Research Article

PREVALENCE, SEVERITY AND COPING BEHAVIOUR OF PREMENSTRUAL SYNDROME AND PREMENSTRUAL DYSPHORIC DISORDER AMONG FEMALE STUDENTS IN A PRIVATE INSTITUTION IN INDIA

Shenuka S. [1], Vijayalakshmi R [1], Sambath Kumar R [2]*
[1]Department of Pharmacy Practice, J.K.K. Nattraja College of Pharmacy, Komarapalayam-638183, Tamil Nadu, India
[2]Department of Pharmaceutics, J.K.K. Nattraja College of Pharmacy, Komarapalayam-638183, Tamil Nadu, India
*Corresponding Author Email: sambathkumar.r@jkkn.org

ABSTRACT

A prospective observational study was conducted among 500 women aged 17-27 years to assess the prevalence and severity of Premenstrual syndrome (PMS) and Premenstrual Dysphoric Disorder (PMDD) in a private institution in Kumarapalayam during the period of six months (May 2017-October 2017). The study was done among healthcare and non-healthcare students and the results were compared. One healthcare (H=250 students) and two non-healthcare (NH=250 students) colleges were approached. Chi square test was done to find any difference between the variables and $p<0.05$ was considered as statistically significant. Out of the 478 participants 7.3% of the total population was using hormonal supplementations. Mood swings was the most common symptom and is severe in around 22% of total study sample. The prevalence of PMDD was 8(3.2%) and 11(4.8%) for non-healthcare and healthcare students respectively. The total prevalence of PMDD in the study population was found to be 3.97%. Based on our study the healthcare students reported higher percentage of moderate to severe symptoms than non-healthcare students. The prevalence of PMDD was also found to be higher in healthcare institution

Key words: PMS, PMDD, Severity, coping behaviour.

INTRODUCTION

PMS is recurrent variable cluster of troublesome physical and emotional symptoms that develop 7–14 days before the onset of menstruation and subsides when menstruation occurs. PMDD is a severe form of PMS characterized by mood changes, anxiety, and somatic symptoms experienced during the specific time of menstrual cycle The symptoms of PMS is categorized into 2 domains, mainly the affective symptoms (depression, angry outburst, irritability, anxiety, social withdrawal) and the somatic symptoms (breast tenderness, abdominal bloating, swelling).The symptoms mainly start during teenage and worsen with aging. The severity changes from month to month and it can affect the social and functional living. Some women manage their monthly periods easily with few or no concerns while other women experience a number of physical or emotional symptoms that may be more problematic [1]. Many surveys had reported that 90% of women has experienced at least one of the PMS and 80% women experience mood and physical changes. Epidemiological studies show that 24-32% of menstruating women have moderate to severe symptoms.

PMS reoccurs monthly and last for 6 days and last till menopause. It has been estimated that during the reproductive years' women experience 3000 days of severe symptoms [2]. PMDD is the severe form of PMS. The psychological symptoms are irritability, emotional liability, anxiety, and depression. Somatic symptoms include edema, weight gain, mastalgia, headache, syncope, and paresthesia. They appear about 1 week before the onset of menses and disappear soon after onset of menses [3].

Across the globe, menstruation is considered as a sign of sexual health during the adolescence and fertility age of women. Many communities celebrate it as a gift of fertility. Puberty is the result of alteration in the hormones in hypothalamus- pituitary- gonad axis. This axis is stimulated by the placental hormones in female fetus and this leads to the secretion of gonadotropin releasing hormones (GnRH) and the level of these hormones is kept minimal until menarche[4]. Age of first menstruation is higher in underprivileged society which shows that the level of development of the society is inversely related to the age of menarche [5]. Causes of PMS are still not clear. Apart from the pharmaceutical treatment, educating women to practice self care measures are very effective way in reducing the severity of the symptoms. Many studies have showed that educational interventions have improved the outcome measures [6]. PMDD as defined by the American Psychiatric Association (APA) Diagnostic and Statistical Manual, Fifth Edition (DSM-5), can be differentiated from premenstrual syndrome (PMS) by the presence of at least one affective symptom, such as mood swings, irritability, and depression. Premenstrual symptoms are common, affecting up to 75 percent of women with regular menstrual cycles. Clinically significant PMS occurs in 3 to 8 percent of women while PMDD affects about 2 % of women [7, 8].

PMS and PMDD are one of the major factors that make women more susceptible to depression than man. Studies conducted globally shows that the severity of PMS is higher than that of expected in highly educational women than non-educational women. Studies also shows positive correlation PMS and stress [9-12].

