Prevalence of Premenstrual Syndrome and Its Effects Among Regular Female Students in Ambo University, West Shoa, Oromia Regional State, Ethiopia, 2019

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Abstract

Back ground - Premenstrual syndrome (PMS), also known as premenstrual tension is defined as a complex of emotional, physical and behavioral symptoms that start at the last week of a woman's reproductive cycle and end with the onset of menstruation.**Objective**: The objective of the study was to assess the prevalence of Premenstrual syndrome and its effects among regular female students in Ambo University, west shoa, Oromia regional state, Ethiopia, 2019.**Method**: Institutional based a descriptive cross sectional study was conducted from January 1_20, 2019. All regular female students in Ambo University. The sample size was determined using single population proportion formula and 288 study subjects were selected. The study subject was selected using systematic random sampling. Data was analyzed using SPSS version 20.**Results**: Of the 288 regular female students, all responded to the questions 100%. The results of the study show that the prevalence of PMS was found to be 51(18%).Out of the regular female students diagnosed with PMS, 75% had stopped studying and class missing was reported by 40% of the students. **Conclusion and Recommendation:** The study concludes among 288 chosen samples regarding the prevalence of PMS among regular female students in Ambo University main campus and effects related to PMS. Although a full grasp of the concept of PMS in Ambo University has not been covered, this study revealed that Ambo university regular female students have symptoms similar to other area in Ethiopia and some report so severe symptoms that they interfere with daily functioning. Therefore, awareness about PMS appropriate medical treatment and psychotherapy services should be provided to affected female students.
Keywords: Premenstrual Syndrome, regular Female students, Ambo University, Central Ethiopia.
DOI: 10.7176/JHMN/65-02
Publication date: August 31st 2019

Background

Premenstrual syndrome (PMS), also known as premenstrual tension is defined as a complex of emotional, physical and behavioral symptoms that start at the last week of a woman's reproductive cycle and ends with the onset of menstruation [1]. PMS should not be confused with the regular pain of menstruation because physiologic pain during menstruation uniquely resolves with the onset of a woman's period. These symptoms have been categorized into Somatic and Behavioral symptoms. The most common behavioral symptoms are anxiety, depression, irritability, mood swings, angry outbursts, confusion, changes in appetite, decreased concentration, withdrawal from social activities and inability to cope with daily activities, while the most frequent somatic symptoms include abdominal bloating, breast tenderness, body aches, back pain, upper thigh pain, headache, fatigue and swelling of extremities, where psychological symptoms like school/work absenteeism [2-4].

Premenstrual symptoms might cause several difficulties for female including impairment in physical functioning, psychological health, and severe dysfunction in social or occupational functioning. In young adolescents symptoms might particularly affect school functions and social interactions in a negative way [5-8]. The overall prevalence reported varies between 30%-90%, with 5-10% reporting severe symptoms [9-11].Whatever the cause(s) of PMS, it is clear that the complaints are related to the changes in the hormonal milieu produced by the menstrual cycle, which is itself under the control of the hypothalamic-pituitary-ovarian axis [12].

The American Physician family report prevalence PMS 3%-30% [13], Iranian and Chinese 18-20% [14, 15], Asian 59%, 53% [16, 17]. UK from 75 to 85% [18], University Bangkok, 41% [19], Jordan University About 22% [20], Iranian Adolescents students, 31.4 % [21].Isra University Hospital, Pakistan (51%) [22], Yenişehir primary care center in Turkey, 79% [23].

In our neighbor country Eritrea the research conducted on prevalence and effects of PMS among female health science students reveals that the prevalence of PMS was 17.5% out of 240 students [24]. A research done in Addis ketema preparatory school, Addis Ababa Ethiopia shows that Out of the sampled female students 41.3% [25], Jima University 99.6% [26].

Therefore, this study aimed to determine the prevalence of Premenstrual syndrome and effects on female students of Ambo University health science students. In addition, examine the phenomenon of unreported and underreported premenstrual syndrome female students that is virtually hidden.

