

Original Article

Patterns and Predictors of Premenstrual Syndrome in Jordanian Women

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ABSTRACT

Objective: To determine the prevalence of premenstrual syndrome (PMS) in Jordanian women and to determine the socio-demographic, gynecological, and lifestyle predictors for the occurrence of PMS

Design: Cross-sectional study

Setting: Family medicine clinic at the Jordan University Hospital

Subjects: A convenient sample of 179 women who attended the clinic for different reasons, who fit the inclusion criteria and who agreed to participate in the study were included.

Intervention: The women completed a self-administered questionnaire, including an Arabic validated version of the Shortened Premenstrual Assessment Form (SPAF).

Main outcome measures: Women were classified as no PMS, mild, moderate or severe PMS according to their

SPAF total score. Data were analyzed using SPSS (version of the 19). P-values were considered significant at $p < 0.05$.

Results: Of the 179 women, 88% were identified as suffering from PMS to some degree. Women aged 21 – 25 years and those with dysmenorrhea were more likely to suffer from severe symptoms with statistically significant p-value. Interestingly, women who engaged in regular effective exercise were more likely to suffer from severe PMS symptoms ($p = 0.013$). Also, women who consumed fast food regularly were more likely to suffer from PMS symptoms ($p = 0.047$).

Conclusion: PMS is a common problem that affects women in the reproductive age group. Health care providers should consider socio-demographic, gynecological and lifestyle factors associated with PMS.

KEYWORDS: dysmenorrheal, exercise, fast food, premenstrual syndrome

INTRODUCTION

The menstrual cycle has attracted research interest since the 1930s and is an excellent model of ovarian steroid influence on emotion, behavior, and cognition^[1]. Premenstrual syndrome (PMS) is a condition of recurrent physical and psychological symptoms occurring in a cyclic fashion during the luteal phase of the menstrual cycle^[2]. Over 150 PMS symptoms have been identified^[3], including physical, behavioral, and emotional. Although different definitions of PMS might focus on one or more of those domains^[4], each is important and should not be underestimated.

Worldwide data suggests that 75 – 85% of women experience PMS to some extent during the late luteal

phase of each menstrual cycle (7 – 14 days prior to menstruation)^[5-7]. Data from university students and employers in Jordan demonstrate similar findings, with 80.2% of the studied population suffering from PMS^[8]. Moreover, 20 – 40% of menstruating women experience PMS to a degree that warrants clinical treatment^[2,9]. Diagnosing and effectively treating PMS is of vital importance for both the clinician and patient, considering the prevalence, chronicity, and potential distress.

Although the exact etiology of PMS is unknown^[10,11], there are many new hypotheses, including deficiencies in some minerals, serotonin deficiency, and an exaggerated response to normal

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hormonal changes. Other hypotheses currently under investigation include increased endorphins, alterations in the gamma-amino butyric acid system, and hypoprolactinemia^[12,13]. Regardless of the exact pathophysiology behind PMS, its importance as a chronic, distressing, and disabling problem affecting women of reproductive age should not be overlooked.

Depending on the defining body, there are many definitions of PMS^[3]. One well-recognized tool to assess PMS is the Shortened Premenstrual Assessment Form (SPAF), which classifies PMS symptoms into pain, affect, and water retention symptoms. Once PMS is recognized, it is crucial to determine the important risk factors, including sociodemographic factors, lifestyle, and gynecological factors. Some risk factors, such as younger age, higher body mass index, menstrual cycle regularity, and history of abuse have been studied^[14].

As there are very limited data regarding the prevalence and associated risk factors of PMS in Jordanian women, the purpose of the current study was to determine the prevalence of premenstrual syndrome in Jordanian women and to determine the sociodemographic, gynecological, and lifestyle predictors for the occurrence of PMS. These data will help clinicians to better understand the problem and tailor management plans accordingly.

