A school-based survey of premenstrual dysphoric disorder-relationship with depression, anxiety, self-esteem and quality of life

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Abstract

Introduction: Premenstrual dysphoric disorder (PMDD) is a severe and debilitating form of Premenstrual syndrome (PMS) affecting women in their reproductive age. There is paucity of Indian research in this area among adolescents.
Aims: To determine the prevalence of PMDD in adolescent school students, and to study relationship between PMDD and anxiety, depression, self-esteem and quality of life (QOL).
Materials and Methods: A cross-sectional survey was conducted on 100 adolescent students of an urban school. The Premenstrual symptom screening tool for adolescents (PSST-A), Hamilton anxiety (HAM-A) and Depression (HAM-D) Scale, Rosenberg self esteem scale (RSES) and The women's quality of life questionnaire were employed.
Results: All participants reported at least one PMS symptom of minimal severity and 68% had at least one PMS symptom of moderate-severe intensity. Twenty five percent of the participants had 'moderate-to severe' PMS. None of the participants qualified for PMDD. Disruption of daily activities was reported by 35% while 22% missed school due to PMS. A statistically significant relationship was found between PSST scores and HAM-D score (p<0.005). No statistically significant relationship was found between PSST scores and HAM-A, RSES and Women's QOL scores.
Conclusion: Although PMS and PMDD pose a difficulty, majority of adolescents do not have significant anxiety, experience positive self-esteem and good quality of life. There is a need for multi-centric and multi-disciplinary research to further elucidate the factors associated with PMS and PMDD in this population.

Keywords: Premenstrual dysphoric disorder, Premenstrual symptoms, Adolescents, Depression, Anxiety, Self-esteem, Quality of life.

Introduction

Premenstrual dysphoric disorder (PMDD) is a severe and debilitating form of premenstrual syndrome (PMS) affecting women in their reproductive age which was listed as a depressive disorder in the diagnostic and statistical manual of mental disorders in 2013.[1] This disorder includes cluster of affective, behavioral and somatic symptoms. These symptoms occur periodically during the luteal phase of menstrual cycle as it follows a predictive cycle pattern as also seen in PMS. Symptoms end shortly after menstruation begins.[2] The more acute symptoms occur 2 days before menses through the first day of menstrual blood flow and terminate after first day of menstrual cycle. The most disabling symptoms are emotional that includes irritability, depression, mood liability, anxiety, feeling of loss of control, difficulty concentrating and fatigue and physical symptoms include abdominal bloating, breast tenderness, headache, generalized aches.[3] At least 20% of teenagers may experience moderate-to-severe premenstrual symptoms. Literature suggests that a similar proportion of teens would also meet criteria for PMS/PMDD.[4-5] In young adolescents PMS might negatively affect school functions social interactions that can impact their individuals, their families, and their relationships.[6] Previous studies have shown that women with premenstrual disorders have a poor quality

of life (QOL).[7-9] Some women with depressive disorders experience severe premenstrual symptoms.[9-10]

Global self-esteem is typically defined as one's overall sense of worthiness as a person.[11] Self-esteem has a strong relation to happiness[12] and social-emotional adaptation.[13] Low self-esteem ranks among the strongest predictors of emotional and behavioral problems. Compared to people with high self-esteem, people with low self-esteem tend to be more anxious, depressed, lonely, jealous, shy, and generally unhappy. They are also less assertive, less likely to enjoy close friendships, and more likely to drop out of school.[12] Women with PMDD have poor quality of life.[1,14] At present, there is a paucity of studies from India pertaining to the prevalence of PMDD/PMS and its impact on self-esteem and QOL in adolescents. Given this background, the present study was undertaken with the following objectives: a) to study the frequency of PMDD in adolescent school students, b) to evaluate anxiety, depression, self esteem and quality of life in adolescent school students, c) to study relationship between PMDD and anxiety, depression, self esteem and QOL.

