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RESEARCH ARTICLE

Study of psychological predictors and sleep quality in different grades of premenstrual syndrome

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ABSTRACT

Background: Premenstrual syndrome (PMS) is a recurrent, cluster of symptoms and signs that develop during the 10 days before the onset of menses and subside with the onset of menstruation. It is known to affect the women's interpersonal relationships, social interactions, academic performance, sleep, emotional, and also physical well-being. **Aims and Objective:** This study aims to determine the psychological predictors and sleep quality in different grades of PMS. **Materials and Methods:** The study was conducted on 100 female nursing students, and psychological predictors of depression, anxiety, and stress were assessed using depression anxiety stress scale questionnaire and also, the sleep quality was assessed using Pittsburgh sleep quality index and insomnia severity index (ISI). The above parameters were compared in different grades of PMS. The PMS was graded using moos questionnaire. **Results:** Among the 100 females, 50 belonged to mild grading, 50 belonged to moderate grading, and none of them had severe grading of PMS. On comparison of psychological predictors, the depression, anxiety, and stress scales were found be significantly elevated in moderate category when compared to mild with $P = 0.03$, 0.045, and 0.042, respectively ($P < 0.05$). Furthermore, the sleep quality index showed poor quality of sleep in moderate category when compared to mild which was statistically significant with $P = 0.027$. However, the ISI score was high in moderate PMS when compared to mild, but it was not statistically significant. **Conclusion:** The intensity of PMS is associated with elevation of depression, anxiety, stress, and poor quality of sleep. Determining the methods of coping with PMS and strengthening the young girls on this subject may enhance their quality of future life.

KEY WORDS: Premenstrual Syndrome; Psychological Predictors; Sleeps Quality

INTRODUCTION

Premenstrual syndrome (PMS) includes complex of symptoms like emotional tension and fluid retention by women in the days immediately before menstruation. It includes a variety of psychological and physical symptoms that disappear with the onset of menses.[1] There is a wide variation in the prevalence of PMS from studies around the world. Women experiencing PMS can have altered behavior and can affect the well-being of family, friends, and working relationships and also known to have a poorer health-related quality of life, resulting in increased pharmacological treatment,[2] and decreased social relationships and work success.[3] Furthermore, studies have reported that they have high interpersonal sensitivity,[4] poor sleep quality,[5] increased appetite,[6] and greater alcohol intake.[7] Previous studies investigated the possibility of psychiatric comorbidity of PMS with panic disorder, mood, and anxiety disorders.[8,9] A study has proven that PMS was associated with stress and poor mental health[10] and decreased sleep quality. Furthermore, there is relationship between severity of PMS and psychological predictors.[4] Thus, our study

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assessed the relationship between the severity of PMS with psychological predictors and sleep quality among young nursing students. Further, only a few studies have been conducted regarding the role of psychological factors and sleep quality among nursing students with different grades of PMS.

MATERIALS AND METHODS

This is a cross-sectional, descriptive, and correlational study conducted on 100 female 1st year nursing students studying in Nursing College of SRM University between November 2016 and January 2017. The inclusion criteria of this study were as follows: Being single, being woman, and accepting to participate in the study. Failure to precisely fill out the questionnaire and scales, usage of oral contraceptive pill, and hormone replacement therapy were accepted as the exclusion criteria. Materials included a demographic variables questionnaire, a 42-item (depression anxiety stress scale; Lovibond and Lovibond, 1995) that measures the three-related negative emotional states of depression, anxiety, and stress. It contains 42-item and three subscales that cover depression (14 items), anxiety (14 items), and stress (14 items). Each item is scored from 0 (not present) to 3 (severe). Therefore, total scores for the subscales ranged between 0 and 42. We applied the following cutoff scores to assess the presence of symptoms: Depression ≥ 10, anxiety ≥ 8, and stress ≥ 15.[11] Furthermore, sleep was assessed using 19 -item Pittsburgh sleep quality index (PSQI)(Buysse *et al*.) which consisted of a self-report scale involving totally 19 items and seven subscales (subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction) that evaluates the sleep quality and disorder within the last 1 month.[12,13] Further, insomnia was assessed using 7-item based insomnia severity index (ISI) scale. The above parameters were compared in different grades of PMS which was assessed using 28-item designed PMS questionnaire with scaling from 0 to 3 (0 - no symptom, 1 - mild, 2 - moderate, and 3 - severe) (modified Moos).

Statistical Analysis

Statistical analysis was done using SPSS 21 statistical package software. Results on continuous measurements are presented as mean ±standard deviation. Student *t*-test (two-tailed, independent) was used to find the significance of depression, anxiety, stress, sleep quality, and insomnia in mild and moderate PMS. The limit value of the statistical significance was accepted as $P < 0.05$. Before starting the study, ethical approval was received from the institutional ethics committee. Furthermore, written informed consent of the students was taken for the voluntary participation in the study and the need and purpose of the study were explained to them.

