Prevalence of Premenstrual Disphoric Disorder Associated Factors among Students of Tabor Secondary and Preparatory School in Hawassa City, Ethiopia Cross Sectional

Mulugeta Gobena Tadesse (jaragobe@yahoo.com)
Ambo University College of Medicine and Health Science
https://orcid.org/0000-0001-9438-9237

Dereje Dirago Dire
Hawassa University College of Medicine and Health Sciences

Yacob Yacob Abraham
Hawassa University College of Medicine and Health Sciences

Primary research

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Abstract

Background: Premenstrual dysphoric disorder (PMDD)-is a severe and disabling form of premenstrual Syndrome affecting 3-8% of menstruating women. The disorder consists of a cluster of affective, behavioral and somatic symptoms that recur monthly during the luteal phase the menstrual cycle. Premenstrual dysphoric disorder (PMDD) was added to the list of depressive disorders in the diagnostic and statistical manual of mental disorders in 2013. The exact pathogenesis of the disorder is still unclear.

Objective: To assess the prevalence of PMDD and its associated factors among students of Hawassa tabor secondary and preparatory school.

Method: A cross sectional institutional based was conducted among 351 randomly selected female students of Hawassa tabor school. Data was collected by three students were facilitate the works with closed ended structured questionnaire and they was trained on how to collect the data. The collected data was entered, analyzed and cleaned by SPS.

Results: prevalence of premenstrual dysphoric disorder in this study was 76.9%. Of each symptom is more than ninety present or 324 (92.3%) respondents can’t have experience unpleasant physical or emotional symptoms peculiar to the five days before the onset of menses & 27(7.7%) participants have show the symptoms. Among those 26 (7.4%) have present for the past ≥3 consecutive cycles. 46 (13.1%) have family history of such symptoms.

Conclusions: These findings have implications for both women and medical providers, who should be aware that PMS symptoms are prevalent and often distressing, yet also understand that the severity of symptoms may remit over time.

Background

Premenstrual dysphoric disorder (PMDD)-is a severe and disabling form of premenstrual Syndrome affective 3-8% of menstruating women. The disorder consists of a cluster of Affective behavioral and somatic symptoms that recur monthly during the luteal phase the menstrual cycle. Premenstrual dysphoric disorder (PMDD) was added to the list of depressive disorders in the diagnostic and statistical manual of mental disorders in 2013. The exact pathogenesis of the disorder is still unclear. Most reproductive women appear to experience recurrent premenstrual physical and/or emotional symptoms. It is appearance of physical, psychological symptoms recurring periodically. (J psychol 1998).

At least 80% of menstruating woman have some premenstrual symptoms. About 40% of menstruating women have premenstrual syndrome and 10% have severe symptoms, a condition called premenstrual Dimorphic disorder (PMDD). Nine million women or approximately five to seven (5-7%) present of women of child bearing age have PMDD. Due to the fact that there are no adequate pathophysiologic explanation for PMDD and no consistently effective therapy available, the issue is confusing. Different researchers agreed on the following criteria to diagnose PMDD. The diagnosis of PMDD is based on fulfilling the
following criteria:- Presence of one or more of the following somatic symptoms (abdominal bloating, breast fullness and tenderness, perceived weight gain, headache, low back pain and arthralgia. Psychobehavioral symptoms (anxiety, irritability, confusion, depression, difficulty in concentration, fatigue, emotional liability and sleep disturbance). Three or more cyclic recurrence during the five days prior to menses, and symptoms so severe and debilitating the social and / or occupational function. (Philip’s LS, 2003).

Risk factors for PMDD include advancing age (beyond 30 years) and genetic factors. However, as indicated above, PMS symptoms are identified in adolescents and can begin around age 14, or 20 years post-menarche, and persist until menopause.

Premenstrual dysphoric disorder related to long time frame work and loss of efficiency in work place, high suicidal and accident rates, poor academic performance and acute psychiatric problems (Philip’s LS, 2003).

Lack of school health service, inadequate adolescent reproductive health education, lack of published standardized diagnostic criteria for PMDD and other related factors makes the problems worse in developing countries. In our country adequate studies are not done to overcome the previously mentioned problems and on the study area no recent and reliable study has been done on PMDD. For this reason this study has been designed. (Li Chaoyang, 2008).