Materials and Methods

The present cross-sectional observational study was conducted in the departments of Obstetrics &

Gynecology; and Psychiatry of Geetanjali Medical College and Hospital, Udaipur, Rajasthan in February 2018. One hundred female adolescent students of a school from an urban area were surveyed. Approval of the Institution Ethics Committee and informed consent was obtained from the study participants and parent(s) and/or legal guardian(s). The demographic variables were recorded in specific proforma prepared for the study.

The following self-reported questionnaires were employed:

1. Premenstrual symptoms screening tool for adolescents[15] (PSST- A) to screen for presence and severity of PMS and PMDD. The PSST-A consists of 19 items, 14 premenstrual symptoms, and 5 functional items, in line with diagnostic and statistical manual of mental disorders-5 criteria. Participants were asked to rate the extent to which they experience each symptom during the late luteal phase and stopping within a few days of bleeding and the extent to which the symptoms interfere with each functional domain. Items are rated as "not at all," "mild," "moderate," or "severe." The items that address functioning in the PSST-A are: (a) "school/work efficiency/productivity," and (b) "relationships with friends, classmates/coworkers."[15]

2. Hamilton anxiety (HAM-A) and depression (HAM-D) acale[16]: Anxiety is a type of emotion characterized by unpleasant feeling, excessive/uncontrollable worry and anticipated behavior of person or in more general term it is overreaction to a situation, restlessness, uneasiness, fatigue, problem in concentration and forgetfulness. The HAM-A rating scale was developed to measure severity of anxiety symptoms. The scale is consisting of 14 items that assess person's severity of anxiety. Each of 14 items contains several symptoms, and each group is self-rated on scale of zero to four, with four being most severe. HAM-D is used to rate severity of depression by assessing mood, feeling of guilt, suicide, insomnia, agitation or retardation, weight loss and somatic symptoms. The scale has 17 items, and four other questions are not added to score but just used as additional information. Each item on the questionnaire is scored on 3 or 5 point scale, depending on the item.

3. Rosenberg self esteem scale[17] (RSES): Self esteem is judgment of oneself or one's attitude toward himself/herself. It is overall subjective emotional estimation of one's worth.[11] The RSES is widely used self-reporting instrument for evaluating self-esteem. It is a 10 item scale; with items to be answered on four-point scale– from strongly agree to strongly disagree. It uses a scale of 0-30 where a score less than 15 may show a problematic low self-esteem. This scale measures the state of self esteem by asking participant to rate their current mood i.e., mood during participants premenstrual phase.

4. The Women's Quality of Life questionnaire[17] (WOMQOL): Quality of life is a multi-dimensional construct and defined subjectively. The WOMQOL was developed as part of a community-based study of women's health, including mental health through the menstrual cycle with no known pathology.[17] A generic conceptualization of QOL was used in the construction of the measure that weighted health and non-health factors to ensure the representation of the life experiences of a broad range of women in the community-based Women Wellness study.[17] The participants were asked to answer "yes", "no" or "not applicable" to the 40 questions in the WOMQOL based on how they have felt in the last week of their life.

Data Analysis

Discrete co-variates were expressed as frequencies. Continuous co-variates were expressed as mean with standard deviation (SD) and compared between groups using the unpaired student's *t*-test. All statistical analysis was done at 95% confidence interval and p< 0.05 was considered significant.

Results

Age of the study participants ranged between 13-17 years with the mean age of 15.27 years. The mean scores of PSST-A, HAM-A, HAM-D, RSES and WOMQOL are presented in Table 1. All participants reported at least one PMS symptom of minimal severity and 68% had at least one PMS symptom of moderate-severe intensity. Disruption of daily activities was reported by 35% while 22% missed school due to PMS. Majority of the adolescents (80%) reported that PMS was a usual part of menstruation and about half (52%) reported moderate to severe stress. Twenty five percent of the participants were had 'moderate-to severe' PMS and none of the participants qualified for PMDD based on PSST-A.