The main objective of our study is to find the most commonly occurring PMS symptom and its severity, to find the prevalence of PMDD among healthcare (H) and non-healthcare (NH) students and also to compare their coping behaviour.

MATERIALS AND METHODS

A prospective observational study and a total of 500 women were approached with a set of 3 questionnaires –PMS [13], PSST [14] and coping behavior [15]. The purpose of the study was explained and assured that the data will remain confidential. The questions and the related terms were explained to the participants both in English and in local language. The study was done among healthcare and non-healthcare students and the results were compared. One healthcare (250 students) and two non-healthcare (250 students) colleges were approached. Of the 500 students approached only 478 (250 non-healthcare and 228 healthcare) of them returned the completely filled questionnaires. That is, 22 of the healthcare students dropped out from the study. Students of age group 17-27, with regular menstrual cycle were selected for the study. Menopausal women, pregnant women and those who had a history of psychiatric, psychological or endocrinal disorder were excluded.

Data collection

The questionnaire we used for data collection consists of 3 parts. Part 1 included a set of symptoms from which we can identify the most prevalent and severe symptoms. The first questionnaire also included the basic demographic information about the participants. The PMS was categorised into PMS-A (anxiety) included anxiety, irritability, mood swings, and nervous tension. PMS-C (cravings) included increase in appetite, headache, fatigue, dizziness or fainting, palpitation. PMS-D (depression) included depression, crying, forgetfulness, confusion, insomnia. PMS-H (hydration) included fluid retention, weight gain, swollen extremities, breast tenderness, abdominal bloating. PMS-O (other) symptoms included oily skin, acne, constipation, diarrhoea, hives, and weakness radiation down thighs. The severity of these symptoms was recorded and compared among health care and non-healthcare students. The questionnaire incorporated all symptoms listed by the current classificatory systems. Scoring was categorized as mild, moderate and severe and it also included the checklist to mark whether the symptoms occurred one week before periods or after periods or due to other reasons. Part 2 included PSST which was adapted from Steiner *et al* for identifying the PMDD cases. The PSST reflects and 'translates' categorical DSM-IV criteria into a rating scale with degrees of severity. PSST applies a necessary degree of measure of severity and impact of premenstrual symptoms, establishes quickly if women qualify for PMDD, and is less time consuming and more practical than two cycles of prospective charting. The third part consists of PMCM which explains how women come up with their PMS.

Filling of questionnaire

After getting approval from various institution we visited the participants and gave them a brief introduction about PMS and PMDD. After getting their consent we requested them to fill the above-mentioned questionnaire. The questions were explained in English and also in the regional language.

Women are asked ''Do you experience some or any of the following premenstrual symptoms which start before your period and stop within a few days of bleeding?'' The symptoms listed are depressed mood/hopelessness, anxiety/tension, tearful/ increased sensitivity to rejection, anger/irritability, decreased interest in work activities, decreased interest in home activities, decreased interest in social activities, difficulty concentrating, fatigue/ lack of energy, overeating/ food craving, insomnia/hypersomina, feeling overwhelmed or out of control and physical symptoms. In order to capture DSM-1V criteria of impairment at work, at school in usual social activities and in relationships with others, women are asked "Have your symptoms as listed above interfered with any of the five domains.

Table 1: Distribution of our study participants

Sl. No	Institutions	Number of participants	Frequency (%) (n=478)
1	Health care institution(H) (Pharmacy)	228	47.6
2	Non-healthcare institution (NH) (Engineering and Arts & science)	250	52.3

Table 2: Most common PMS

Symptom	Mild	Moderate	Severe	Total (n=478)
Mood swings (PMS-A)	29.5%	45.2%	22%	96.7%
Appetite increase (PMS-C)	55.9%	29.5%	10.5%	95.9%
Depression (PMS-D)	47%	25%	13.8%	85.9%
Abdominal bloating (PMS-H)	38.9%	32.6%	14%	85.7%
Acne (PMS-O)	20.9%	55.8%	16.5%	93.3%

Table 3: Diagnostic classification of PMDD using PSST

Institutions	Moderate/severe PMS	PMDD
Non-Healthcare [n=250]	92(36.8%)	8(3.2%)
Healthcare [n=228]	112(49.1%)	11(4.8%)
Total [n=478]	204(53.3%)	19(3.97%)