Methods

The study was conducted in Hawassa tabor senior secondary school, female students. Tabor senior secondary school is established in 1968 E.C. It is one of the biggest public schools in south Ethiopia. Hawassa is one of the capital city of SNNPR and 272 km far from Addis abeba. A facility based cross sectional study was conducted after stratifying students based on their class and section.

All female students of Hawassa tabor school where the source of population. Samples were selected randomly by sections from sections selected female students were selected for the study and those who have seen their menses at least three times consecutively included in the study.

The sample size was calculated by using single population proportion formula with the following parameters:-

\[ n = \frac{(Z)^2 p(1-p)}{d^2} \]

- \( n \) = minimum sample size
- \( q = 1-p = 0.5 \), regarding this case \( p = 50\% = 0.5 \) and margin of error = 5\% (0.05\%).
- \( P \) = population proportion in problem (estimated prevalence of population) = 0.5
- \( d = \) degree of accuracy = 0.05 (margin of error)
\[ d^2 \]
\[ n = 384.16 \approx 384 \]

With none respondent rate assumed to be 10%

\[ 384 \times 0.10 / 100 = 38.4 \approx 38 \]

\[ n = 384 + 38 = 422 \]

\[ n_f = \text{final sample size} \]

\[ N = \text{total population} = 2013 \]

\[ z = \text{standard normal value at confidence interval of } 95\% = 1.96 \]

(Reduction formula for a population < 10,000)

So that:

\[ n_f = \frac{n}{1 + n/N} = 351 \]

Finally After stratifying the students on their class, stratified random sampling techniques was used.

Independent variables

- Age
- Marital status
- Parity
- Religion
- Ethnicity
- Average of last semester
- Class attendance during menstruation
- Medication use
- Health seeking behavioral -

Dependent variables

- Premenstrual dysphoric disorder (PMDD) Yes/No

OPERATIONAL DEFINATIONS

Premenstrual dysphoric disorder (PMDD) is very severe form of premenstrual syndrome. Distressing, physical, psychological and behavioral symptoms not caused by organic disease. It relatively recurs
during the same phases of menstrual cycle and which disappears or significantly regress during the remainder of the cycle. The client must report at least one of the effective or/ and somatic symptoms during the five days before menses with other medical and psychological condition ruled out.

Affective symptoms:-

Depression:-Feeling sadness/ hopelessness during menstruation.

Irritability:-Excess response to stimuli during menstruation.

Confusion:-State of uncertainty about what is happening during menstruation.

Suicidal ideation:-Feeling of hurting/ harming themselves

Somatic symptoms: - Headache, abdominal bloating, breast tenderness, swelling of extremities

Data Collection Instruments

The structured and well organized questionnaire that was prepared after reviewing similar literature and modified to our context was used to collect data.

Data collection

The study participants were given a general introduction to the study as well as the opportunity to ask questions about the study and questionnaire were distributed. The principal investigator and the supervisor had checked the completed questionnaires for consistency and completeness on a daily basis.

Data Analysis and Presentation

After the data were collected it was sorted, entered, cleaned and analyzed by using manual scientific calculator and tally sheet and presented by table and graphs.

Data Quality Assurance

To increase the quality of data; pre-testing of questionnaire, training of data collectors, consistent supervision during data collection by the coordinator, cross checking of questionnaire for their completeness and double entry of data to assure data quality will done.

Ethical Consideration

Official letter was written from HU ethical bored was shown to the school head and then to the individual respondent students who were participating in the study. In addition to this, informed verbal consent taken from each participant. During data collection time the name of the participant were not taken to keep their confidentiality
Results

Socio demographic characteristics of respondents

The total response rate was 351, from those total respondents 192 (54.7%) of the respondents were between the age of 20-24 year and 137 (39.0%) respondents were between the age group of 13-19. As shown (table 1)

