

PREMENSTRUAL SYNDROME AND ITS POTENTIAL FUNCTIONING IMPACT AMONG FEMALE PHARMACY STUDENTS AT JOUF UNIVERSITY, SAUDI ARABIA: A CROSS SECTIONAL STUDY

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Abstract

The gynaecological disorder premenstrual syndrome (PMS) is a common problem among females. PMS can be severe enough to affect the productivity and quality of life. The aim of the present study was to estimate the PMS prevalence and its adverse impact on academic potential among pharmacy female students. The study also aimed at investigating the different treatment modalities females used to relieve PMS severe symptom. Accordingly, a cross-sectional study was conducted in College of Pharmacy, Jouf University. A reported Arabic language tool was used to collect data. The tool was made available to students via a google during February 09-22, 2021. Based on the exclusion criteria, 30 students were excluded and statistical analyses were based on the rest 58 students. Results revealed that the existence of PMS was 34.5% and symptoms severity could affect the academic performance adversely. The majority of the students who had experienced severe symptoms used analgesics and/or hot drinks (coffee or tea) to relieve these symptoms.

Keywords: Women health, Premenstrual symptoms, female students, Saudi Arabia

Introduction

Premenstrual syndrome (PMS) is a cyclical disorder involving behavioural, emotional and physical symptoms that develop within the luteal phase of the menstrual cycle affecting the patient's normal daily functioning, and resolve shortly after menstruation (1). The prevalence, severity and impact of PMS have been described widely in the medical literature with limited reports in Saudi Arabia (2-8). Different hormonal, psychosocial, and physiological factors contribute to varying intensities of PMS among women (9). PMS has been reported to have a negative impact on female adolescents and young adults with regards to achieving their aspired developmental goals (10). Impaired routine daily activities, altered interpersonal relationships and defective academic performance have been proved to be associated with PMS. In addition, PMS has been a potential cause of decreased occupational productivity and lowered health-related quality of life (11-13). The Saudi Arabia Vision 2030 recognizes that a successful, modern nation must encourage and empower all members of society, including women. To that end, women's rights have grown and expanded under the current leadership, and Saudi women are more engaged than ever in society, government and business (14). This would definitely prioritize women health related studies in the Kingdom. To date, not a single study about PMS in Al Jouf province, Saudi Arabia has been reported. Thus, the primary objective of this study was to assess the existence, treatment modalities, and academic impact of PM symptoms on female pharmacy students in Jouf University, Sakaka, Kingdom of Saudi Arabia. The study was approved by the Deanship of College of Pharmacy, Jouf University (Number 3/42/48141 on February 10, 2021). Participation was voluntary and anonymous and this was made clear to students via online informed consent.

Methods

A questionnaire based cross-sectional survey was conducted at College of Pharmacy, Jouf University. The targeted population was the female students who completed the first semester of the academic

year 2019/2020 using a convenient sample. Married female students and those who reported period irregularities were excluded from the study. A reported Arabic language tool (A-PMS) (3) was used to collect the data via a google link during the period February 09, 2021 to February 22, 2021. The A-PMS was prepared, as a structured questionnaire, with reference to the guidelines of the Diagnostic and Statistical Manual of Mental Disorder-IV (DSM-IV) (3) and the coefficient of reliability or internal consistency was computed using the standard procedure of Cronbach alpha. The structured questionnaire consisted of three domains: physical symptoms, psychological symptoms and impairment of functioning. Items 11 through 15 and 18 through 22 were set for measuring the severity of the physical symptoms while the psychological symptoms were included in items 1 through 10, 16 and 17. All questions were close-ended and for each question participants were asked to respond by none, mild, moderate or severe. The questionnaire also included a part for collecting social, demographic and educational data along with menstruation characteristics. The automatically generated excel sheet was downloaded from the google drive where the data collection tool was generated. Data were analysed using statistical package of social science (IBM SPSS v20). Descriptive analysis was used to report variables frequencies and percentages. Inferential analysis was done using chi-square tests, Pearson correlation, Independent samples T-test or one-way ANOVA and linear regression. A value of $P < 0.05$ was considered significant. To measure symptoms' severity and functioning impairment the following scoring system was used: None = 0; Mild = 1; Moderate = 2; Severe = 3. The academic performance was categorized based on GPA as follows: Excellent (≥ 4.5), Very good (≥ 3.75 to < 4.5); Good (≥ 2.75 to < 3.75); Poor (< 2.75).