Table 4: Adaptive coping behaviour using PMCM

Adaptive coping behaviour	Health care (n=228)	Non-Healthcare (n=250)	*P* value	significance
Do not blame themselves	207(90.7%)	221(88.4%)	0.0614	Not significant
Accept PMS as natural process nothing can be done	157(69%)	104(41.6%)	0.0043	Significant
Allow extra time to rest	142(62.3%)	208(83.2%)	0.0437	Significant
Do not express anger on others	189(83%)	188(75.2%)	0.0481	Significant
Decrease social activities	54(23.6%)	182(72.8%)	0.0025	Significant
Vent their feelings on others	73(32%)	42(16.8%)	0.028	Significant

RESULTS

Out of the 478 participants 218 (45.6%) were under the age group 17-19 while only 63 (13.2%) were of age 22-24. Out of the total number of participants, 239 (50%) of the participants was having normal body weight. The number of obese patients was only 16(3.3%). It was observed that 55.7% of healthcare and 44.8% of non-healthcare have normal body weight according to BMI calculation.

The demographic patters included the distribution of the participants according to age, body weight. The body weight of the participants was calculated using BMI(body mass index) which categorized the patients weight as underweight (BMI- 18.5 kg/m^2), Normal weight (25kg/m^2), Overweight (30kg/m^2), obese (30-35 kg/m^2), severely obese (35-40 kg/m^2), morbidly obese (40 kg/m^2).Out of the total number of participants, 239 (50%) of the participants was having normal body weight. The number of obese patients was only 16(3.3%). It was observed that 55.7% of healthcare and 44.8% of non-healthcare have normal body weight according to BMI calculation. The use of hormonal supplementation among the participants was evaluated and it was found that only 7.3% of the total population was using hormonal supplementations. Among them the healthcare students have higher usage pattern of hormonal supplementation 9.2% than in the non-healthcare with 5.6%.

The most common PMS symptoms were assessed using Premenstrual syndrome questionnaire and the result with their severity is depicted in [Table 2]. It was found that mood swings were the most common symptom and is severe in around 22 % of total study sample.

Menstrual back aches were found to be severe in 46 (20.1%), moderate in 81 (35.5%), and mild in 67 (29.3%) of health care students. Among non-health care student's data was severe 79(31.6%), moderate 89(35.6%) and mild 82 (32.8%).85.5% (409) women in total reported menstrual cramps. The premenstrual syndrome screening tool (PSST) is used to diagnose PMDD, 500 subjects were approached, 22 dropped and data from 478 were analyzed using the PSST scoring (n=478).

Based on our study 92(36.8%) NH and 112(49.1%) has moderate to severe PMS while the prevalence of PMDD was 8(3.2%) and 11(4.8%) for NH and H respectively [Table 3]. The total prevalence of PMDD in the study population was found to be 3.97%.

The adaptive coping behaviour of the students was studied using premenstrual coping measure scale (PMCM) and result was compared between H and NH using then chi square test $p < 0.05$ was set as statistically significant difference [Table 4].

Based on [Table 4] there was no significant difference between H and NH students on the coping statement of "Do not blame themselves", rest of the statement show statistical significance.

DISCUSSION:

In India, about one-fourth (27.7%) of the female population falls in the age group of 15-29 years [5]. These ages are associated with the physical, mental, emotional, and social development. Study conducted in adolescent students reported an excessive amount of blood flow and long interval between the menstrual period (14.3%and 28.6% respectively) in obese, compared to those who had normal BMI (13.1% and 20.7% respectively). Meanwhile, students who were overweight (30.0%) were significantly more likely to have short interval between the menstruation compared to those who had normal BMI (10.7%)[16-18]. Based on a cross sectional study on Relationship of Menstrual Irregularities to BMI and nutritional status in adolescent girls Dars *et al,* found that 75.5% girls with BMI 14- 24.9 (underweight to normal) had a normal menstrual pattern. All sixteen girls with a BMI of 25 – 29.9 kg/m2 (overweight) had infrequent cycles [16]. Many studies [17-21] have confirmed that a higher increase in body mass index (BMI) during childhood is related to an earlier onset of puberty. These results were complimentary to an Indian study which concluded that the increase in BMI is significantly associated with pre-menstrual syndrome (p=0.035)[22]. Life style modifications like regular physical activity, decreasing the intake of junk food, promoting healthy eating habits and maintaining optimal BMI should improve menstrual health. Improvement of menstrual health prevents future problems like heavy bleeding dysmenorrhea, premenstrual symptoms, Polycystic Ovarian Disease, hyperlipidemia, obesity and infertility [23]. Warner and Bancroft found significant association between oral contraceptive use and lower prevalence of PMS [24]. The PMS was first described in 1931 by Frank and Horney and they explained that PMS is occurring due to hormonal imbalance. The hormones (estrogen and progestin) in contraceptive pills regulate the menstrual cycles. Contraceptive pills are also used for treating severe PMS and PMDD[25]. Warner Bancroft *et al,* found significant association between oral contraceptive use and lower prevalence of PM symptoms [26]. According to the association of UK dieticians' women may feel increased appetite during the luteal phase due to an increase in the metabolic rate and simultaneous increase in calories. This proportion may vary from women to women [27]. These results are complementary to a South Indian study which concluded that 73% of the students were experiencing back ache [28]. An evidence-based medicine study conducted in high school students in China reported that higher Lower Back Pain prevalence in school age girls than in school age boys is due to psychological factors, female hormone fluctuation, and menstruation. Compared with young and middle-aged subjects, a further increased LBP prevalence in females than in males was noted after menopause age [29]. A cross analytical study conducted in an Italian university where menstrual pain was reported by 84.1% of women, with 43.1% reporting that pain occurred during every period, and 41% reporting that pain occurred during some periods [30]. A study conducted in Indian medical students has reported the prevalence of dysmenorrhea was 51% and that of the pre-menstrual syndrome was 67%.22A study conducted in medical students of internship stage found an elevated frequency of PMS in medical students. Also, in students

