

## ORIGINAL ARTICLE

## Pattern of premenstrual symptoms among pre-clinical medical students at the University of Nigeria

Lawrence C IKEAKO<sup>1</sup>  
Hyginus U EZEGWUI<sup>2</sup>  
Michael I NWAFOR<sup>2</sup>  
Eric E NWAOGU-  
IKEOJO<sup>2</sup>

<sup>1</sup>Department of Obstetrics and Gynaecology, Anambra State University Teaching Hospital Awka, NIGERIA

<sup>2</sup>Department of Obstetrics and Gynaecology, University of Nigeria Teaching Hospital Ituku-Ozalla, Enugu NIGERIA

**Author for Correspondence**

Dr Lawrence C IKEAKO  
Department of Obstetrics and Gynaecology, Anambra State University Teaching Hospital Amaku, Awka, NIGERIA

E-mail:

ikeakolawrence@yahoo.com

Phone: +234-809-080-1080

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## INTRODUCTION

Nearly all women with regular menstrual cycles experience some symptoms in the luteal phase of the cycle. In some women, these manifestations may be exaggerated and become a cause of misery, family

disharmony, absenteeism, criminal acts like murder and suicide.<sup>1</sup> Premenstrual syndrome (PMS) is the cyclic occurrence in the luteal phase of the menstrual cycle of a combination of distressing physical, psychological and behavioural changes of sufficient severity to result in deterioration of interpersonal

## ABSTRACT

**Background:** Premenstrual syndrome is a recognized entity which causes much distress to women at some stage during the reproductive period of their lives.

**Objective:** To evaluate the pattern of premenstrual symptoms among pre-clinical female medical students at the University of Nigeria, Enugu Campus.

**Methodology:** This was a descriptive cross-sectional study. The second-year and third-year pre-clinical female medical students filled the questionnaires. Questions were asked on socio-demographic characteristics, premenstrual symptoms, severity of symptoms and effects on quality of life. The collected data were analyzed using the *Statistical Package for Social Sciences (SPSS) version 11.0* software.

**Results:** A total of 183 students completed their questionnaires with a mean age and standard deviation (SD) of 21.33(2.9) years. Of these, 38.3% had recurrent symptoms in the luteal phase of the three previous menstrual cycles. Pelvic discomfort (65.8%) and breast fullness (59.5%) were the most common physical symptoms, while mood changes (27.9%) were the most common psychological symptom, and 9.8% reported lowered concentration to academic work at school. Treatment with pharmacologic agents was employed by 81.4%, while 12.6% each stayed at home and avoided social activities, respectively.

**Conclusion:** There were predominance of physical symptoms and mood related changes which interfered with school activities. Health education with emphasis on reproductive health component is necessary to enable students cope with premenstrual symptoms.

**Keywords:** Life quality, health education, mood changes, pelvic discomfort, preclinical students

relationships and/or interference with normal activities which remit upon onset or immediately after menstruation.<sup>2</sup>

The specific emotional and physical symptoms attributable to PMS vary among women, but each individual's pattern of symptoms is predictable, occurs consistently during the ten days prior to menses, and vanishes either shortly before or shortly after the start of menstrual flow.<sup>3</sup>The number of women who experience PMS depends on the stringency of the definition of PMS.<sup>4</sup>

By the year 2010, the World Health Organization (WHO) estimated that 199million women had PMS, and this constituted 5.8% of the female population.<sup>5</sup> Studies have shown that while 80% of menstruating women have experienced at least one symptom that could be attributed to PMS, estimates of prevalence range from as low as 3% to as high as 30%.<sup>4,6</sup>

Premenstrual dysphoric disorder (PMDD) consists of symptoms similar to, but more severe than, PMS.<sup>2</sup>Whereas 50-80% of menstruating women report having some degree of these symptoms only about 3-9%, meet the diagnostic criteria for PMDD.<sup>7,8</sup> The exact causes of PMS are not fully understood.