Results and Discussion

The A-PMS (3) was converted to a google form with minor modification and made available to the pharmacy college female students on February 09, 2021 until February 22, 2021. The response rate was nearly 40%. In Saudi Arabia, the culture is

fundamentally traditional and conservative. In such a community, women health related issues are considered big taboo and thus it is difficult to address or discuss PMS. This is clearly indicated by the very a few numbers of studies about PMS conducted in KSA. Moreover, the majority of habitants in Al-Jouf area are Bedouins who are more conservative and the culture of silence with regard to menstruation issue forbids females from sharing information about their monthly menstruation experience and the symptoms that precede it even through anonymous online survey. This had inevitable impact on the number of participants and hence the sample size. The reliability coefficient was computed following Cronbach alpha procedure and was found 0.91, 0.79 and 0.79 for the psychological symptoms, physical symptoms and measurement of functional impairment, respectively (Table 1). The age of the participated students (N = 58) ranged from 19 to 24 years with a mean (\pm SD) of 21.6 ± 1.4 years. At least one student from each study level participated in the study. Four levels of academic performance were reported and only three students (5.2%) had poor performance and the rest students had excellent (36.2%, n = 21), very good (29.3, n = 17) or good (29.3, n = 17%) academic performance. More than two thirds of the students (72.4%, n = 42) lived with their family or a relative and sixteen students (27.6%) stayed in a dormitory during the first semester of the academic year 2019/2020 (Table 2).

The majority of the participants (56.9%, n = 33) reported that they experienced menstrual cycle every 22–28 days. Bleeding days were 1–3 days for seven students (12.1%) and 4–7 days for the rest students (87.9%, n = 51). The menarche age was < 14 years for thirty-two students (55.2%) and 14–18 years for twenty-six students (44.8%) (Table 3). Based on the scoring system, the mean score (SD) for both psychological and physical symptoms was 28.1 ± 12.7 (Table 4). The rate of prevalence of each premenstrual symptom was classified according to degree of severity: none, mild, moderate or severe. The most reported symptom was “hopelessness” (100%, n = 58) and the least was “guilt feeling” (50%, n = 29). At least, four students had experienced one or more severe symptom with “lethargy, fatigue or decreased energy” being the most frequently experienced (24.1%, n = 14) (Table 5). Item 23 in the

A-PMS focused on the premenstrual symptoms-related functioning impairment. These symptoms impaired relationships (55.2%, n = 32), academic achievement (53.4%, n = 31) and daily routine activities (65.5%, n = 38) (Table 6) with overall mean score (\pm SD) of 2.6 ± 2.2 (Table 7). About 24–32% women report moderate to severe PMS and 3–8% have very severe form of PMS that is Premenstrual Dysphoric Disorder (PMDD) (15). Epidemiological studies have shown that the prevalence of PMS varies with the methods and measuring instruments used (16). According to American College of Obstetricians and Gynaecologists (ACOG), a female could be diagnosed as having PMS if she reported at least one physical symptom and one psychological symptom that cause dysfunction in social, academic, or work performance (1). On the other hand, PMDD is diagnosed when a female report five or more severe symptoms at least one of must be physical. Based on this, twenty students (34.5%) were diagnosed as PMS patients ten of whom (50%) were classified as having PMDD. Nearly half of the participants (55%, n = 32) were not aware about PMS. In contrast, a study conducted in Karachi revealed that the more than 96% of female students had heard about PMS (17). Different treatment modalities were reported by the participants and only five participants (8.6%) did not seek treatment. Similar to medical students at Mekelle University (13), the majority of participants (70.7%, n = 41) in the present study used analgesics and/or hot drinks (coffee or tea) to relieve PMS symptoms (Table 8). The obtained PMS prevalence (34.5%) is nearly similar to that observed in King Faisal University, Saudi Arabia (35.6%) (4) and Mekelle University, Ethiopia (37%) (13) but much less than that reported for Taibah University, Saudi Arabia (56%) (7).