Method

Institutional based descriptive cross-sectional study was conducted from January 1, 2019 to January 20, 2019 G.C at Ambo, university which were west shoa zone central Ethiopia. The sample size was calculated using single population proportion formula by assuming population proportion 33% [28]. To get the possible sample at 95% confidence interval, which is Z-value of 1.96 and marginal error of 5%, it is calculated as follows:

$$n = \frac{z^2 p (1-p)}{d^2}$$

$$n = \frac{(1.96)^2 \times 0.33 \times (1-0.33))}{(0.5)^2} = \frac{3.8416 \times 0.33 \times 0.67}{0.0025} = \frac{0.8493}{}$$

n= 340

Where: Z- Level of confidence interval (95%)

P-population proportion

n=sample size

Since our sample, n was less than **10, 000**, we used correction formula,

nf = $\frac{n}{1+n/N}$ where **N**=total number of female students selected from colleges

n= calculated sample size

nf= required sample size to be selected in Ambo University.

By taking our source population N=1321(Total number of female students found in the three colleges November 2018E.C).

$$nf = \frac{n}{1+n/N} = \frac{340}{1+340/1321} = \frac{340}{1+0.3} = \frac{340}{1.3} = 262$$

By considering 10% non-response rate, 10% of 262 =26

So, our final sample size will be 262 +26=**288**

Sampling   In Ambo University main campus, there are seven colleges. From those colleges we selected three colleges by using simple random sampling. Systematic random sampling was employed to select and approach each study subjects. K value=N/nf where, N = total number of female regular students (1321)

nf = Total sample size(required)=1321/288=5

Ethical clearance was obtained from Ambo University research committee written informed consent for participation in the study was obtained from participants just after start of the interview.

Result

100% response rate of participants.

 Among the respondents, 82(28%) were medicine and health science college, 77(27%) were business and economics college and 129(45%) were college of natural and computational science. The prevalence of PMS among the participants was **18%**. It is calculated that 23(45%) of subjects with positive history stopped performing their usual activities (eating, washing, talking to friends). The respondents who qualified for the diagnosis of PMS considerably suffered on their academic as well as social lives. The most common academic performance impairment was cessation or interruption of studying which was reported by 38(75%) of those diagnosed with PMS. Our study finding showed that, the magnitude of severely depressed mood is 58(20.4%) of severely anxiety or tension is 37(12.8%) for markedly irritability, 29(10.1%), for headache 71(24.7%), for fatigue 59(20.5%), for severely breast tenderness 49(17%), for severely backache 60(20.8%), for marked menstrual cramp 56(19.4%) and the magnitude of decreased interest in usual activities and social withdrawal is 45.3%, 68.5% for lack of energy, 49.2% for appetite change, 35.4% for change in sleep pattern, 21% for feeling of out of control or overwhelmed, 38.7% for difficulty of concentration and 41.4% & 37% for somatic symptoms such as abdominal bloating and symptoms sever enough to interfere with day to day activities respectively.

Majority of the respondent had their first menstrual flow between the ages of 13 to 16 years which was 65.5% and had menstrual cycles ranging from 21-35days which was 55%. All subjects responded about their ethnicity and 152 (53%) were Oromo, 105(36.5%) were Amara 17(6%) were Tigre and 14(5%) were others. *(Table 1).*

DISCUSSION

This study had attempted to determine the prevalence of premenstrual syndrome among Ambo University regular female students in main campus. Our findings show the magnitude of premenstrual syndrome was **(18%)** almost similar with Eritrean 17.5(2016)[24]. but other literatures reveal different findings with larger magnitude such as (Guder,West Shoa,Oromia regional state,Ethiopia,2017),Addis ketema Addis Ababa, and Jimma University, Ethiopia),(Yenişehir primary care center in Turkey) and Isra University Hospital, Pakistan which was (33.37%),(30.4%),(99.6%),(79%),(51%) respectively [**29,25,26,23,20,22].** And Study conducted in Jordan University showed lesser magnitude than this study (9.6%) [**20**].

According to an article written in Addis ketema 73.2% of the respondents have markedly depressed mood with feelings of hopelessness, 73.8% have decreased interest in usual activities and social withdrawal and 71.5% have somatic symptoms such as abdominal bloating. And a research done at Jimma university indicated that the magnitude of markedly depressed mood with feelings of hopelessness is 59.9%, 49.6% for irritability, 73.1% showed decreased interest in usual activities, and the magnitude of change in appetite & sleep pattern is 61.9% & 60.3% respectively.

A research article which was done in Iranian adolescent students showed that 89.7% have abdominal bloating[21] and an article of Isra university hospital, Pakistan indicated that 34.3% are with symptoms which is sever enough to interfere with day to day activities.

In thesis computed at Jordan University about 17% of the participants had menstrual cycle duration of less than five days while 83% of them had menstrual cycle durations of five days or more [20].

