Research Article

Prevalence of Premenstrual Syndrome and its Influence on Job Performance Among Nurses

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ABSTRACT

Introduction: Premenstrual syndrome (PMS) is characterized by a wide range of emotional and physical symptoms and behavioural changes, happening before the menstruation phase of the menstrual cycle and dropping after the starting of the menstrual period.

Objective: To determine the prevalence of premenstrual syndrome and its influence on job performance among nurses.

Methods: This cross-sectional study was conducted on a population of 310 nurses working at Madinah maternity and child hospital and affiliated Primary Health care Centers in AlMadianh, from January to February 2019 in Al-Madinah, Saudi Arabia. Data were collected using the Premenstrual Syndrome Scale (PMS). The data were analyzed with Version 22.0 of the Statistical Package for Social Science. Descriptive statistics, Pearson's correlation, independent t-test and one way ANOVA test was used.

Results: The prevalence of PMS among the nurses was 52.0%, with a mean score of 114±32. The premenstrual syndrome was significantly higher in younger nurses, those with less number of children, those who had pain before and during the period, those with disappearance symptoms before and with the onset of menstruation, those who use regulated medicine, those who experienced dysmenorrhea, cramps and back pain ($p < 0.05$). The premenstrual syndrome was significantly affected daily work ($p < 0.0001$).

Conclusion: The premenstrual syndrome was found in more than half of the nurses who participated in the study. The premenstrual syndrome was higher in younger nurses who suffered from pain before and during the period and used regulated medicine. There was a statistically significant negative effect of PMS on daily work performance.

Key Words: Premenstrual syndrome (PMS), Nurses, Work related quality of life, AlMadinah, Saudi Arabia

INTRODUCTION

Premenstrual syndrome (PMS) is characterized by a wide range of emotional and physical symptoms and behavioural changes, happening before the menstruation phase of the menstrual cycle and dropping after the starting of the menstrual period, [1-6]and it is classified as physical disease in the 10th revision list of the international classification of disease (ICD).[6,7,8]

PMS is variously defined.2 The American College of Obstetricians and Gynecologists (ACOG) defined PMS as "a clinical condition characterized by the cyclic presence of physical and emotional signs and symptoms unconnected to any organic illness that show during the 5 days before menses in each of the three previous menstrual cycles and vanish

within 4 days of the onset of menses, without repetition until at least the day 13th of the cycle.[4,9] Also, the American Psychiatric Association (APA) has determined criteria for the diagnosis of severe PMS or premenstrual dysphoric disorder (PMDD).[4,10] Where women are diagnosed with PMDD when their lives are considerably affected by moderate to severe symptoms as defined in the Diagnostic and Statistical Manual of Mental Disorders, fifth edition.[4,11]

PMS disturbs the daily lives of women and can worsen their quality of life and social skills.[3,12,13] The severity of PMS symptoms is associated with its duration in how it ruins the daily lives of women.[3,13] Known risk factors for PMS are hormonal imbalance, fluid retention, thyroid dysfunction, genetic factors, hypoglycemia, stress and psychological factors.[6,14,15] Over 200 premenstrual symptoms have been reported; how-

ever, very few are explained by changes in the menstrual cycle.[5,16]

Symptoms widely associated with PMS include physical symptoms such as bloating, headache, breast swelling and tenderness, nausea, weight gain and sweating, and psychological symptoms such as restlessness, anger and irritability.[1-6] The incidence of PMS is very common among women of reproductive ages.[3] Studies have stated that the rate of PMS with moderate and severe symptoms ranges from 4.1% to 80.2%.[1-6,17-19] Where PMS prevalence rates can vary due to cultural characteristics, sample differences, and diagnostic methods.[3]

Few epidemiological studies have investigated the prevalence of premenstrual syndrome and its influence on job performance among nurses, particularly in Saudi Arabia. The current study aimed to investigate the prevalence of premenstrual syndrome and its influence on job performance among nurses in Al-Madinah, Saudi Arabia,

MATERIALS AND METHODS

Study design
This was a cross-sectional descriptive study conducted among nurses working at Madinah maternity and child hospital and affiliated Primary Health care Centers in Madinah. The calculated sample size was 300 with 95% confidence limits, 5% accepted errors, the prevalence of premenstrual syndrome =4.1% to 80.2%, [1-6] and a 10% (27 nurses) was added to the sample to avoid withdrawing and refusing to participate.

Procedure
A stratified random technique (proportional allocation) was applied to select the required sample size representing different clinical departments. Targeted departments were: Emergency department, Intensive care Units, medical department, surgical department, pediatric department, Oncology Physiotherapy and 7 primary healthcare centres PHCCs.

A structured self –administered questionnaire. The questionnaire was taken from previous studies[4,5,20,21] and modified by two experts from family medicine, it contains four main parts; A – Socio-demographic characters of the nurses. B –Menstrual and premenstrual characteristics. C –Premenstrual symptoms. D- Premenstrual syndrome scale.

