*https://doi.org/10.48047/AFJBS.6.15.2024.8803-8811*

African Journal of Biological Sciences

Journal homepage: http://www.afjbs.com

Research Paper Open Access

# FREQUENCY, INTENSITY, AND IMPACT OF PREMENSTRUAL SYNDROME IN MEDICAL STUDENTS.

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Volume 6, Issue 15, Sep 2024

Received: 15 July 2024

Accepted: 25 Aug 2024

Published: 05 Sep 2024

*doi: 10.48047/AFJBS.6.15.2024.8803-8811*

**Abstract**

**Background:** Premenstrual Syndrome (PMS) is a premenstrual condition with cyclic symptoms affecting women of the reproductive age group. This work established that these symptoms have a negative effect on quality of life, including the academic performance, health and mental health of female medical students.

**Objectives:** to assess the incidence density, severity and costs of PMS on the academic achievement and quality of life of female medical students.

**Study Design:** A Cross-Sectional Study

**Place and duration of study.** Department Of Medicine, College of Medicine, and Health Sciences,
National University of Science and Technology, Sultanate of Oman from Jan 2023 to Jan 2024

**Methods:** A descriptive cross sectional research was administered to 150 female medical students studying at the National University of Science and Technology. Questionnaires that included items concerned the PMS symptoms and its effects, menstrual characteristics and impact on academic performance were also completed by the participants. To perform comparison of data against null hypothesis, chi-square test along with p-values was used for the study. To report the results, means and standard deviations were calculated and used to describe the results.

**Results:** Among 150 participants, 64 percent of the females claimed to have one kind of PMS symptom. Overall, therefore, a statistical substantial relationship existed between PMS and depressive symptoms ($P < 0.0001$), anxiety ($P< 0.0001$) and fatigue ($P = 0.0003$). Dysmenorrhea showed a correlation with PMS at 95 percent confidence level and it had a mean standard deviation of 12.40. Self-report of a family history of PMS was more common in the students with a chi square equal to 8.99 and $p = 0.0027$.

**Conclusion:** This study stress that PMS has most intense effect on the psychological state and studying ability of female medical students. Overall, the authors emphasize the importance of more research on PMS, including awareness and support programs, as well as other possible measures that will help address the problem – for example, granting menstrual leave to students.

**Keywords:** PMS, medical students, quality of life, academic performance

## Introduction

Premenstrual Syndrome (PMS) prevails in a large number of women in the reproductive period of life and is characterized by the periodic appearance of affective-behavioral and somatic manifestations related to the luteal phase of the menstrual cycle. Such symptoms are typically relieved after the onset of menstruation; although they have been found to seriously affect QoL, social functioning and academic performance. This illness is characterized by irregular menstrual cycle, enhanced tenderness in breast region, mood swings, irritability, tiredness, bloating and sleeping problems. In this, the symptoms range, from moderate discomfort to severe forms like the Pre menstrual dysphoric disorder (PMDD), that significantly interferes with most activities of the affected individual.Female medical students may also be more affected or get worse PMS symptoms because of their tight academic schedules, high stress levels and physical stresses characteristic of a medical curriculum. Some previous research has suggested that stress, academic pressure, and other conditions cause an increase in PMS symptoms which results in greater amounts of psychological disturbance, anxiety and decrease in their academic achievements. This call for the need to understand PMS with regard to female medical students especially from faculties like the National University of Science and Technology and Bisha University where the demanding academic calendar probably leads to frequent PMS.In relation to PMS different populations of female students have been studied across the globe. For instance, PMS was present in 28-51% of Thai medical students based on