RESULTS

Among the 100 nursing students, 50 of them belonged to mild category of PMS and 50 of them had moderate PMS. None of them had severe manifestation of PMS. The depression score, anxiety score, and stress score were significantly elevated in the moderate PMS when compared to mild PMS, and it was statistically significant with $P = 0.003$, $P = 0.045$, and $P = 0.042$ [Figure 1–3]. Furthermore, the sleep index scores were significantly high in moderate PMS when compared to mild PMS with $P = 0.07$ [Figure 4]. However, the ISI score was higher in moderate PMS when compared to mild although it was not statistically significant ($P = 0.991$) [Figure 5].

DISCUSSION

To the best of our knowledge, this is the first study of psychological predictors in different grades of PMS among nursing students. The results revealed that psychological predictors such as depression, anxiety, and stress scores were significantly higher in moderate PMS when compared to

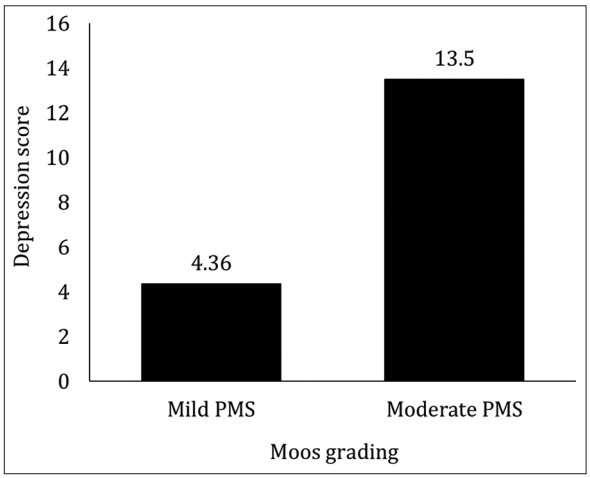

Figure 1: Depression scores in mild and moderate premenstrual syndrome $P < 0.05$

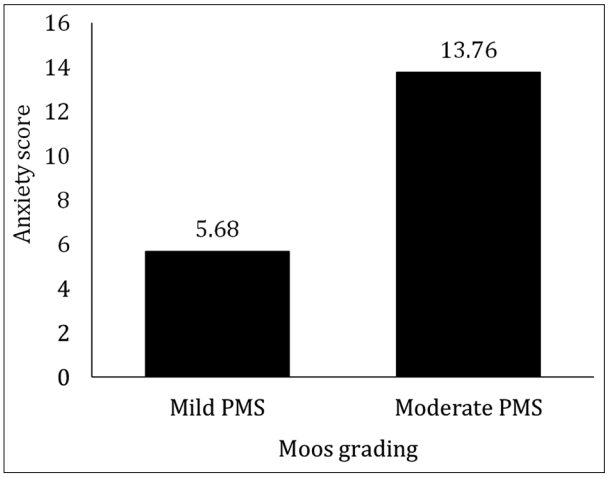

Figure 2: Anxiety cores in mild and moderate premenstrual syndrome $P < 0.05$

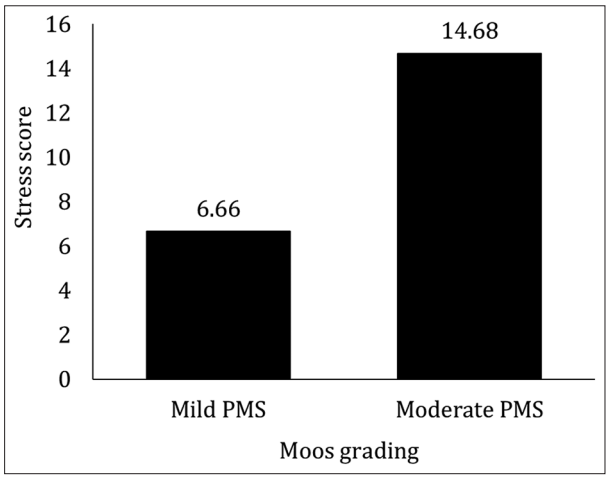

Figure 3: Stress scores in mild and moderate premenstrual syndrome $P < 0.05$

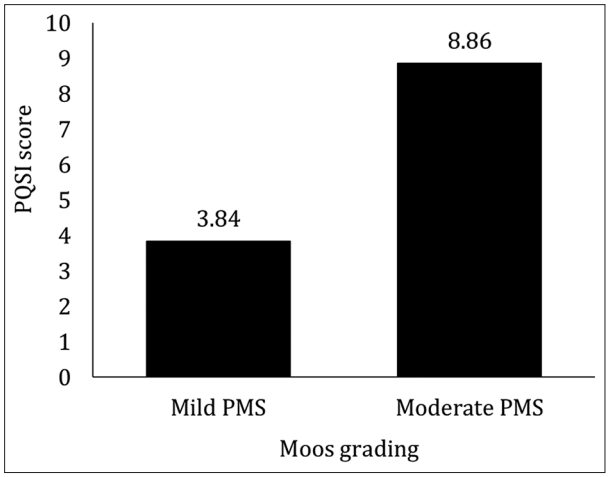

Figure 4: Pittsburgh sleep quality index scores in mild and moderate premenstrual syndrome $P < 0.05$