Variables
The dependent variable of the study was Job performance. And the independent variable were sociodemographic characteristics, menstrual and premenstrual characteristics, and premenstrual symptoms.

Statistical analysis
Data was entered and processed by using SPSS software version 21 for analysis and interpretation. P-Value is considered statistically significant if it is ≤ 0.05.

Study approvals
The following approvals were obtained: the research ethical committee, ministry of health, and the general Directors of Madinah maternity and child hospital (MMCH) and affiliated primary healthcare centres (PHCCs) in AL-Madinah. Written consent was obtained from each participant. And the collected data was handled confidentially.

RESULT

The Shapiro-Wilk statistic test was done for the following continuous variables (PMS score, age, children number, body mass index (BMI), absence days by week, absence days by months and age at first ministration). The result for PMS score was (0.991, p value= 0.745) indicating normal distribution. On the other hand the result for the rest continuous variable were (0.943, 0.851, 0.321, 0.465,0.485 and 0.963) with (p<0.001, p<0.001, p<0.001, p<0.001, p<0.001, p<0.001, and p<0.001). Indicating non normally (non-parametric) distributed.

Out of 310 female nurses, 176 (56.8%) were married and 112 (36.1%) were single, with an average age of 31.8±6.7. The majority 270 (87.1%) were Saudi. Half of the nurses 158 (50.9%) had a bachelor degree, 134 (33.6%) reported regular exercises,67 (21.6%) were smokers. Less than fifth 40 (12.9%) had a chronic illness. The mean score of BMI was 25.8±4.9, where 134 (43.2%) had normal weight, were 96 (31%) overweight, and 62 (20%) were obese. More than half 174 (56.2%) worked day shift, and 100 (32.2%) worked rotating shift. The median scores of days absence weekly and monthly were 1 & 1 respectively (Tables 1 & 2).

Out of 310 nurses, 166 (54.5%) reported a positive family history of PMS, with the average age at first ministration 12.8±1.7. The majority 272 (87.7%) reported pains before and during mensuration and 236 (76.1%) had regular mensuration, 144 (45.5%) reported dysmenorrhea, only 37 (11.9%) received regulated medications. Almost half had moderate cramps 147 (47.4%) and back pain 144 (45.5%). The most common pain relief methods were Taking pain pill by 140 (36.5%), hot applications by 115 (29.9%), and resting by 94 (24.5%). While the most common reasons for increasing pains were cold weather by 193 (55.8%) and family problems by 47 (13.6%). Regarding Premenstrual syndrome 26 (8.4%) diagnosed with it and 33 (10.6%) received treatment for it. More than half 177 (57.1%) stated that Premenstrual syndrome affected their daily work. Symptoms disappear in almost half 151 (48.7%) (Figures 1 & 2).

The PMSS mean score was 114±32 rang (51-211) and was divided into two categories with cut off > 110, of the 360 nurses, 164 (52%) had premenstrual Syndrome (PMSS score > 110), and 146 (48%) did not have premenstrual Syndrome (PMSS scores ≤110) (Figure 3).

The results showed a significant association between PMS and the following demographic data, job discerption, and menstrual and premenstrual characteristics (Pain before and during M, Regulated medication, Dysmenorrhea, Cramps, Back pain, Premenstrual syndrome treatment, Premenstrual syndrome affect daily work, and symptoms disappear before menstruation) where those who had pain before and during menstruation, those who received regulated medication, that who had dysmenorrhea, those who suffered from severe cramps and severe back pain, those who received premenstrual syndrome treatment, those who premenstrual syndrome affect their daily work, and those who's symptoms don't disappear before menstruation showed higher scores in PMSS (p=0.02, p<0.0001, p<0.0001, p<0.0001, p<0.0001, p<0.0001, p<0.0001, and p=0.015) respectively. On the other hand, the rest variables didn't show any significant association (Table 3).

DISCUSSION

Premenstrual syndrome (PMS) is a natural situation that can cause psychological, physical, and social problems in women.[22] Women with PMS are usually affected during the luteal phase of the menstrual cycle.[23]

There are no precise physical examination findings or lab tests definite to the diagnosis of PMS.[4] A symptom calendar can help women recognize the most worrying symptoms and confirm the diagnosis of PMS.[5] To diagnose PMS, the American Obstetric and Gynecologists Association stated that the symptoms should be seen 5 days before the onset of menstruation and disappear within 4 days post the onset of menstruation. [24]Several previous studies reported the negative influence of PMS such as; decreasing the efficacy and capacity to work and to study.[25] The present study aimed to investigate the prevalence of premenstrual syndrome and its influence on job performance among PHC nurses in Al-Madinah, Saudi Arabia.