SUBJECTS AND METHODS

Design

This cross-sectional study was conducted at a family medicine walk-in clinic in a hospital in Amman, the capital of Jordan. The patients at this hospital are primarily medically insured through the Ministry of Health, universities, and many affiliated public institutions and companies, although there are also some private patients. The clinics serve patients of all age groups who attend the clinic complaining of acute, sub-acute, and chronic complaints, as well as those who attend for health checkups and preventive services.

Participants

A convenience sample of 179 women was recruited. Women attending the clinic for various reasons from February 2015 through November 2015 were asked to complete a self-administered questionnaire. Inclusion criteria were all women aged 15 – 45 years old who attended the clinic in the aforementioned period of time and who agreed to participate in the study. Women were excluded from the study if they were pregnant, had given birth in the last 6 months, or were on hormonal contraception; each of these factors might affect the occurrence and severity of PMS^[15]. A trained research assistant was responsible for obtaining

consent from patients, explaining the purpose of the study, distributing the questionnaire, ensuring that all questions were answered, and helping fill out the questionnaires for patients with literacy problems or poor eyesight. Ethical approval was obtained from the appropriate ethical committees.

Questionnaire

The questionnaire consisted of two main parts. The first part asked about sociodemographic variables and gynecological history, including age, education level, average income, marital status, occupation, age at menarche, menstrual cycle regularity, and any history of chronic gynecological problems (mainly polycystic ovary syndrome, endometriosis, and/or pelvic inflammatory disease).

The second part of the questionnaire consisted of a modified SPAF. This form, developed by Allen, McBride, and Pirie^[2], was used to determine the degree of premenstrual symptoms. The 10-item SPAF is used to assess the presence and/or change in intensity of symptoms that are typically expressed during the luteal phase of the menstrual cycle. The SPAF provides the same assessment as the original 95-item Premenstrual Assessment Form as demonstrated by its equally strong reliability (test-retest coefficient

Table 1: Sociodemographic characteristics of the sample

Sociodemographic variable	Frequency	Percent
Age Groups		
15 - 20	20	11.2
21 - 25	55	30.9
26 - 30	37	20.8
31 - 35	33	18.5
36 - 40	20	11.2
41 - 45	13	7.3
Social status		
Single	91	50.8
Married	80	44.7
Widowed	1	0.6
Divorced	6	3.4
Other	1	0.6
Educational level		
Illiterate	2	1.1
Elementary	5	2.8
High school	38	21.2
Bachelor's degree	117	65.4
Higher education	17	9.5
Income/month (JOD)		
Less than 800	103	58.2
800 - 1500	57	32.2
More than 1500	17	9.6
Occupation		
Student	51	28.7
Housewife	51	28.7
Full time job	71	39.9
Part time job	2	1.1
Other	3	1.7

JOD : Jordanian dinar

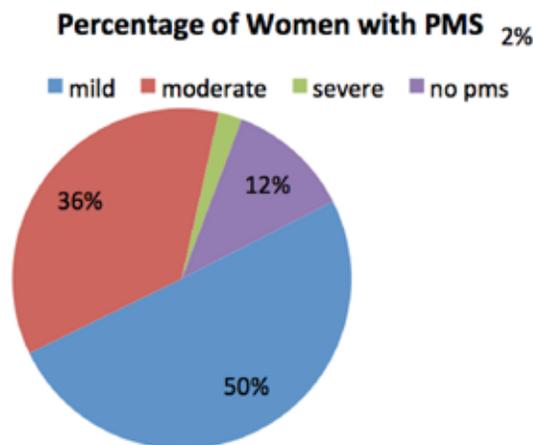


Fig.1: Percentages of women with different degrees of PMS

range of 0.6 – 0.7) and validity (internal consistency coefficient of 0.95)^[16]. Owing to linguistic reasons, during translation for the current study, we divided the first item in the questionnaire into two questions; accordingly, patients were asked about breast pain and tenderness in one question and breast enlargement in another question. We also added two

more items as per our literature review, including the appearance of acne on the face, upper chest or back, and headaches^[15,17,18]. Our new version of SPAF was examined by three full professors and three assistant professors in the appropriate medical department; all suggested changes were discussed and resolved. The final Arabic version of our modified SPAF was examined for reliability in a pilot study of 40 patients who were not included in the present analysis. The analysis revealed the questionnaire to be reliable (Cronbach's α of 0.747).