According to our research, the duration of menstrual cycle is greater than 4 days for 99(34.4%) of the study subjects, 4 days for 142(49.3%) and less than 4 days for 47(16.3%) of the study subjects.

The respondents who qualified for the diagnosis of PMS considerably suffered on their academic as well as social lives. The most common academic performance impairment was cessation or interruption of studying which was reported by 75% of those diagnosed with PMS. This contradicts with what was reported by the Eritrea who's highest scoring academic performance impairment was frequent class missing (90.5%) [24].

40% of those diagnosed with PMS in this study reported missing classes. This finding was inconsistent with the findings of Iranian studies, of which reported class missing rates was 25% [21]. The reasons on that made the percentage of this study to be higher might be due to the fact that the later studies analyzed performance impairment of the whole participants, not of the PMS affected ones only.

This study found out that only 9.5% of the PMS diagnosed students missed an exam. This finding is logically explainable as female students give priority and wouldn't want to miss their exams at any cost.

Abbreviations

DSM-V -   Diagnostic statistical manual 5th edition

DSM-IV - Diagnostic statistical manual 4th edition

PMS   -   Premenstrual syndrome

PMDD - Premenstrual dysmorphic disorder

SPSS - Statistical Package for Social Science

Declarations

Ethics approval and consent to participate

The study proposal was initially approved by the ethical review board of Ambo University. A formal letter of permission was obtained from the college and submitted to department. The information about the study was given to the participants. Verbal and then written informed consent was sought from each participant who agreed to participate in the study and full filled the inclusions criteria. Only anonymous data collected in private rooms.

Availability of data and materials

This study is a part of institutional based a descriptive cross sectional study among on female regular students. The dataset pertaining to this study will be shared upon reasonable request.

Conflict of Interests

The authors declare that they have no competing interests.

Authors' contributions

Kumera W. has involved in the conception, design, analysis, data interpretation and report writing. Takele T. has involved in advice all part of activities. All of us read and approved the final manuscript.

Acknowledgements

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Table 1: Socio-demographic characteristics of respondents in Ambo university female regular students.