Table 1: Distribution of students by their socio demographic characteristics of female students in Hawasa Tabor high school and preparatory, January 2019 Hawassa, Ethiopia (n=351)

| Socio demographic characteristics | Frequency | %  |
|-----------------------------------|-----------|----|
| **Age of respondents**            |           |    |
| 13-19                             | 137       | 39.0% |
| 20-24                             | 192       | 54.7% |
| 25 and above                      | 22        | 6.3%  |
| **Ortodox**                       | 131       | 37.3% |
| **Catolic**                       | 39        | 11.1% |
| **Muslim**                        | 34        | 9.7%  |
| **Protestant**                    | 144       | 41.0% |
| **Others**                        | 3         | 0.9%  |
| **Living with**                   |           |    |
| Parent                            | 220       | 62.7% |
| Dorm                              | 23        | 6.6%  |
| Alone                             | 70        | 19.9% |
| Others                            | 38        | 10.8% |
| **Marital status**                |           |    |
| Single                            | 244       | 69.5% |
| Marred                            | 91        | 25.9% |
| Widowed                           | 11        | 3.1%  |
| Others                            | 5         | 1.4%  |
Majority of the respondents were living with parents (62.7%) & some were alone (19.9) & 244 (69.5) are single, Marital status of the respondents were single 244 (69.5%), marred 91(25.9).

**Menstruation history of the respondents**

All of the respondents reported they had regular menstruational cycle. 254(72.4%) respondents could not use oral contraceptives, 97(27.6%) have been using contraceptives. many of them have no child 62 (17.7%). (Table 2)

**Table 2- Menstruation & contraceptive history of the respondent’s of Female students in Hawasa Tabor high school and preparatory, January 2019 Hawassa, Ethiopia (n=351)**

| Variables                          | Frequency | %    |
|------------------------------------|-----------|------|
| Have you ever seen menstruation?   | Yes       | 351  | 100.0% |
|                                    | No        | 0    | 0.000% |
| Do you use oral contraceptive?     | yes       | 97   | 27.6%  |
|                                    | no        | 254  | 72.4%  |
| How many children did you have?    | One       | 39   | 11.1%  |
|                                    | Two       | 21   | 6.0%   |
|                                    | 3 and above| 2   | .6%    |
|                                    | None      | 289  | 82.3%  |

**Premenstrual Dysphoric symptoms**

The prevalence of each symptom is shown in Table 3- More than ninety present or 324 (92.3%) respondents could not had experience unpleasant physical or emotional symptoms peculiar to the five days before the onset of menses & 27(7.7%) participants had showed the symptoms. Among those 26 (7.4%) had present for the past ≥3 consecutive cycles. 46 (13.1%) have family history of such symptoms. Majority of somatic symptoms have headache 155 (44.2%), nausea and vomiting 58 (16.5%) , Breast pain 52 (14.8%) , Abdominal bloating 46(13.1%), swelling of extremities 28(8.0%) & the other are don’t specify the symptoms. Tension 98 (27.9%) , lack of energy 83(23.6%) , decrises in interest 70 (19.9%) have some affective symptoms of the respondents. Majority of the symptoms226 (64.4%) have within two
years of first menses & 106 (30.2%) have after two years of first menses and some are by social events 19 (5.4%). (table3)

Table 3 – Distribution of Premenstrual Dysphoric symptoms female students in Hawasa Tabor high school and preparatory, January 2019 Hawassa, Ethiopia (n=351)
| Variables                                                                 | Frequency | %   |
|--------------------------------------------------------------------------|-----------|-----|
| Have you experienced unpleasant physical or emotional symptoms peculiar to the five days before the onset of menses? | Yes       | 27  | 7.7% |
|                                                                          | no        | 324 | 92.3%|
| If yes, was the symptoms present for the past ≥3 consecutive cycles?    | Yes       | 26  | 7.4% |
|                                                                          | No        | 325 | 92.4%|
| Did you have family history of such symptoms?                           | Yes       | 46  | 13.1%|
|                                                                          | No        | 305 | 86.9%|
| Which somatic symptoms do you often have?                               | Headache  | 155 | 44.2%|
|                                                                          | Abdominal bloating | 46  | 13.1%|
|                                                                          | Breast pain | 52  | 14.8%|
|                                                                          | swelling of extremities | 28  | 8.0% |
|                                                                          | Nausea and vomiting | 58  | 16.5%|
|                                                                          | Other (specify) | 12  | 3.4% |
| Which affective symptoms do you often have?                             | Excess response to stimuli | 41  | 11.7%|
|                                                                          | Tension   | 98  | 27.9%|
|                                                                          | Thinking taking your life | 9   | 2.6% |
|                                                                          | Tense feeling | 11  | 3.1% |
|                                                                          | Decrease interest | 70  | 19.9%|
|                                                                          | Lack of energy | 83  | 23.6%|
|                                                                          | Change in appetite | 39  | 11.1%|
| When do you start to have the symptoms?                                 | within two years of first menses | 226 | 64.4%|
|                                                                          | After two years of first | 106 | 30.2%|
menses