Contrary to the study conducted by Bekele and Tolossa (13), there was no significant relationship between the academic performance and PMS or PMDD prevalence. Nonetheless, the mean of premenstrual symptoms overall score for those who reported excellent academic performance (36.2%, n = 21) was significantly 9.7 less than that of the others ($p < 0.001$). The functioning impairment had adverse impact on the distinguished academic performance of the participants where the mean score for those who reported excellent academic performance was

significantly 1.2 less than that of the others ($p < 0.05$). Residence status appeared to cause no difference in the symptoms' severity overall mean score. However, a difference in physical symptoms mean score was seen where students who lived with their families or relatives (72.4%, $n = 42$) reported a mean score that was significantly smaller, by 3.6, than the mean score for those who stayed in a dormitory ($p < 0.05$). The study level did not have significant association with PMS diagnosis. However, the functioning impairment (FI) mean score for those who had completed the fourth study level (65.5%, $n = 36$) was significantly 1.3 less than that of the others ($p < 0.05$). Participants' ages had no association with the prevalence of PMS and this agrees with the findings of the study conducted by Potter and co-workers (9). Yet, the FI mean score for the group age 23–24 (31.0%, $n = 18$) was significantly 1.9 less than that of the group age 19–20 (27.6%, $n = 16$), $p < 0.05$). The FI mean score for those who were diagnosed as PMS patients (34.5%, $n = 20$) was significantly 2.4 above that of the others ($p < 0.001$). In addition, it was found to have a significant strong correlation with the premenstrual symptoms overall score ($r=0.655$, $p < 0.001$) and they tend to increase together. Moreover, reporting severe functioning impairment was significantly more obvious for females who were diagnosed as PMDD patients (17.2%, $n = 10$) whose mean score was 3.2 less than the others' ($p < 0.001$).

In conclusion, the existence of PMS among college of pharmacy female students, Jouf University was nearly 35%. The severity of premenstrual psychological and physical symptoms appeared to have adverse impact on the academic achievement. Analgesics and/or hot drinks (coffee or tea) were used, the most, for relieving PMS severe symptoms. In retrospective studies participants are likely to recall their recent experience. Possible concurrent physical or psychiatric illness, which could potentially interfere with the findings of the current study, were not included in the data collection tool. Because of small sample size together with non-probability sampling the findings of the current study could not be generalized to Jouf University female students. The results of the current study can be considered as a

preliminary finding for future research targeting all female students in Jouf University.

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Table 1. Questionnaire's reliability and descriptive results of the A-PMS, N=58

	Cronbach Alpha	Minimum	Maximum	Mean	sd
Psychological symptoms	0.91	0.81	1.60	1.28	0.23
Physical symptoms	0.79	0.91	1.72	1.24	0.26
Assessment of functional impairment	0.79	0.65	1.07	0.85	0.21

Table 2. Educational and demographic characteristics (n = 58)

Variable	n	%	Variable	n	%
<i>Age</i>			<i>Study level</i>		
19	3	5.2	First	3	5.2
20	13	22.4	Second	1	1.7
21	11	19.0	Third	14	24.1
22	13	22.4	Fourth	4	6.9
23	15	25.9	Fifth	13	22.4
24	3	5.2	Sixth	2	3.4
<i>Academic performance</i>			Seventh	17	29.3
Excellent	21	36.2	Eighth	4	6.9
Very good	17	29.3	<i>Residency</i>		
Good	17	29.3	With family or a relative	42	72.4
Poor	3	5.2	In a dormitory	16	27.6

Table 3. Menstrual cycle characteristics (n = 58)