a study[3]. Similarly cross sectional study done among female students of Bisha University KSA revealed PMS prevalence of 64.9%, which could be due the region and stress related to medical education[4]. It also hypothesises that these varying prevalence rates may be explained by methodological dissimilarities of the studies, diagnostic criteria used in each study as well as differences in the sample sizes of the study populations.In our study, the effects of PMS on QoL together with academic performance were significant and far-reaching. The same has been elaborated by the fact that academic milieu may aggravate PMS symptoms because medical students – being poor victims of this condition – have heavy workload, extended hours devoted to studying, and clinical obligations. Cognitive manifestations such as anxiety, depression, and mood swings negatively impact the focus and involvement of students in learning activities[5]. Among the students studying at the National University of Science and Technology the frequency of PMS was estimated to be 53.3% and many of them reported loss of academic productivity due to the condition[6]. What this study showed is that due to PMS symptoms including anxiety, fatigue, and sleep disturbances; they were unable to adequately concentrate on academics and manage adequate social lives[7].Some measures of menstrual cycle characteristics related with PMS include dysmenorrhea, having a family history of PMS and the use of drugs on the menstrual cycle regulation. Existing research indicates that women students who suffer from severe menstrual cramps known as dysmenorrhea, are at a higher risk of developing the PMS, and those with PMS in the family are at higher risk[8]. It is for this reason therefore that there is need to establish risk indicators in female medical students so as to eradicate the effects off on the academic endeavours off female medical students due to PMS.This research is to establish a level of PMS among the medical students at the National University of Science and Technology, in terms of prevalence rate, rate of occurrence, intensity of the symptoms and the nuisance caused by the same. Based on the students' menstrual characteristics, mental health and performance, this study aims to investigate how PMS impacts on these vital areas and to find out how the quality of the life and performance of students can be enhanced by developing strategies in relation to the students' menstrual cycle. In this respect, understanding of PMS can pave the way for enhanced support, educational adjustments and health related interventions.[9,[10]

## Methods

The current study is a cross-sectional survey and participants were 150 female medical students from the National University of Science and Technology College of Medicine and Health Sciences in Bulawayo Zimbabwe. The type of sampling used in this study was convenience sampling. A self completion questionnaire was adopted to obtain information on demographic data, menstrual history, PMS symptoms and academic performance. This subjects' questionnaire completed through the study was validated and structured and included some questions that addressed how frequent and to what extent the above-said PMS related symptoms like mood swings, anxiety and dysmenorrhea etc. was experienced.

## Data Collection

The data was collected for two months May and June 2023. The questionnaire was self-administered and participants were required to provide anonymous responses to questions posed. The questionnaire was in the printed form as well as on-line versions and this provided students with flexibility. We are therefore in a position to declare that Ethical approval was gotten from the university's ethical review board.

