study. The girls were selected using convenient sampling technique. Sample Size: 400. Inclusion criteria; Female students who are willing to participate in the study by signing informed consent. Ethical clearance was obtained from Rama university, Mandhana, Kanpur, Uttar Pradesh. Permission for data collection from the college girls was obtained from the principals of the respective colleges. Written inform consent was obtained from participants. Superior care was taken to maintain the privacy and confidentiality of the study participants. Data collection tools; The baseline assessment questionnaire included items related to PMS/PMDD, such as menstrual status (age of menarche, number of menstrual days, and cycle days). The Premenstrual Symptoms Screening Tool (PSST). The World Health Organization Quality of Life (WHOQOL)-BREF.

CONCLUSION

The study revealed a prevalence of 4.43% for PMDD among nursing students, indicating a notable presence of this disorder among college-going students. Additionally, a considerable portion of participants exhibited moderate to severe PMS symptoms (56.41%), underlining the substantial burden of menstrual-related symptoms among this population. Significant associations were found between PMDD and the duration of menstruation and flow, indicating potential risk factors for the disorder. However, no significant associations were observed with age and age of menarche.

The predominant symptoms of PMDD were anger and fatigue, significantly impacting concentration. Functional impairment, especially in education, was evident across all PMS severity levels. PMDD participants reported the lowest quality of life scores, particularly in psychological health. These findings underscore the importance of addressing menstrual-related disorders among college students and implementing appropriate interventions to mitigate their impact on academic, social, and psychological well-being.

Declarations:
Conflicts of interest: There is no any conflict of interest associated with this study
Consent to participate: There is consent to participate.
Consent for publication: There is consent for the publication of this paper.
Authors' contributions: Author equally contributed the work.

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