While PMS is linked to the luteal phase, measurements of sex hormone levels at the phase are not remarkable. It has been suggested that one or more neurotransmitters and/or neurohormonal systems in certain women may have an abnormal response to fluctuations in gonadal hormones across the menstrual cycle.<sup>9</sup> In twin studies, the concordance of PMS is twice as high in monozygotic twins as in dizygotic twins, suggesting the possibility of some genetic component.<sup>9</sup> In addition to race and ethnicity, culture may influence expression of premenstrual symptoms and their severity.<sup>6</sup> Other risk factors include high caffeine intake, stress, increasing age, history of depression and diet.<sup>10</sup>

Several different symptoms have been associated with PMS, but the three most prominent symptoms are irritability, tension and dysphoria.<sup>2</sup>The presence of exclusively physical symptoms associated with the menstrual cycle, such as bloating, abdominal cramps, constipation, swelling or tenderness of the breasts, cyclic acne and joint or muscle pain - no matter how disruptive - these physical symptoms are not considered as PMS.<sup>2</sup>

The diagnosis of PMS is controversial and there is no laboratory test or unique physical finding to verify the diagnosis of PMS.<sup>2</sup>The diagnosis is mainly clinical. Based on the criteria outlined in the Tenth Revision of the International Classification of Disease (ICD-10), PMS is diagnosed when symptoms occur in the luteal phase of the cycle, resolve by the end of menstruation, be severe enough to have major impact on normal functioning and have occurred in at least four of the six previous cycles.<sup>11</sup>

The American Psychiatric Association, Diagnostic and Statistical Manual of mental disorders, 4<sup>th</sup> edition (DSM - IV) outlined the criteria for the diagnosis of PMDD which is a severe form of PMS.<sup>12</sup>Though potentially not life-threatening, PMS is associated with reduction in health related quality of life and women with PMS have greater work productivity impairment than women without it.<sup>9</sup>

This study was carried out to access the pattern of premenstrual symptoms among pre-clinical medical students in the University of Nigeria, Enugu Campus.

## METHODOLOGY

This was a descriptive cross-sectional survey carried out on second-year and third-year female preclinical medical students at the University of Nigeria, Enugu Campus. Enugu is located in South-East Nigeria. The study was done over a period of 1month, from January 15<sup>th</sup> to February 14<sup>th</sup> 2008.The students were interviewed in their lecture

halls by two trained assistants using pre-tested questionnaires after obtaining individual informed consents. The study was approved by the Ethics Committee of the University of Nigeria Teaching Hospital, Enugu. All subjects with psychiatric disorders such as chronic fatigue syndrome and panic disorders were excluded.

The first part of the questionnaire included socio-demographic and gynaecological questions such as age, marital status, religion and age at menarche. The second part of the questionnaire contained items derived from DSM-IV and ICD-10 classificatory systems.<sup>11,12</sup> Both systems were used to estimate the prevalence for ICD-10 and DSM-IV criteria for PMS and PMDD. Prevalence connotes the relative frequency of students experiencing the syndrome. The students were asked to identify symptoms experienced during the week preceding the menses in the last 3 menstrual cycles and effects on the quality of life.

The third part of the questionnaire was composed of questions exploring the severity of premenstrual symptoms and its treatment. The severity of the symptoms were graded thus 0=None (No symptom); 1=mild (noticeable, but not troublesome); 2=moderate (interfere with normal activity); 3=severe (intolerable, unable to perform normal activities).

The collected data were analyzed using the *Statistical Package for Social Sciences (SPSS) version 11* software. *Chi square* test was used for discrete variables and *p-values* <0.05 were considered statistically significant. The results were presented in tables and simple percentages.

## RESULTS

A total of 183 students completed their questionnaires out of the 207 pre-clinical female students, giving a response rate of 88.4%. The mean age (standard deviation) was 21.3 (2.59) years and the range, 17 to 29 years. The mean age (standard deviation [SD] at

menarche was 13.1 (1.77) years and the range, 9-18years. All the respondents were nulliparous.

One hundred and sixty (87.4%) students reported experiencing various degrees of at least one of the 20 symptoms included in the questionnaire. Of these, 61 (38.1%) had symptoms that were mild, 32 (51.3%) had moderate symptoms while 17 (10.6%) had severe symptoms. One hundred and forty-nine students (81.4%) used pharmacologic remedies for treatment. Of these, 62/149 (41.6%) participants used *piroxicam*, 43(28.9%) used *baralgin*, 29(19.5%) used *ponstan* while 15 (10.1%) used *paracetamol*. Non-pharmacologic remedies used included bed rest 30/183 (16.4%), exercise 21 (11.4%) and sleep 20 (10.9%). Seventy (38.3%) of the respondents met the criteria for the diagnosis of premenstrual syndrome (Table 1) according to ICD-10 criteria, while 7% (13/183) met the criteria for severe PMS or PMDD.