As the SPAF is scaled from 0 – 3 according to the severity of the symptoms (0, no symptoms; 1, mild symptoms; 2, moderate symptoms; and 3, severe symptoms), PMS diagnosis was given on the basis of a PMS score >14 with the symptoms preceding menses. PMS scores from 0 – 14 were rated as no PMS, 15 – 29 as mild PMS, 30 – 44 as moderate PMS, and > 45 as severe PMS.

Statistical Analysis

Data were analyzed using SPSS (version 19). The χ^2 test was used to compare the frequencies of categorical variables; an independent T-test, analysis

Table 2: Comparison of population demographics in women with mild, moderate and severe PMS (N = 179)

Sociodemographic variable	No PMS n (%)	Mild PMS n (%)	Moderate PMS n (%)	Severe PMS n (%)	P-value
Number of women	30 (16.8)	84 (46.9)	62 (34.6)	3 (1.7)	
Age					
15 - 20	6 (20)	10 (12)	3 (4.8)	1 (33.3)	0.047*
21 - 25	6 (20)	20 (24.1)	27 (43.5)	2 (66.7)	
26 - 30	8 (26.7)	14 (16.9)	15 (24.2)	0 (0)	
31 - 35	5 (16.7)	20 (24.1)	8 (12.9)	0 (0)	
35 - 40	1 (3.3)	11 (13.3)	8 (12.9)	0 (0)	
41 - 45	4 (13.3)	8 (9.6)	1 (1.6)	0 (0)	
Marital status					0.447
Single	17 (56.7)	37 (44)	34 (54.8)	3 (100)	
Married	13 (43.3)	44 (52.4)	23 (37.1)	0 (0)	
Widowed	0 (0)	1 (1.2)	0 (0)	0 (0)	
Divorced	0 (0)	2 (2.4)	4 (6.5)	0 (0)	
Other	0 (0)	0 (0)	1 (1.6)	0 (0)	
Level of Education					0.879
Illiterate	0 (0)	1 (1.2)	1 (1.6)	0 (0)	
Elementary	1 (3.3)	3 (3.6)	1 (1.6)	0 (0)	
High school	8 (26.7)	19 (22.6)	11 (17.7)	0 (0)	
Bachelor's degree	20 (66.7)	50 (59.5)	44 (71)	3 (100)	
Higher education	1 (3.3)	11 (13.1)	5 (8.1)	0 (0)	
Income (JOD)					0.409
Less than 800	17 (56.7)	50 (61)	34 (54.8)	2 (66.7)	
800 - 1500	11 (36.7)	27 (32.9)	19 (30.6)	0 (0)	
More than 1500	2 (6.7)	5 (6.1)	9 (14.5)	1 (33.3)	
Job					0.985
Student	11 (36.7)	20 (24.1)	18 (29)	2 (66.7)	
Housewife	8 (26.7)	26 (31.3)	17 (27.4)	0 (0)	
Full time job	10 (33.3)	35 (42.2)	25 (40.3)	1 (33.3)	
Part time job	0 (0)	1 (1.2)	1 (1.6)	0 (0)	
Other	1 (3.3)	1 (1.2)	1 (1.6)	0 (0)	

* significant $p \leq 0.05$; JOD : Jordanian dinar

of variance, and linear correlation were used to compare continuous data as appropriate. P-values were considered significant at $p < 0.05$.

RESULTS

Of the studied population, 88% suffered from some degree of PMS, 50% had mild PMS, and only 2% suffered from severe PMS (Figure 1). As plotted in Table 1, more than 50% of the studied population was 20 – 30 years old, 50.8% were single women, more than 65% had attained a bachelor's degree, and ~40% worked full-time.

Regarding PMS and sociodemographic variables (Table 2), women aged 21 – 25 years were more likely to suffer from severe PMS ($p = 0.047$). However, education level, marital status, occupation, and income were not significantly associated with the occurrence or severity of PMS.

