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## Premenstrual Syndrome in Students of a Teaching Hospital

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### ABSTRACT

**Background:** Premenstrual syndrome is group of psychosomatic symptoms which occurs during second half of menstrual cycle. Significant number of reproductive aged females suffer from it with its impact on their daily activities. This study was conducted to assess the prevalence, severity and impacts of Premenstrual syndrome on female students of a teaching hospital of Kathmandu, Nepal.

**Methods:** This cross-sectional study was conducted among female students of a teaching hospital from Kathmandu over a period of three months. Premenstrual Symptom Screening Tool was used to quantify the symptoms severity and their effect in activities. In addition; patient profile, socioeconomic status were recorded. The obtained information was entered in Statistical Package for Social Sciences and analyzed. Findings were then interpreted using chi-square test.

**Results:** Out of the 285 respondents, 206 (72.3%) reported at least one premenstrual syndrome symptom of moderate to severe intensity among which 74 (25.9%) had at least one severe symptom. Six individuals (2.1%) fulfilled all criteria for Pre-Menstrual Dysphoric Disorder and 49 (17.2%) fulfilled the criteria for moderate to severe premenstrual syndrome and rest (80.7%) were having no or mild premenstrual syndrome with isolated symptoms. PMS was found to have significant association to menstrual bleeding ( $p < 0.001$ ) and severity of dysmenorrhea ( $p < 0.001$ ), family history of premenstrual syndrome ( $p = 0.019$ ) and physical activity ( $p = 0.021$ ).

**Conclusions:** Premenstrual syndrome is common in female and has a considerable impact on day to day activities although its severe form Pre-Menstrual Dysphoric Disorder is less common.

**Keywords:** Female students; Nepal; premenstrual syndrome.

### INTRODUCTION

Premenstrual syndrome (PMS) is cyclical symptom complex of behavioral, cognitive, affective and physical symptoms during the luteal phase resolving quickly at or within a few days of menstruation.<sup>1</sup> These symptoms should impair functioning of the individual and are not due to another disorder. Study revealed 23-31% of reproductive aged women experience PMS which affects their daily activities.<sup>2</sup> In about one third, the symptoms can be moderate to severe.<sup>3</sup> PMS is high and interfere the performance of students.<sup>4,5</sup> Though cause of PMS is unknown, the changes of ovarian hormones, metabolites, age and genetics are correlated.<sup>6,7</sup> These factors affects neuro-transmission especially serotonin pathway.<sup>8</sup> So, PMS must be addressed properly to improve the quality of life and performance of reproductive age females.

The aim of this study was to assess the prevalence, severity and impacts of PMS on female students of a teaching hospital of Kathmandu, Nepal.

### METHODS

This was a cross-sectional prospective study conducted at the College of Medicine and College of Nursing of Nepalese Army Institute of Health Sciences, Kathmandu over a period of three months from May to July 2017. Female medical students from 1<sup>st</sup> year to 5<sup>th</sup> year, Bachelor of Nursing Sciences (BNS) and Bachelor of Science (BSc.) Nursing students who have given consent were enrolled. Two hundred eighty five students of 18 to 30 years age who gave consent and not under any treatment for PMS were enrolled as participants. The obtained information was entered in SPSS and analyzed

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and interpreted the findings using chi-square test ( $\chi^2$ ).

Premenstrual Symptom Screening Tool (PSST)<sup>9</sup> was used to quantify the symptoms severity and its effect in activities. The characteristics of the PSST are detailed as in Table 1 and 2. In addition, the following data were recorded for each participant; age, residence, age at menarche, BMI, socioeconomic status, menstrual regularity, duration of bleeding, dysmenorrhoea, physical activities and family history of PMS.

The study proposal was submitted to institutional ethical review committee (IRC) and study was conducted after approval from local IRC. The participants were given verbal explanations about the topic and the aim of the study. All the questionnaires were self-reported and were completed by the participants with the aid and observation of a researcher about all aspects of the questionnaires.

## RESULTS

Out of the 285 respondents, 206 (72.3%) reported at least one PMS symptom of moderate to severe intensity among which 74 (25.9%) had at least one severe symptom. Total 126 women (44.2%) reported mild to moderate severity of at least one of the four major symptoms (anger/irritability, anxiety, tearfulness/emotional lability, and depressed mood), with 29 (10.2%) reporting at least one severe symptom. Sixteen respondents (5.6%) said that their symptoms interfered severely with at least

one of the 5 aspects (work efficiency or productivity, relationships with colleagues, family relationships, social life activities, and home responsibilities), and 70 (24.6%) reported moderate interference.