Table 1. Criteria for diagnosis of premenstrual symptoms

Symptom	No.	%
Absent by end of menstruation	159	86.9
Recurrent for at least 3 cycles	147	80.3
Free interval - 7 days	133	72.6
Severe enough to interfere with daily activities	73	39.9
Present in luteal phase	70	38.3

Table 2 shows the symptoms reported by the students. Pelvic discomfort 120/183 (65.8%) and breast fullness 109 (59.5%) were the most common physical symptoms while mood changes 51 (27.9%) and irritability 38 (20.8%) were the most common psychological changes. The behavioural symptoms reported by the students were staying in bed 30/183 (16.4%), whereas 23 (12.6%) each stayed at home and avoided social activities, and 18 (9.8%) had lowered concentration to academic work at school.

Table 2. Physical and psychological symptoms of menstrual cycle

Symptom	No.	%
Pelvic discomfort	120	65.8
Breast fullness	109	59.5
Mood Changes	75	41
Irritable	51	27.9
Fatigue/tiredness	38	20.8
Headache	30	16.5
Bloating	21	11.4
Anxiety	21	11.4
Loss of appetite	20	10.9
Lack of concentration	18	9.8
Weight gain	17	9.2
Anger	17	9.2
Depression	15	8.2
Tension	15	8.2
Abdominal Discomfort	14	7.7
Sleep disorder	14	7.7
Confusion	12	6.6
Sleeplessness	10	5.5
Backache	7	3.8
Acne	5	2.7

## DISCUSSION

The study conducted on pre-clinical medical students showed that 87.4% participants had various degrees (mild to severe) of at least one premenstrual symptom (PM). Bakshani, *et al*, observed that 92% of Iranian female medical university students experienced some premenstrual symptoms.<sup>6</sup> Thu, *et al*, also found that more than 98% of their respondents in Thailand reported one or more PM symptoms out of which 41% were mild, 53% were severe and 6% were severe.<sup>13</sup> A similar observation in our study showed that 38.9%, 51.3% and 10.6% of the participants had mild, moderate and severe symptoms, respectively. The increased reporting of premenstrual symptoms may be as a result of awareness.

The study showed that 38.3% of the pre-clinical female students met the criteria for the diagnosis of PMS as documented by the Tenth International Classification of Disease

(ICD-10).<sup>11</sup> The result, though lower than 50.1% reported among students from Lagos, Nigeria is comparable to the 31% reported from Pennsylvania.<sup>7,14</sup> Tabassum, *et al*, observed that 53% of the young college girls in Peshawar had PMS according to ICD-10 criteria.<sup>15</sup> The variation in prevalence could be attributed to differences in instruments, sampling techniques and the use of prospective or retrospective methods. It is also possible that the observed differences may have been influenced by other confounding variables like cultural and geographic factors.<sup>6</sup>

Although PMS can start at any age following menarche, the prevalence is higher between 25 years and 35 years of age.<sup>16</sup> This could account for the lower prevalence in our study as the mean age of the preclinical female students was 21.3 years.

Using the fourth edition of the Diagnostic and Statistical Manual of Mental disorders (DSM-IV) criteria for diagnosis, 7% of the participants in our study met the criteria for diagnosis of PMDD.<sup>12</sup> In Iran, among 300 participants 98.2% reported at least one mild to severe premenstrual symptom and 16% met the criteria of DSM-IV for severe PMS.<sup>6</sup> Among 384 young girls at Khyber Medical College, Peshawar the frequency of premenstrual syndrome was 53% according to ICD-10 criteria while only 18.2% (64/384) met the DSM/IV criteria for severe PMS or PMDD.<sup>15</sup> This suggests that more women suffer from distressing premenstrual symptoms than are observed by the strict PMDD diagnostic criteria.<sup>17</sup>

The most common physical symptoms were pelvic discomfort 65.8% and breast fullness 59.5% while mood changes 41% and irritability 27.9% were the most common psychological symptoms. This is in consonance with other reports.<sup>2,18</sup> The mood lability observed in this study may be related to the relatively younger age of the participants in our study. A similar report from Iran showed that depressed mood 72.3%, and mood changes 70.3% were the

predominant psychological symptoms in the younger participants.<sup>6</sup>

Majority of the pre-clinical students suffering from PMS used medications. In Thailand, Thu, *et al*, observed that majority (69.2%) of the participants used medications for the treatment of PMS and this was more common amongst younger women.<sup>13</sup> On the contrary, Pal, *et al*, in Pakistan noted that majority of the women suffering PMS used no treatment/medication to relieve their symptoms.<sup>17</sup> This was attributed to cultural influences which urge Pakistani women to accept these symptoms as part of womanhood.