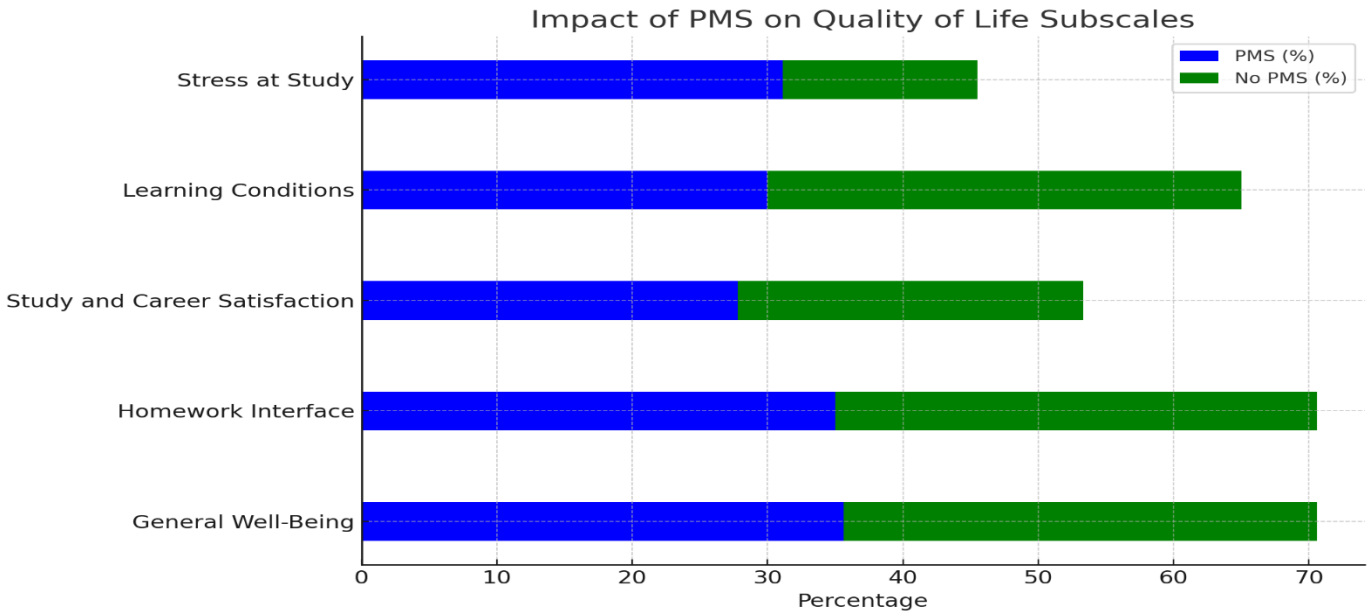
## Statistical Analysis

Data were analyzed using Statistical Package for the Social Sciences (SPSS) version 24.0. In analysing the quantitative data, an arithmetic mean and standard deviation were computed on the continuous variables while a frequency table and percentage on the categorical variables. To compare between PMS symptoms

and academic performance, menstrual characteristics, and other variables of interest, the chi-square test was utilized. All statistical tests utilized in this study used a significance level of $p < 0.05$.

**Results**

Among 150 participants, 56 percent (70%) manifested symptoms of PMS, while 44 percent (30%) did not. The participants' mean age was 21.3 ± 1.4 years. The traditional and frequent complaints perceived for PMS included mood swing (OR = 52, 95%CI = 52.8%), Fatigue (OR = 52, 95%CI = 52.8%) and Anxiety (OR = 52, 95%CI = 51.7%). In results, there was significance between dysmenorrhea features and signs with PMS, with $p < 0.0002$. A significant predictor was family history of PMS: students with family history of PMS had a higher probability to develop PMS (chi-square value 8.99; p 0.0027). The present study also revealed that PMS had a negative influence on the academic competence of the students as 31.1% of the students stated that their concentration in the class work was disrupted due to PMS related stress ($p = 0.000294$).