Variable	n	%
<i>Length of the period</i>		
< 21 days	16	27.6
21 days	9	15.5
22–28 days	33	56.9
<i>Bleeding days</i>		
1–3 days	7	12.1
4–7 days	51	87.9
<i>Menarche age</i>		
< 14 years	32	55.2
14–18 years	26	44.8

Table 4. The premenstrual symptoms severity score (n = 58)

Score	Mean	SD
Psychological symptoms score (out of 36)	15.6	7.8
Physical symptoms score (out of 30)	12.4	6.0
Premenstrual symptoms overall score (out of 66)	28.1	12.7

Table 5. Existence rates of premenstrual symptoms according severity level (n = 58)

Symptom	None		Mild		Moderate		Severe	
	N	%	N	%	N	%	N	%
1. Depressed mood	7	12.1	26	44.8	16	27.6	9	15.5
2. Hopelessness	0	0.0	39	67.2	12	20.7	7	12.1
3. Guilt feeling	29	50.0	17	29.3	6	10.3	6	10.3
4. Anxiety/worry	12	20.7	25	43.1	14	24.1	7	12.1
5. Affective lability	8	13.8	21	36.2	16	27.6	13	22.4
6. Increased sensitivity	11	19.0	26	44.8	14	24.1	7	12.1
7. Feelings of anger	11	19.0	19	32.8	18	31.0	10	17.2
8. Easily tempered	6	10.3	30	51.7	10	17.2	12	20.7
9. Lack of interest	14	24.1	14	24.1	24	41.4	6	10.3
10. Difficulty concentrating	19	32.8	24	41.4	11	19.0	4	6.9
11. Lethargy/fatigue/decreased energy	4	6.9	21	36.2	19	32.8	14	24.1
12. Increased appetite	28	48.3	15	25.9	8	13.8	7	12.1
13. Craving for certain food	20	34.5	14	24.1	12	20.7	12	20.7
14. Hypersomnia	14	24.1	20	34.5	16	27.6	8	13.8
15. Insomnia	25	43.1	13	22.4	16	27.6	4	6.9
16. Loss of control	12	20.7	24	41.4	16	27.6	6	10.3
17. Feeling overwhelmed	17	29.3	19	32.8	18	31.0	4	6.9
18. Breast tenderness	18	31.0	14	24.1	17	29.3	9	15.5
19. Breast engorgement or weight gain	21	36.2	14	24.1	17	29.3	6	10.3
20. Headache	26	44.8	15	25.9	10	17.2	7	12.1
21. Muscle, joint or back pain	12	20.7	12	20.7	22	37.9	12	20.7
22. Acne	13	22.4	26	44.8	11	19.0	8	13.8

Table 6. Functioning impairment due to premenstrual symptoms (n = 58)

interfering with ...	None		Mild		Moderate		Severe	
	n	%	n	%	n	%	n	%
1. Social relationships	26	44.8	26	44.8	6	10.4	0	0.0
2. Academic achievement	27	46.6	18	31.0	9	15.5	4	6.9
3. Daily routine activities	20	34.5	19	32.8	14	24.1	5	8.6

Table 7. The functioning impairment score (n = 58)

Score	Mean	SD
Interference with social relationships (out of 3)	0.66	0.66
Interference with academic achievement (out of 3)	0.83	0.94
Interference with daily routine activities (out of 3)	1.1	0.97
Overall functioning impairment (out of 9)	2.6	2.2

Table 8. PMS diagnosis, knowledge and treatment modalities

Variable	N	%
<i>PMS diagnosis</i>		
Yes	20	34.5
No	38	65.5
<i>PMDD diagnosis (of those who were PMS diagnosed)</i>		
Yes	10	17.2
No	10	82.8
<i>Knowledge about the PMS</i>		
Yes	26	44.8
No	32	55.2
<i>Treatment modalities</i>		
Analgesics	12	20.7
Analgesics + Exercise	1	1.7
Analgesics + Massage	1	1.7
Analgesics + Hot drinks	17	29.3
Exercise	1	1.7
Hot drinks	12	20.7
Hot drinks + Exercise	3	5.2
Hot drinks + Massage	6	10.3
Nothing	5	8.6