The respondents ranged from 18 to 30 years in age, with a mean of 21.85 ( $\pm 2.64$ ) years. There were total 181 female students in college of medicine and 175 in college of nursing in bachelor program; of which only 125 (69.06%) from medicine and 162 (92.57%) from nursing has responded and participated in the study. There were two incompletely filled questionnaire which were discarded. So, 285 students were included and analysed; 124 (43.5%) were students of medicine and 161 (56.5%) were students of nursing. Most students (264, 92.6%) were resident of urban areas while 21 (7.4%) in rural areas. Ages of menarche ranged from 10 to 18 years with the average being 13.1 years. Only 74.7% of respondent mentioned their BMI. Among them there were 80.3% of respondents with BMI between 18.5 and 24.9, 10.8% had BMI between 25 and 29.9, 7.5% below 18.5 and 1.4% had BMI of 30 or above. The average BMI reported was 21.63 ( $\pm 2.90$ ) Kg/m<sup>2</sup>. Total 230 (80.7%) of respondents had regular menstrual cycles. The most common duration of menstruation was 4-5 days with mean of 4.93 and variations from 2 to 10 days. 229 (80.4%) reported pain during menstruation, among which 95 (33.3%) reported mild pain, 94 (33.0%) reported moderate pain, and 40 (14.0%) reported severe pain. The severity of premenstrual symptoms and its influences is shown in Table 1 and 2.

Table 1. The frequencies of each symptom.

| Symptoms/Influences   | Not at all | Mild* | Moderate | Severe |
|---|------------|-------|----------|--------|
| Anger/irritability  | 61         | 135   | 72       | 17     |
| Anxiety/tension   | 91         | 121   | 64       | 9      |
| Tearful/increased sensitivity to rejection  | 141        | 81    | 44       | 19     |
| Depressed mood/hopelessness   | 133        | 110   | 32       | 10     |
| Decreased interest in work activities   | 61         | 140   | 71       | 13     |
| Decreased interest in home activities   | 66         | 137   | 64       | 18     |
| Decreased interest in social activities   | 80         | 130   | 55       | 20     |
| Difficulty concentrating  | 95         | 126   | 49       | 15     |
| Fatigue   | 40         | 130   | 97       | 18     |
| Overeating/food cravings  | 111        | 109   | 49       | 16     |
| Insomnia  | 192        | 60    | 28       | 5      |
| Hypersomnia   | 131        | 96    | 40       | 18     |
| Feeling overwhelmed/out of control  | 183        | 76    | 21       | 5      |
| Physical symptoms: Breast tenderness, Headache, Joint pain, Bloating, Weight gain | 145        | 80    | 52       | 8      |

\* Using the Premenstrual symptom screening tool

Table 2. Interference of physical activities.

| Interference of activities                      | Not at all | Mild <sup>†</sup> | Moderate | Severe |
|---|------------|-------------------|----------|--------|
| Interference with work productivity             | 101        | 146               | 29       | 9      |
| Interference with relationships with colleagues | 153        | 96                | 34       | 2      |
| Interference with family relationships          | 163        | 90                | 29       | 3      |
| Interference with social activities             | 104        | 134               | 38       | 9      |
| Interference with home responsibilities         | 124        | 115               | 44       | 2      |

Table 3. Proportion of severity of PMS with different PMS symptoms.

| Symptoms                                   | No/Mild PMS |       | Moderate/Severe PMS |       | PMDD |        |
|--|-------------|-------|---------------------|-------|------|--------|
|  | N           | %     | N                   | %     | N    | %      |
| Anger/irritability                         | 49          | 21.30 | 34                  | 69.39 | 6    | 100.00 |
| Anxiety/tension                            | 34          | 14.78 | 34                  | 69.39 | 5    | 83.33  |
| Tearful/increased sensitivity to rejection | 27          | 11.74 | 30                  | 61.22 | 6    | 100.00 |
| Depressed mood/hopelessness                | 11          | 4.78  | 26                  | 53.06 | 5    | 83.33  |
| Decreased interest in work activities      | 41          | 17.83 | 37                  | 75.51 | 6    | 100.00 |
| Decreased interest in home activities      | 36          | 15.65 | 40                  | 81.63 | 6    | 100.00 |
| Decreased interest in social activities    | 32          | 13.91 | 37                  | 75.51 | 6    | 100.00 |
| Difficulty concentrating                   | 31          | 13.48 | 29                  | 59.18 | 4    | 66.67  |
| Fatigue                                    | 70          | 30.43 | 39                  | 79.59 | 6    | 100.00 |
| Overeating/food cravings                   | 40          | 17.39 | 23                  | 46.94 | 2    | 33.33  |
| Insomnia                                   | 15          | 6.52  | 16                  | 32.65 | 2    | 33.33  |
| Hypersomnia                                | 32          | 13.91 | 21                  | 42.86 | 5    | 83.33  |
| Feeling overwhelmed/out of control         | 10          | 4.35  | 14                  | 28.57 | 2    | 33.33  |
| Physical symptoms                          | 38          | 16.52 | 19                  | 38.78 | 3    | 50.00  |