| Variables	characteristics	Frequency	(%)
Age	<20	110	38.2
	20-23	156	54.2
	>24	22	7.6
Religion	Orthodox	124	43.1
	Protestant	131	45.5
	Muslim	24	8.3
	Other	9	3.1
Ethnicity	Oromo	152	53.0
	Amara	105	36.5
	Tigre	17	5.9
	Other	14	4.9
Marital status	Single	256	88.9
	Married	32	11.1
	Divorced	0	0
	Other	0	0
Residence	Urban	172	59.7
	Rural	116	40.3
Academic year	1st year	58	20.1
	2nd year	96	33.3
	3rd year	117	40.6
	4th year	14	4.9
	5th year	3	1
Mothers education	No formal education	113	39.2
	Primary school	120	41.7
	High school	25	8.7
	College/university	30	10.4
Monthly family income	1000-3500	123	42.7
	3600-5000	113	39.2
	5100-10000	26	9
	>10000	26	9
Family status	Family live together	228	79.2
	Extended family	31	10.8
	Divorced family	27	9.4
	Other	2	0.7
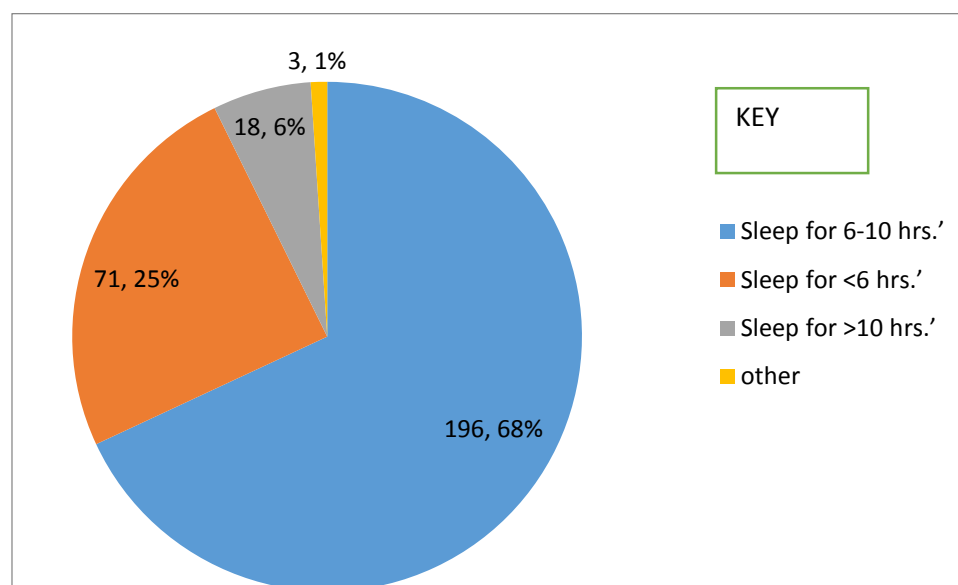
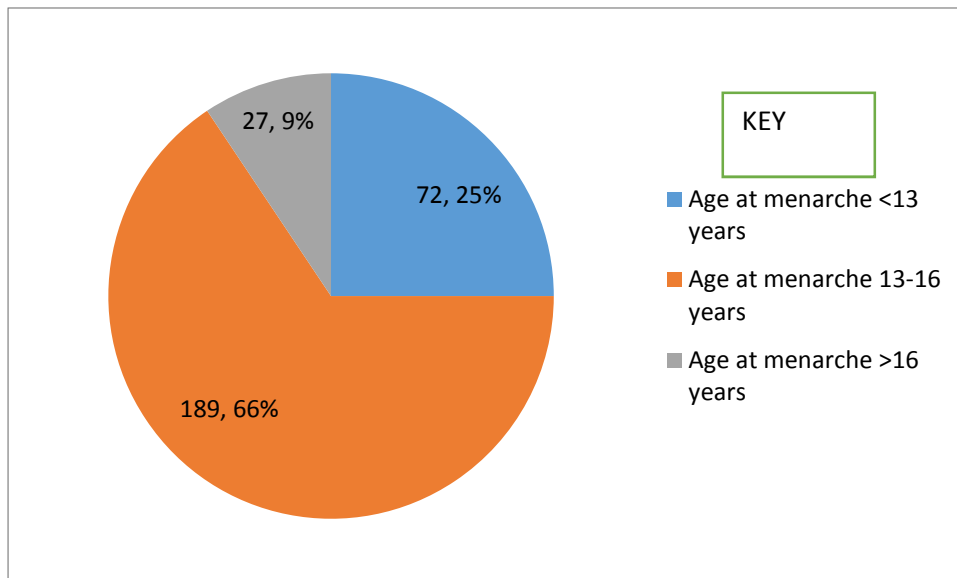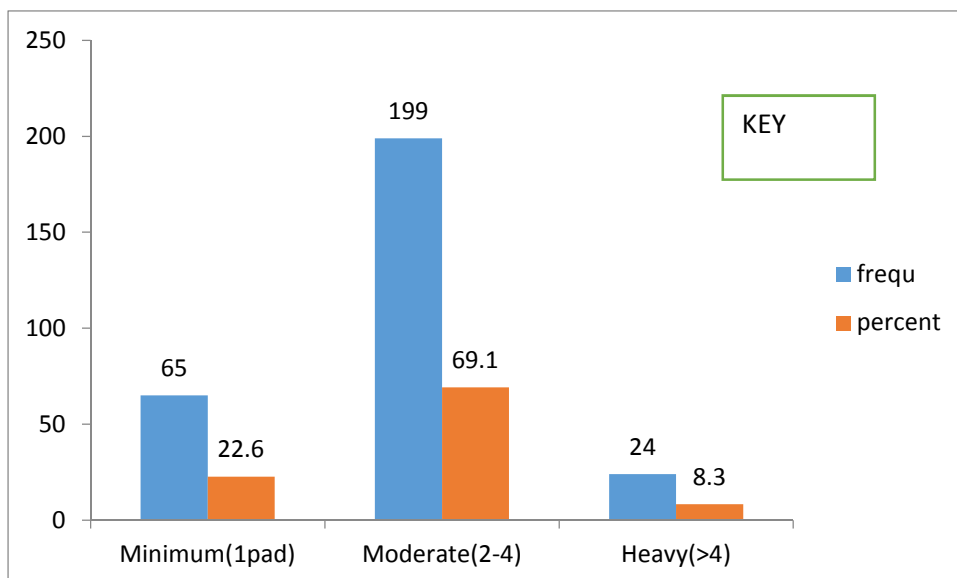Figure 1: Sleep habit of the Study subjects

Figure 2: Age at menarche shown by pie chart

Figure 3: Menstrual flow shown by graph