with PMS, rate of depression was higher than students without PMS also the total frequency of PMS in medical students in the internship stage was 55% [31], which was similar to the Namavar et al., findings [32]. More prevalence in healthcare students can be due to greater awareness among the medical students in attributing their symptoms to PMS than in the general population as proposed by an Indian study [3]. A study conducted in Gujarat with prevalence of PMDD as 3.7%. 204 (42.6%) had moderate-severe PMS, the remaining 255 (53.35%) experienced no /mild PMS and may have isolated symptoms associated with PMS4.A Spanish national survey reported only 1.5% prevalence of PMDD. But 91% symptomatic women had isolated symptoms or mild PMS and 8.9%, moderate to severe PMS [33]. An American study conducted in young women found that 4.6% prevalence of dysphoric disorder [34]. Also, a study among girls of 12-18 years found a prevalence of premenstrual symptoms to be 8.3% [35]. A study conducted in Pakistan among young college girls reported that 18.2% met the DSM-IV criteria for Premenstrual Dysphoric disorder [36]. PMS has been reported in 40-95% of menstruating women [37]. For most of these women, PMS is a minor problem [38] while some even report positive features such as increased industriousness, energy, creativity and sexual interests [39]. The syndrome may begin at any phase of reproductive life but is more commonly reported by women in the later reproductive years and in those with more years of natural menstrual cycles [40]. An Indian study followed the symptoms of 62 non-treatment-seeking women in India for two menstrual cycles and found 6.4% met the diagnosis of PMDD [41]. A study conducted by Steiner et al., reported a prevalence of severe PMS and PMDD was reported 21.3% and 8.3% [14]. A study was conducted in Gujarat, India to assess the PMS and coping behaviour of students. This study explains that majority of students use adapted behaviour to cope with the PMS 89.11% do not blame themselves, 75.40% accept it in healthy way that nothing can be done, 72.98% take hot or cold drinks 71.77% do not express their anger on others. They accept it as a natural process as nothing can be done and try to cope up in healthy way [42].

CONCLUSION

Our study concludes that there exist a high prevalence and severity of PMS and PMDD among adolescent students. Based on our study the healthcare students reported higher percentage of moderate to severe symptoms than non-healthcare students. The prevalence of PMDD was also found to be higher in healthcare institution (4.8%). While comparing the coping behaviour, the healthcare students have better coping measures than the non-healthcare students. The difference in severity and prevalence in different regions may be due to the culturing difference, altering assessment tools, the type of participants and how they report the symptoms. Many women still find difficulty in communicating such symptoms with the physician thus makes it as a barrier to diagnose PMS and PMDD. All females from the age of puberty should be educated about menstruation and all related topics. Including general information about physiology, hormonal changes, symptoms, preventive strategies about PMS therefore they can adapt a healthy life style, improving the quality of life.

LIMITATIONS

Our study faced certain limitations since the Self-reported data was based on recollection which may increase the chance of errors, the intensity of reported symptoms may vary because the inability to approach each and every participant during PMS also the answers of the participants were heavily influenced by their peers' answers and there was no specific discrimination between moderate and severe PMS.

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