| Social events (marriage, job, divorce, etc.) | 19 | 5.4% |
|---------------------------------------------|----|------|
| Have you ever uses substance or drug?       |    |      |
| Yes                                         | 92 | 26.2%|
| No                                          | 259| 73.8%|
| If yes, what kind of substance or drug did you Use? |    |      |
| Alcohol                                     | 53 | 15.1%|
| Cigarette                                   | 6  | 1.7% |
| Chat                                        | 8  | 2.3% |
| Others                                      | 284| 80.9%|
| Effect on academic performance?             |    |      |
| Yes                                         | 163| 46.4%|
| No                                          | 188| 53.6%|
| Have you ever been absent from classes due to these symptoms? |    |      |
| yes                                         | 231| 65.6%|
| no                                          | 120|      |
| Do these symptoms affect your attention in class or during studying? |    |      |
| yes                                         | 284| 80.9%|
| No                                          | 67 | 19.1%|

Of the total of 351 girls 231(65.6 %) were classified into the ‘absent ‘from class during menstration.163 (46.4%) respondents have effect on academic performance, which demonstrated that premenstrual symptoms affected school attendance. although the prevalence of absent girls increased based on the severity of PMS

**Coping methods to PMDD of respondents/ how to cope with the symptom of PMDD of students**

In our study most of respondents 172(49.0%) have using medication to relief the symptoms, Changing diet 81(23.1%), Exercise 41(11.7).most of them were 191(54.4%) using anti-pain to relief the symptoms. Majority of the respondents 246(70.1%) are having history of discuss to your problems with your family or friends. 147(41.9%) have visited health institution for your symptoms. (table 4)
Table 4: Coping methods to PMDD of the respondents of female students in Hawasa Tabor high school and preparatory, January 2019 Hawassa, Ethiopia (n=351)

| Variables                                                                 | frequency | %     |
|---------------------------------------------------------------------------|-----------|-------|
| What coping methods do you use to get relief from your symptoms?          |           |       |
| Changing diet                                                             | 81        | 23.1% |
| Exercise                                                                  | 41        | 11.7% |
| Medication                                                                | 172       | 49.0% |
| None                                                                      | 42        | 12.0% |
| Other (specify)                                                           | 15        | 4.3%  |
| If yes to the medications, which types of medications?                    |           |       |
| OCP                                                                       | 26        | 7.4%  |
| Anti-pain                                                                 | 191       | 54.4% |
| Sedatives                                                                 | 16        | 4.6%  |
| Other (specify)                                                           | 118       | 33.6% |
| Have you ever visited health institution for your symptoms?               |           |       |
| Yes                                                                       | 147       | 41.9% |
| No                                                                        | 203       | 57.8% |
| If yes what was done for you?                                             |           |       |
| Anti-pain                                                                 | 144       | 41.0% |
| Oral contraceptive                                                        | 23        | 6.6%  |
| Don’t remember                                                            | 184       | 52.4% |
| Did you discuss your problem with your friends or family?                 |           |       |
| YES                                                                       | 246       | 70.1% |
| NO                                                                        | 105       | 29.9% |

Table 5: Bivariate analysis showing the association between PMDD and others different variables in Hawassa tabor secondary and preparatory school Ethiopia, 2019
On this study, Chi-square test analysis revealed that, marital status, substance use, contraceptives, academic effects show significant association with PMDD.

**Discussion**

Apart from our previous study epidemiological studies have revealed a high prevalence of PMDD in adolescents: The prevalence of PMDD was 3.7% according to DSM IV-TR and 91% according to International Classification of Diseases, 10th edition criteria. The symptoms commonly reported were “fatigue/lack of energy,” “decrease interest in work,” and “anger/irritability.” The most common functional impairment item was “school/work efficiency and productivity.” PSST have 90.9% sensitivity, 57.01% specificity, and 97.01% predictive value of negative test. The rate of PMDD in east Asia (1.3-2.8%) appear to be lower than that seen in the western literature (3.8%). many of the risk factors of PMDD were the same in the eastern and western literature although same key differences were found. The few studies on treatment of PMDD in Este Asia have shown positive results. (Schatz DB, et al. J Psychiatry Med. 2012.)