Table 4. Proportion of Severity of PMS with interference of activities.

| Interference                    | No or mild PMS |      | Moderate to severe PMS |       | PMDD |       |
|---------------------------------|----------------|------|------------------------|-------|------|-------|
|                                 | N              | %    | N                      | %     | N    | %     |
| Decreased work productivity     | 10             | 4.35 | 23                     | 46.94 | 5    | 83.33 |
| Int. with work relationships    | 8              | 3.48 | 23                     | 46.94 | 5    | 83.33 |
| Int. with family relationships  | 5              | 2.17 | 22                     | 44.90 | 5    | 83.33 |
| Int. with social activities     | 17             | 7.39 | 25                     | 51.02 | 5    | 83.33 |
| Int. with home responsibilities | 21             | 9.13 | 21                     | 42.86 | 4    | 66.67 |

Six individuals (2.1%) fulfilled all criteria for Pre-Menstrual Dysphoric Disorder (PMDD) and 49 (17.2%) fulfilled the criteria for Moderate to Severe PMS. The rest (80.7%) had no or mild PMS with isolated symptoms.

The proportion of patients of three categories (PMDD, Moderate to severe PMS and No or Mild PMS) having moderate to severe symptoms is given in the (Table 3). The proportion of patients of three categories (PMDD, Moderate to severe PMS and No or Mild PMS) having moderate to severe interference in different aspects of their life is given in the (Table 4).

PMS was found to have significant association to menstrual

bleeding ( $p < 0.001$ ) and severity of dysmenorrhea ( $p < 0.001$ ), and family history of PMS ( $p = 0.019$ ) but a non-significant association with regularity of menstruation ( $p = 0.081$ ) or days of menstrual bleeding ( $p = 0.100$ ). Physical activity was found to have a significant association with PMS ( $p = 0.021$ ). The severity of PMS was found to have no statistically significant correlation to whether the respondent was studying medicine of nursing ( $p = 0.63$ ), urban or rural residence ( $p = 0.211$ ), body mass index ( $p = 0.059$ ), education status of her father ( $p = 0.604$ ) or mother ( $p = 0.770$ ), occupation of her father ( $p = 0.608$ ) or mother ( $p = 0.827$ ), or the family's income satisfaction ( $p = 0.600$ ).

## DISCUSSION

The present study was conducted in female students of college of medicine (43.5%) and college of nursing (56.5%). Among 285 respondents, 72.3% had at least one PMS symptom of moderate to severe intensity among which 25.9% had at least one severe symptom. This is comparable with a study where 73.7% of women reported suffering from any premenstrual symptoms in the last 12 menstrual cycles.<sup>10</sup> In contrast, our finding is quite low in comparison to other studies where in one study from Iran, 98.2% students had at least one mild to severe PMS symptom.<sup>11</sup> Similarly, 91% of the participants from a population based study reported of having one of the symptom of PMS.<sup>12,13</sup> In our study PMDD was found in 2.1% and 17.2% fulfilled the criteria for Moderate to Severe PMS with rest 80.7% having no or mild PMS; this finding was comparable with study among Japanese high school students where PMDD was found in 2.6% and Moderate to Severe PMS in 11.8%.<sup>5</sup> However, the prevalence varies with geography and from one to another study with range from 12-98% with average pooled prevalence of 47.8% (95% CI: 32.6-62.9).<sup>2</sup>

PMS was not associated with individual factors like place of residence, education status and occupation of parents and income satisfaction, which is not surprising considering the study group was limited to one medical institute and not in the general population, even though studies have found that socio-economic factors affect the prevalence of PMS. Menstrual symptoms like menorrhagia and dysmenorrhea seem to have high association with PMS. Precious studies have shown that both physical health affects PMS and PMDD.<sup>12</sup> Physical activity was also found to affect PMS, which is similar to findings of previous research.<sup>14</sup> Findings of PMS symptoms and its severity varies with studies and demographic character of the female population and geography. Our study shows high number of female students having at least one PMS symptom and considerable number of students having moderate to severe PMS symptom with impact on their day to day activities. Our findings have some variation in findings, especially in association of PMS to demographic and socioeconomic factors, which can be attributable to the fact that the study was conducted among young medical and nursing students and not in the general population. However, the findings regarding prevalence of PMS and relation to menstrual history are comparable to previous studies conducted in general population.

Our study was based on the PSST questionnaire, a retrospective tool, and not the clinical diagnosis of

PMS and PMDD, and so our findings are subject to the limitations of subjective questionnaires.

## CONCLUSIONS

PMS is common among female students of a teaching hospital and has a considerable impact on day to day activities, whereas its severe form PMDD is less common. PMS is associated with the amount of menstrual bleeding and dysmenorrhea, as well as level of physical activity and family history.

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