Table 3 demonstrates the association between lifestyle factors, smoking, medication and over-the-counter daily supplement use on prevalence of PMS. Interestingly, women who engaged in regular exercise of 150 minutes or more a week were more likely to suffer from severe PMS symptoms ($p = 0.047$). In addition, women who consumed fast food weekly were also more likely to suffer from severe PMS symptoms ($p = 0.013$). However, smoking, type of bread, use of a daily vitamin and mineral supplement, and the daily consumption of caffeinated drinks were not significantly associated with the occurrence or severity of PMS.

When comparing gynecological factors with PMS occurrence (Table 4), women who suffered from dysmenorrhea were more likely to suffer from severe PMS. However, parity and the presence of other gynecological diagnoses (such as polycystic ovarian syndrome and endometriosis) were not statistically significantly associated with PMS. Interestingly, women with severe PMS symptoms were more likely to seek medical consultation for their symptoms ($p = 0.009$).

DISCUSSION

Premenstrual syndrome remains a clinical entity of great significance in medical practice^[5]. The prevalence of PMS varies significantly, depending on the studied age group, race, and methodology to define PMS, ranging from 10% in Switzerland^[19] to 98.2% in one Iranian study^[20]. According to a meta-analysis, the pooled prevalence was estimated to be 48% (95% confidence interval (CI): 33 – 63%). One recent Jordanian study reported a prevalence of 80% in college students and workers^[8]. The current study found some degree of PMS in 88% of participants; this number lies on the higher border among reported populations. Compared to the previous study from Jordan, we believe that our sample was more representative of the normal Jordanian population, as it consisted of patients who were attending the clinic for different reasons and had variable educational and sociodemographic backgrounds.

Table 3: Comparison of lifestyle in women with mild, moderate and severe PMS

Life style and habitual factors	No PMS n (%)	Mild PMS n (%)	Moderate PMS n (%)	Severe PMS n (%)	P-value
Smoking					
Yes	3 (10)	7 (8.2)	2 (4.8)	0 (0)	0.740
No	27 (90)	77 (91.7)	59 (95.2)	3 (100)	
Daily over the counter supplements					
Yes	8 (26.7)	21 (25)	22 (35.5)	0 (0)	0.357
No	22 (73.3)	63 (75)	40 (64.5)	3 (100)	
Medications					
Yes	2 (6.7)	5 (6)	6 (9.7)	0 (0)	0.801
No	28 (93.3)	79 (94)	56 (90.3)	3 (100)	
Drinks					
Yes	28 (93.3)	80 (95.2)	59 (95.2)	3 (100)	0.951
No	2 (6.7)	4 (4.8)	3 (4.8)	0 (0)	
Exercise					
Yes	16 (53.3)	42 (50)	43 (96.4)	3 (100)	0.047*
No	14 (46.7)	42 (50)	19 (30.6)	0 (0)	
Type of bread					
White	25 (83.3)	72 (86.7)	49 (79)	2 (66.7)	0.434
Whole	3 (10)	8 (9.6)	7 (11.3)	0 (0)	
Both	2 (6.7)	3 (3.6)	6 (9.7)	1 (33.3)	
Fast Food					
Yes	16 (53.3)	51 (60.7)	50 (80.6)	3 (100)	0.013*
No	14 (46.7)	33 (39.3)	12 (19.4)	0 (0)	