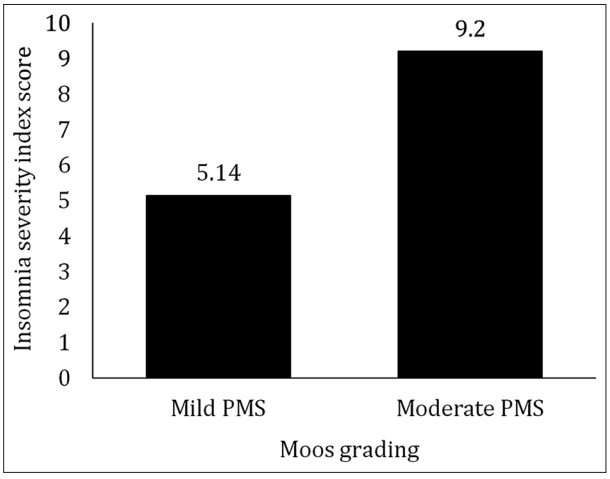

Figure 5: Insomnia severity index score in mild and moderate premenstrual syndrome

mild PMS. Previous studies by Morse *et al*. and Christensen and Oei have proved that women experiencing PMS have a greater degree of depression and anxiety when compared women who do not experience PMS.[14,15] The probable cause for PMS could be due to less adequate social support,[16] which may be due to the presence of unsatisfactory relationship and high rate of alexithymia among this population.[17] Furthermore, studies have proven that this population have a limited ability to cope adaptively with stressful events[18] and are known to have enhanced sensitivity.[19] Thus, studies have proven that high level of alexithymia is associated with PMS. Further studies have shown that the PMS prevalence is high among women with neurotic personality[20] which in turn probably has an influence on the intensity of pain perception.

However, in our studies, we have not assessed cultural variables, alexithymia, and neurotic problems as a result of which no causal relationship could be confirmed. Further, it's a self-reported questionnaire study which may have underreporting. Thus, future studies are needed to explain the role of cultural variables in association between social support, neurotic personality, and PMS.

Further, there are findings from previous studies suggesting that women reporting high levels of premenstrual symptomatology are said to have an external locus of control (LOC) that is their lives are believed have influence from chance, fate, and powerful others.[21,22] Although the above statement is unclear, various previous researchers have proved it; however, in our study, we have not evaluated this domain. The assessment of relationship between LOC and PMS not only indicate the absolute level of symptomatology but an individual's unique experience and its subsequent relationship with cognitive states.

The assessment of relationship between LOC and PMS not only indicate the absolute level of symptomatology but an individual's unique experience and its subsequent relationship with cognitive states. Previous studies have proved that anxiety has a strong influence over the sleep quality and that controlling the affective symptoms improve sleep quality.[23] Thus, studies have proved a positive significant correlation between PMS and PSQI.[7] Thus, in girls with PMS, sleep quality worsened as the symptoms exacerbated. Further studies have stated that negative menstrual attitude relates to the severity of PMS among nursing student.[24] Another study by Guvene *et al.* reported that PMS scores were significantly high in those who consider menstruation as a debilitating event. Literature also explains the influence of positive and negative attitude toward menstruation and its effect on physiological and psychological symptoms.[5,25] However, it is difficult to interpret this relationship, and there is an only limited study proving the same. Thus, it is individual's menstruation perception that predicts PMS symptoms as excess/exaggerated. Thus, the studies have all proved that there is significant correlation of symptoms such as effect, fatigue, irritability, bloating, and change in appetite with PMS scores. The above symptoms are more frequently related with negative menstrual attitudes. Further, Lu's study also revealed the fact that women's attitude

toward menstruation was related with physical, cognitive, behavioral, and psychological symptoms in the menstrual and premenstrual phases.[26,27] Furthermore, studies have proven that students with insufficient knowledge about menstruation had more negative attitudes toward the same and experienced PMS more frequently.[28] Furthermore, a study by Sonmezer and Yosmaguk discovered that women with dysmenorrhea did not consider menstruation as a natural event.[29] Thus, in young girls, PMS with a negative attitude is a never-ending vicious cycle.

Study Limitation

The study is conducted in nursing students of our university only. Further, it has to be extended to other subpopulation to actually study it in detail. The second one is that study is conducted on students receiving medical education, and the data are based on self-report instead of the prospective report or clinical measurements. Thus, there are chances for exaggeration or prejudiced. The above limitation should be taken into consideration while interpreting data. However, the fact that data collection tools in our study are valid, reliable, and more efficient in diagnosing the assessment and interpretation of data.

CONCLUSION

It is recommended that educational intervention is necessary for young girls to cope with PMS and aim in to bring in positive menstrual attitude. This decreases the prevalence of PMS. Further determining the methods of coping and strengthening young girls on this subject matter enhances their quality of life in future.

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