Anxiety symptoms of moderate and severe intensity were observed in 18% and 4% respectively. Twenty percent of the participants had moderate depressive symptoms while one participant had severe depressive symptoms as determined from HAM-D. Only one participant had a score of <15 on the RSES. The minimum and maximum score obtained on the WOMQOL questionnaire was 10 and 32 respectively. A statistically significant relationship was found between PSST scores and HAM-D score (p<0.005) as shown in Table 3. No statistically significant relationship was found between PSST scores and HAM-A, RSES and WOMQOL scores (Tables 2, 4, 5).

Table 1: Mean scores of the study variables

Variable	Mean (±SD)
Age	15.27 (1.58)
PSST-A[a]	16.27 (8.56)
HAM-A[b]	11.38 (6.57)
HAM-D[c]	12.64 (7.01)
RSES[d]	21.57 (3.42)
WOMQOL[e]	21.56 (4.71)

[a]Premenstrual symptoms screening tool for adolescents; [b]Hamilton anxiety and [c]Depression rating scale; [d]Rosenberg self esteem scale; [e]Women's quality of life questionnaire

Table 2: Relationship between premenstrual symptoms and anxiety in adolescents

N=100	PSST-A score	HAM-A score	t-Test: Two-sample assuming unequal variances
Mean	16.27	11.38	T Stat= 4.530, 186 d.f., p=1.04
Variance	73.29	43.18	

[a]Premenstrual symptoms screening tool for adolescents; [b]Hamilton anxiety rating scale

Table 3: Relationship between premenstrual symptoms and depression in adolescents

N=100	PSST-A[a] score	HAM-D[b] score	t-Test: Two-sample assuming unequal variances
Mean	16.27	12.64	T Stat= 3.280, 191 d.f., p=0.0012[*]
Variance	73.29	49.14181818	

[a]Premenstrual symptoms screening tool for adolescents; [b]Hamilton depression rating scale; [*]Statistically significant at<0.005

Table 4: Relationship between premenstrual symptoms and self-esteem in adolescents

N=100	PSST-A[a] score	RSES[b] score	t-Test: Two-sample assuming unequal variances
Mean	16.27	21.57	T Stat= -5.74824046, 130 d.f., p=6.10
Variance	73.29	11.72	

[a]Premenstrual symptoms screening tool for adolescents; [b]Rosenberg self esteem scale

Table 5: Relationship between premenstrual symptoms and quality of life in adolescents

N=100	PSST-A[a] score	WOMQOL[b] score	t-Test: Two-sample assuming unequal variances
Mean	16.27	21.56	T Stat=-5.413, 154 d.f., p=2.32
Variance	73.29	22.18	

[a]Premenstrual symptoms screening tool for adolescents; [b]Women's quality of life questionnaire

Discussion

This study examined the prevalence of premenstrual symptoms and PMDD in adolescent high school students and how the severity of symptoms is related with anxiety, depression, self-esteem and quality of life. The mean age of the study population is similar to that of Mandal et al.[18] The findings of the present study suggest that premenstrual symptoms are experienced by most adolescents while some suffer socio-occupational dysfunction. Kamat et al[19] using the PSST-A also reported similar findings besides impairment in daily activities and missing school in 37% and 24% of adolescents respectively. Previous investigators have also reported that functional impairment in school efficiency and productivity in adolescents with PMS.[15] We found that 25% of the adolescents had moderate-to-severe PMS which is consistent from previous findings.[20-25] The prevalence of severe PMS and PMDD in this study is inconsistent with the findings of Western[15,26-29] and Asian researchers.[30-35] The variations in prevalence and symptom severity in these studies are due to limitations and differences in the definition of PMS, standards and methods of data collection, sampling technique and type of patient population studied. Many factors can affect the study population such as culture, attitude, age, exercise, nutrition, and contextual disease.[36]