* significant $p \leq 0.05$

Table 4: Comparison of menstruation in women with mild, moderate and severe PMS

Obstetric/ Gynecological history	No PMS n (%)	Mild PMS n (%)	Moderate PMS n (%)	Severe PMS n (%)	P-value
Regularity of periods					0.281
Regular	26 (86.7)	76 (90.5)	50 (80.6)	2 (66.7)	
Irregular	4 (13.3)	8 (9.5)	12 (19.4)	1 (33.3)	
Menstrual pain					0.000*
Yes	20 (66.7)	76 (90.5)	61 (98.5)	3 (100)	
No	10 (33.3)	8 (9.5)	1 (1.6)	0 (0)	
Gynecological diagnosis					0.666
Yes	4 (13.3)	17 (20.2)	13 (21)	0 (0)	
No	26 (86.7)	67 (79.8)	49 (79)	3 (100)	
Previous pregnancy					0.272
Yes	11 (36.7)	41 (48.4)	26 (41.9)	0 (0)	
No	19 (63.3)	43 (51.2)	36 (58.1)	3 (100)	
Seeking consultation					0.009*
Yes	14 (48.3)	41 (48.8)	45 (72.6)	3 (100)	
No	15 (51.7)	43 (51.2)	17 (27.4)	0 (0)	

* significant $p \leq 0.05$

Data regarding the effect of different sociodemographic variables on the occurrence of PMS are conflicting^[8,20,21]. Nonetheless, the current data are consistent with a number of other studies, confirming that younger women (aged 21 – 25 years in the current study) are more prone to PMS than older age groups^[8,20,22]. In one recent large survey, younger persons were found to be more prone to stress^[23]; this might explain our results, as younger women might be more prone to express symptomatology related to PMS in the presence of stress. It is notable that many studies focused on PMS in adolescents and/or college students, thus limiting our ability to compare the present results to those of other studies^[22-26].

Although previous studies have reported that low income and lower educational level are predictive of PMS^[1,27], in the current study, there was no association between PMS and income, marital status, education level, or occupation. Nonetheless, poverty and poor education are risk factors for suffering from chronic stressors and having fewer coping mechanisms to deal with different stressors^[28]. Having fewer coping mechanisms might influence the severity of PMS symptoms.

The American College of Obstetricians and Gynecologists and the National Health Service (NHS) have provided recommendations about the role of exercise as a treatment for menstrual cycle-related disorders^[29], and recent data suggests that exercise reduces premenstrual symptoms in women running in excess of 50 km/month^[30]. However, in the current study, women who exercised were more likely to have experienced PMS symptoms compared to those who did not exercise. Those findings does not imply that exercise is not beneficial in reducing PMS symptoms in women with mild PMS, as found by some studies^[29,30], as the current study does not look at the effect

of initiating exercise in already sedentary women with PMS. Still, this supports the suggestion that prior to advising women that exercise is an effective treatment for PMS, high-quality randomized controlled trials are needed^[29].

Regarding diet, although “PMS diets” have been recommended, few of the recommendations were founded on scientific fact^[30,31]. However, there is some evidence that sufficient calcium, magnesium, vitamin E and restricted caffeine and salt are beneficial for PMS patients with different symptoms^[31]. Although we did not directly assess this in the present study, we found that women who regularly consumed fast food had a higher PMS score on the SPAF. Data is scarce concerning the role of fast food on the occurrence of PMS; most studies tend to discuss a healthy diet as a general rule^[31].

In the current study, women suffering from severe PMS symptoms were more likely to suffer from dysmenorrhea as well; this mirrors both Jordanian and international findings^[24,26]. Some researchers claim that patients with PMS might be more sensitive to hormonal fluctuation than patients with no PMS^[21]; this hypothesis might also apply to dysmenorrhea, which may potentially explain the strong association between the two conditions. In contrast, although a strong association between an earlier age of menarche and PMS has been reported^[32], other studies, in addition to the current study, failed to find any statistically significant association^[8,24,33].

In summary, PMS is a common problem that affects women in their most productive years. Doctors, especially those who take care of women in this age group, should be more vigilant in enquiring about PMS and addressing the needs of women who suffer from this common problem. In addition, they should consider the effect of different sociodemographic,

gynecological, and lifestyle factors associated with the occurrence and severity of PMS.

CONCLUSION

PMS is a common condition in reproductive age females, especially in younger females, and those who suffer from dysmenorrhea. Doctors should take the initiative and ask women at risk about PMS symptoms, offering help and advices, and referring severe cases if needed. Further research is needed to explore common therapies and remedies used traditionally and their effect on such a severe, common condition.

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