In this the study, we conducted school-based cross sectional study to show how premenstrual disorders affect the school and daily lives of adolescents. According to the results Obtained in this study a total of 351 girls 231 (65.6 %) were classified into the ‘absent’school.163 (46.4%) respondents have effect on academic performance, which demonstrated that premenstrual symptoms affected school attendance. although the prevalence of absent girls increased based on the severity of PMS. According to DSM-5 criteria 27 (7.7%) respondents have with PMDD and 324(92.3%) have not include the criteria. Among those 17 (63.0%) respondents have 20-24 age group, 7 (25.9%) have 13-19 age group and 3(11.1%) have 25 and above age group.
This result supports the recent findings of studies in which premenstrual disorders were shown to be major problems in adolescence that markedly interfered with school and social activities. Significant differences were observed in the prevalence of all premenstrual symptoms between the ‘absent’ group and the ‘non-absent’ group in the present study. This result indicated that premenstrual symptoms may lead to school absenteeism in any girl that has menses and ovulates. An analysis of factors interfering with work, activities, and relationships showed that ‘reduced social life activities’ was a risk factor for school absenteeism, conversely indicating that girls in the ‘absent’ group were having problems not only in their school lives but also in other social activities, such as hobbies or after-school activities. In our study most of respondents 172(49.0%) have using medication to relief the symptoms, Changing diet 81(23.1%), Exercise 41(11.7).most of them are 191(54.4%) using anti-pain to relief the symptoms. Majority of the respondents 246(70.1%) are having history of discuss to your problems with your family or friends. 147(41.9%) have visited health institution for your symptoms. Exercise may improve premenstrual symptoms mainly in emotional and physical conditions by increasing beta-endorphin levels and physical well-being. Previous studies have reported the effectiveness of exercise towards physical symptoms, including breast tenderness and fluid retention symptom. We previously demonstrated that physical premenstrual symptoms were related to the high frequency of school absenteeism.

A limitation of our study

Was a being cross-sectional study design, it will not show cause and effect analysis.

Self-reporting design, therefore, recall bias should be considered.

Conclusions

Our results suggest that a greater proportion of women than previously identified may experience a negative impact of PMS symptoms on their daily lives. However, these women appear to vary greatly in their assessment of the burden of their PMS symptoms over time. These findings have implications for both women and medical providers, who should be aware that PMS symptoms are prevalent and often distressing, yet also understand that the severity of symptoms may remit over time. Our findings call for close monitoring of women for PMS symptoms, frequent reassessment of women who report distressing PMS symptoms, and careful consideration before initiation of long-term treatment.

In total, 65.6 % of female students were absent from school due to premenstrual symptoms. Premenstrual symptoms, such as tender breasts, feeling bloating, headache, joint or muscle pain, and weight gain’ were risk factors for school absenteeism. In addition, ‘a preference for salty food’ and ‘lack of regular exercise’ was risk factors of absence. Considering the difficulty of medical treatment in adolescents, education on proper exercise and eating habits is important and may lead to an improvement in premenstrual symptoms and the life qualities of adolescents. According to DSM-5 criteria 27 (7.7%) respondents have with PMDD and 324(92.3%) have not. Among those 17 (63.0%) respondents have 20-24 age group, 7 (25.9%) have 13-19 age group and 3(11.1%) have 25 and above age group.
RECOMMENDATION

- Health Education programs on PMDD for adolescent school girls.
- Health care professionals give Health Education programs to create awareness of PMDD and educated more women.
- Health care professionals should encourage women to track their cycles by keeping a diary and recommended that PMDD patents join online support group.

Declaration

Ethics approval and consent to participate

Ethical clearance was obtained from the Institutional Review Board of Hawassa University College of medicine and health science. Formal letter was obtained from the school of Nursing. Permission was obtained from concerned bodies (Zonal and Educational Bauru). The confidentiality of respondents was kept by not writing their name on the questioners’ sheet. Before questionnaires administered to any eligible participant, written consent was obtained from study participant after the study was explained to them in detail. Any participants who are not willing to participate in the study were not forced to participate.

Competing Interest

None declared

The authors declare no competing interest.

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No Funding was received for this research work.

Missing Availability of data and materials

No data missed

Authors’contribution

MG, YI, DD, participated in the conception, design of the study, reviewing proposal and data analysis

MG has participated in supervising and writing manuscript. All authors read and approved the final manuscript.

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Figures

Figure 1

Have you ever been absent from classes due to these symptoms? * PMDD Cross tabulation.