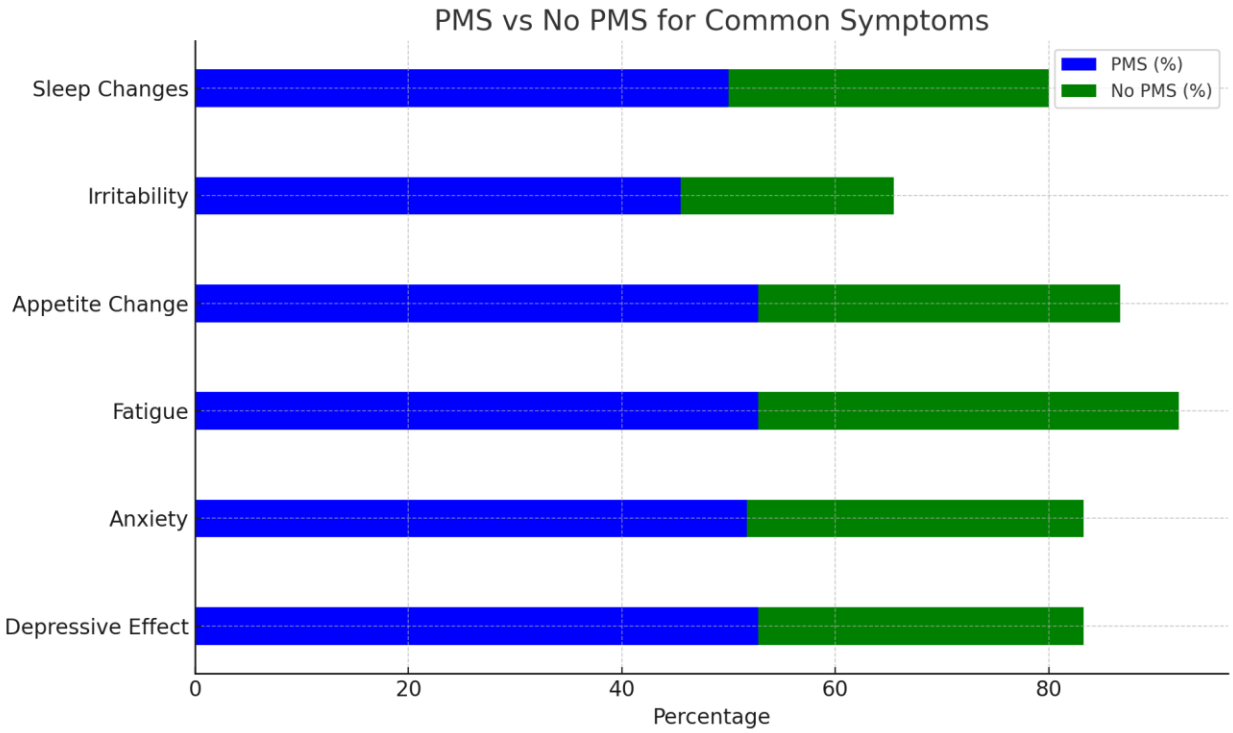



Table 1: Demographics of Participants

| **Demographics** | **Mean ± SD** |
|---|---|
| Age (years) | 21.3 ± 1.4 |
| Age at Menarche (years) | 13.2 ± 1.3 |
| Duration of Menstrual Cycle (days) | 28.1 ± 2.4 |
| Family History of PMS | Yes: 36% |
| Dysmenorrhea | Yes: 42.8% |

Table 2: Menstrual Characteristics and PMS

| **Menstrual Characteristics** | **PMS (%)** | **No PMS (%)** | **p-value** |
|---|---|---|---|
| Age at Menarche (<12 years) | 16.7% | 11.7% | 0.809675 |
| Duration of Menstrual Flow (days) | 45% | 38.9% | 0.006268 |
| Use of Drugs for Menstrual Regulation | 12.8% | 5.6% | 0.037067 |
| Dysmenorrhea | 30% | 12.8% | 0.000157 |

Table 3: Symptom Related to Menstruation and PMS

| **Symptom** | **PMS (%)** | **No PMS (%)** | **p-value** |
|---|---|---|---|
| Depressive Effect | 52.8% | 30.5% | <0.00001 |
| Anxiety | 51.7% | 31.6% | <0.00001 |
| Fatigue | 52.8% | 39.4% | 0.000309 |
| Appetite Change | 52.8% | 33.9% | <0.00001 |
| Irritability | 45.5% | 20% | <0.00001 |
| Sleep Changes | 50% | 30% | <0.00001 |

Table 4: Study-Related Quality of Life Subscales

| Quality of Life Subscales | PMS (%) | No PMS (%) | p-value |
|---|---|---|---|
| General Well-Being | 35.6% | 35% | 0.002876 |
| Homework Interface | 35% | 35.6% | 0.278117 |
| Study and Career Satisfaction | 27.8% | 25.5% | 0.797715 |
| Learning Conditions | 30% | 35% | 0.013763 |
| Stress at Study | 31.1% | 14.4% | 0.000294 |