This study found significant relationship between premenstrual symptoms and depression, but not with anxiety. Premenstrual symptoms are associated with emotional distress in adolescents.[37] Portella and colleagues[38] reported that a sizable positive correlation between seasonal depressive symptoms and premenstrual symptoms. Perkonigg et al[39] studied 1488 women aged 14–24 years and found that history of traumatic events, history of anxiety disorders and

elevated 'daily hassles' scores were powerful predictors of the development of severe PMS. The difference between these studies and our research may be due to the used tool. We used HAM-A and HAM-D which had the advantage that: it was psychometrically validated and that our results would reflect the state of these disorders among Indian adolescents. A study by Angst and co-researchers[40] indicates the prevalence for depressed mood, nervousness, anxiety, and tension to be about 31%, 27%, 5%, and 27% respectively. Emphasis has been laid by some researchers on the similarities between PMDD and anxiety disorders; others have arguably suggested that PMDD should be regarded as a variant of depression.[41] Subjects with depression or an anxiety disorder, experiencing premenstrual aggravation of this condition, may tend to confirm PMS or PMDD at clinical interview without actually qualifying for these diagnoses.[41] It is difficult to discriminate premenstrual aggravation of depression from PMS/PMDD, but it is also possible that an increased vulnerability for depression is associated with proneness for experiencing a PMS or PMDD-like condition with depressed mood and/or irritability.[41] Psychiatric assessments can vary considerably with menstrual cycle phase in psychiatric patients who have PMS. It may be argued that majority of studies of patients with anxiety disorders typically assess patients in an open-ended fashion without regard for menstrual cycle phase. Thus, we cannot know the extent to which such self reported ratings are influenced by menstrual cycle phase and how representative these ratings are of the adolescent in general. Since these ratings may be influenced more by one cycle phase than another.[42]

Moderate and high levels of self-esteem were found in our study which is in agreement with the findings of an Iranian study in high school students.[13] The present study did not find a significant relationship between PMS and self-esteem. This could be attributed to the knowledge of the adolescents in this study that PMS is a usual part of menstruation. A positive attitude towards menstruation could be a factor in the severity of PMS. Educational programs relating to reproductive health in high school students can aid to improve and maintain positive coping mechanisms and self-esteem.

PMS is associated with substantial burden on QOL in adolescents.[43] A study comparing women in two different groups (high and low PMS groups) revealed that women in the high PMS group had significantly more stress and poorer quality of life than women in the low PMS group.[44] These differences are difficult to interpret but might be due to different life styles, socioeconomic status or cultures. However, in comparison with other studies participants in our study scored higher on all measures indicating that they had a better quality of life. The hallmark of PMS and PMDD is the appearance and evanescence of symptoms in relation to the menstrual cycle. To qualify for PMDD, the PMS should improve within a few days after the

onset of menses, and were minimal or absent in the week post-menses.[1] It may be plausible that the adolescents in this study had good quality of life because majority had mild to moderate PMS symptoms which may not impact QOL rated based on the preceding week. Moreover, the validity of the diagnostic category of PMDD has been questioned some scholars.[45]

The study is encumbered by certain limitations. A cross-sectional design with small sample size, a highly selective sample comprising of medical students from a high school limit the generalization of the findings and determination of longitudinal relations between any of the examined variables, whether they were coexisting or preexisting. The PSST-A is a retrospective questionnaire, We believe that the questionnaire filling is likely to pose some biases, either in the recall or differential classification during the filling with either over or under reporting. We did not study differences between adolescents with "mild'' PMS, "moderate-to-severe'' PMS and "very severe'' PMS. Future research may attempt to overcome these limitations besides using a structured clinical interview to ascertain the diagnosis of severe PMS, i.e., PMDD.

Despite the limitations, the findings of this study indicate that screening adolescents for PMS symptoms assumes clinical significance as the latter are associated with depressive symptoms which have a bearing on self-esteem and quality of life.

Conclusion

PMS is a common problem in adolescent students in this urban region of India. Although PMS and PMDD pose a difficulty, majority of adolescents do not have significant anxiety, experience positive self-esteem and have good quality of life. There is a need for multi-centric and multi-disciplinary research to further elucidate the factors associated with PMS and PMDD in this population.

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