The number of respondents that stayed in bed, avoided social activities and had lowered school performance, respectively, corroborated those from other reports.<sup>1,19</sup>

One of the limitations of this study was the dependence on retrospective self-report, which introduced a recall bias. Prospective recording on the other hand has a 50% refusal rate.<sup>20</sup> Our study included highly selective sample comprising of pre-clinical students from one academic institution which will limit generalization of the findings.

Future research should be aimed at other population groupings that include non-medical/university students and other cohorts at risk. The absence of medical disorders was based on assumption as the students were not screened.

## CONCLUSION

This study revealed that premenstrual symptoms were common among pre-clinical medical students. There were predominance of physical symptoms and mood related changes which interfered with activities in school. Health education with emphasis on the reproductive health component could enhance knowledge and enable the young students cope with these symptoms.

## REFERENCES

1. Yang M, Wallenstein G, Hagan M, Guo A, Chang J, Kornstein S. Burden of premenstrual dysphonic disorder on health-related quality of life. *J Women's Health* 2008; 17:113-121.
2. Lakshmi S, Priy M, Salaswath 1, Saravanan A, Ramamchandran C. Prevalence of Premenstrual Syndrome and Dysmenorrhea among female medical students and its association with College absenteeism. *Int J Biol Med Res* 2011; 2:1011-1016.
3. Dickerson LM, Mazyck PJ, Hunter MH. Premenstrual Syndrome. *Am Fam Physician* 2003; 67:1743-1752.
4. Dean BB, Borenstein JE, Knight K, Yonkers K. Evaluating the criteria used for identification of PMS. *J Women's Health* 2006; 15:546-555.
5. Vos T, Flaxman AD, Naghavi M, Lozano R, Michaud C, Ezzati M, *et al*. Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990-2010: a systematic analysis for the Global Burden of Disease study 2010. *The Lancet* 2012; 380:2163-2196.
6. Bakhshani NM, Mousavi MN, Khodabandeh G. Prevalence and severity of premenstrual symptoms among Iranian female university students. *J Pak Med Assoc* 2009; 59:205-208.
7. Vichnin M, Freeman EW, Lin H, Hillman J, Bui S. Premenstrual Syndrome in Adolescents: severity and impairment. *J Paediatr Adol Gynecol* 2006; 19:397-402.
8. Halbreich U, Borenstein J, Pearlstein T, Kahn LS. The prevalence, impairment, impact and burden of premenstrual dysphoric disorder (PMS/PMDD). *Psych Neur Endocrinol* 2003; 28 suppl 3:1-23.
9. Pinar G Colak M, Oksuz E. Premenstrual Syndrome in Turkish College students and its effect on life quality. *Sex Reprod Healthcare* 2011; 2:21-27.
10. Yonkers KA, O'Brien PMS, Eriksson E. "Premenstrual Syndrome". *The Lancet* 2008; 371:1200-1210.
11. World Health Organization (WHO). International Classification of Diseases. 10<sup>th</sup> revision Geneva, WHO 1996.
12. American Psychiatric Association (APA). Diagnostic and Statistical Manual of mental disorders, 4<sup>th</sup> edition. Washington (DC): APA 1994; 714-718.
13. Thu M, Diaz EO, Sawhsarkapaw. Premenstrual syndrome among female university students in Thailand. *AU J T* 2006; 9:158-162.

14. Adewuya AO, Loto OM, Adewumi TA. Pattern and correlates of premenstrual symptomatology amongst Nigerian University students. *J Psychosom Obstet Gynaecol* 2009; 30:127-132.
15. Tabassum S, Afridi B, Aman Z, Tabassum W, Durrani R. Premenstrual Syndrome: Frequency and severity in young college girls. *J Pak Med Assoc* 2005; 55:546-549.
16. Freeman EW. Premenstrual syndrome and premenstrual dysphoric disorder: definitions and diagnosis. *J Psycho Neur Endocrinol* 2003; 28:25-37.
17. Pal SA, Dennerstein L, Lehert P. Premenstrual symptoms in Pakistani Women and their effect on activities of daily life. *JPMA* 2011; 763:61-66.
18. Dennerstein L, Lehert P, Keung LS, Pal SA, Choi D. A Population-based survey of Asian women's experience of premenstrual symptoms. *Menopause Int* 2010; 16:139-145.
19. Tenkir A, Fisseha N, Ayele B. Premenstrual syndrome, prevalence and effect on academic and social performances of students in Jimma University, Ethiopia. *Ethiop J Health Dev* 2003; 17:181-188.
20. Sternfeld B, Swindle R, Chawla A, Kennedy S. Severity of premenstrual symptoms in a health maintenance organization population. *Obstet Gynecol* 2002; 99:1104-1124.