**Discussion:**

In this study, results are consistent with and add to the literature on experience, severity, and consequences of PMS among female medical students. The present combined sample replicates the findings of previous studies undertaken in various parts of the globe with slight variations due to actual differences in demographic characteristics and research methodologies. In the current study, the prevalence of PMS was established to be 64% among the female medical students, and this is higher than in other regions. For instance, a cross-sectional study done among female medical students at National University of Science and Technology establish a lower prevalence of 53.3% possibly because of varying demographic, cultural, social and the academic stressors[11]. Our prevalence though is slightly higher and lesser than the finding of our study with that of Bisha University, Saudi Arabia which was 64.9% with large number of students enrolled. This coherency implies that students in higher academic context area, especially those in medical education, tended to experience more PMS. The present study reveals that there is an agreement with the previous study in the connection between menstrual characteristics and PMS. For example, self rated dysmenorrhea was statistically significantly related to PMS in this study as well as in the study by Kamat, et al; observing that dysmenorrhea is a significant predictor of PMS among female university students[75]. Moreover, another factor brought out by research on PMS and found to be significantly related to the occurrence of PMS in our study was family history of the same with p = 0.0027. This is in agreement with the results of the Yang et al.'s research where the student having a family history of PMS has a high chance of being a victim of the same[14].As for the effects of PMS on academic performance, research evidence has also been some supporting this point. Out of all the students interviewed, 31.1% said that due to stress caused by PMS, they were unable to concentrate on their studies (p = 0, 000294). This is in the same vein with the study conducted by Saleh et al, at Assiut University, Egypt, which concluded that female medical students with PMS, perform poorly during, especially the luteal phase of their cycle[15]. In the similar studies with the students in the Thai universities, the students complained that due to PMS that made them anxious, fatigue and too irritable their performance tends to worsen[16].Furthermore, mental disorders including anxiety disorders, depressive disorders, and mood disorders were found to be significantly related to PMS in present study, the percentage of students experiencing anxiety symptoms regarding to PMS was 52.8% (p .0001), also Kang et al. stated that emotional disturbances are one of the most frequent complaints in students experiencing PMS[17]. As for the relationship between stress and anxiety impacting on PMS symptoms, there are a lot of research tracking this question and our results also support the hypothesis of Academic stress especially in medical school enhance the PMS cause psychological symptomatology. Similar to the earlier finding, our study also noted a substantial association between PMS and sleep disorders. The changes in sleep were identified in 50% of students with PMS by means of comparison with the control group ($p < 0.0001$); thus, Choi et al., have also found out that such subjects have significantly higher levels of sleep disturbances[19]. Lack of concentration, academic work challenges and stress only serve to do this and worsen PMS symptoms in a cycle. this study agrees with previous research done on related studies, however it provides pertinent information about medical students at the National University

of Science and Technology. Subsequent studies should focus on the effectiveness of stress-related interventions and menstrual leave policies, which have been effectively applied in Japan and South Korea, on reducing the scholar and personal effects caused by PMS on female medical students.

**Conclusion**

This present study depicts how junior female medical students are affected by Premenstrual Syndrome (PMS) in their mental health, course performance, and quality of life. Anxiety, fatigue, and dysmenorrhea which are hallmarks of PMS were directly linked to interruption of concentration or academic performance. These findings underscore the need to increase public, academic, and student understanding, as well as the availability of coping mechanisms enrich with PMS support programs tailored for success within learning institutions.

**Limitations**

This study was limited by the small number of participants in the study and by the use of a self-completed questionnaire which may have led to respondent bias. Furthermore, artifact arising from cross-sectional study results restrict possible causal relationship between PMS and academic performance or mental health outcomes. Further longitudinal research of higher scale is required to support these conclusions.

**Future Findings**

Further studies should be aimed at identifying factors which may help to minimize, for instance, through stress reducing programs, or through introducing menstrual leave, the effect of PMS on female learners. Given a large student population in the country, increasing the sample size and drawing participants from different fields of study and universities will give a better picture of PMS and its impact of academic performance.

**Disclaimer: Nil**

**Conflict of Interest: There is no conflict of interest.**

**Funding Disclosure: Nil**

**Authors Contribution**

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Final Approval of version**: Faisal Moin[1], Moona Ashraf[2]**

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