Results of the current study showed that more than half of the nurses had PMS. In Kırcan et al study 60.1% of nursing students had PMS,[26] and in Demirbas study PMS was determined in 56.6% of medical faculty students.[27] In Sut study, 38.1% had a PMS diagnosis according to the PMSS.[3] In a study conducted on Thai nurses, the PMS prevalence was reported as 25.1%.[28] PMS incidence in women working in health care has been reported to be 20.1%.[29] In a recently published meta-analysis, the PMS prevalence was reported as 47.8% for all studied groups; however, rates varied from 12% (France) to 98% (for Iran).[30] This indicates that PMS prevalence differs from country to country.

These differences came from the number and structure of samples, cultural differences, or differences in diagnostic methods. Also, emotional and physical abuse in early life affects PMS prevalence.[31] PMS symptoms can start at any age after menarche. In the current study, the mean age of first menstruation was 12.8±1.7. Similar results were found in Demirbas study, where the mean age of first menstruation was 13.07±1.07.[27] The most prevalent (87.1%) menstrual disorders were cramped, followed by back pain (84.2%), then dysmenorrhea (45.5%). In Abdelmoty et al study, dysmenorrhea was the most prevalent (93%) menstrual disorder, followed by PMS (65%) and abnormal cycle lengths (43%).[32]

The main factors which increase pain were cold weather (55.8%) and family problems (13.6%). This consistent with two Turkish studies (66.5% & 15.9%) and (53.2% & 27%).[27,33] Premenstrual complaints reduce job's productivity and quality and cause economical losses as well as an increase in the accident rate, as well as effect self-confidence, social relations, and attendance.[34] In the current study, complaints due to the menstrual period affected daily work were 57.1%. In 2012 a study by Babacan-Gümüş done among college students, reported that premenstrual complaints influenced 31.2% of daily activities.[34] Borenstein et al reported a greater number of lost workdays due to health reasons and a decrease in work productivity in women with PMS.[35]

In dealing with PMS, both nonpharmacological approaches and pharmacologic approaches can be used.[36,37] Where, women prefer pharmacologic methods. In the current study, 36.5% used analgesic drugs, used 24.5% rest, and 29.9% used hot application. In Turkey study among married women, almost the third 32.5% used painkiller drugs, and the fourth 27.5% rest to decrease pain before menstruation.[38] In a study by Weisz and Knaapen, they stated that hormonal treatment and painkiller drugs were the common utilized in France for PMS treatment, while herbal therapy was the common utilized in Germany.[37]

Findings of the present study showed that PMS were significantly higher (p<0.05) among those who had pain before and during menstruation, those who received regulated medication, those who had dysmenorrhea, those who suffered from severe cramps and severe back pain, those who received premenstrual syndrome treatment, those who premenstrual syndrome affect their daily work, and those who's symptoms don't disappear before menstruation. While age and running exercises weren't significant but close to being statistically significant (p=0.06), where younger age and who don't perform exercises showed higher PMS score.

These findings indicate that PMS is a major health problem for nurses that negatively affects daily work activities and

the compatibility of nurses in working with other health care professionals. Distractibility and irritability in clinical nursing practices, which may occur due to PMS, may cause incorrect applications and irreparable health outcomes. PMS also negatively affects a nurse's patient communication and care, which in turn threatens patients' safety.

CONCLUSION

PMS was common among more than half of the nurses, even that the majority had regular ministration. Almost half had moderate cramps and back pain. The main pain relief methods were taking pills, rest, and hot application. While the main factors which increase the pain were cold weather and family problems. PMS was significantly higher among the nurses who had the following; pain before and during menstruation, received regulated medication, dysmenorrhea, severe cramps and severe back pain, received premenstrual syndrome treatment, the premenstrual syndrome affects their daily work, and whose symptoms don't disappear before menstruation. While Younger age and who don't perform exercises showed higher PMS score close to being statistically significant. The authors recommended the following; Encourage nurses to request professional help to decrease PMS. Further nation-wide studies on detecting the prevalence of PMS need to be conducted in larger sample size and regions other than Am Madinah Almonawarah, to identify the prevalence and underlying causes. Present the most significant points in this study to hospitals and PHCCs administrators. And designing diverse interventional programs to improve effective preventive strategy for this problem.

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Table 1: Demographic data and Job description (numerical variables)

Variable	Mean± SD	Rang (min-max)
Age	31.8±6.7	(20-56)
Age at the first ministration	12.8±1.7	(9-18)
BMI	25.8±4.9	(14.3-49.6)
Variable	Median	Quartile (25,75)
Children number	2	(0,3)
Absence days per week	1	(0,1)
Absence days per month	1	(0,2)

## Table 2: Demographic data and Job description (categorical variables)

Variable		N	%
Marital status	Single	112	36.1
	Married	176	56.8
	Divorced	16	5.2
	Widow	4	1.3
	unknown	2	.6
Nationality	Saudi	270	87.1
	Non-Saudi	40	12.9
Education	Diploma	134	43.2
	Bachelor	158	50.9
	Master	6	1.9
	PHD	2	.6
	Unknown	10	3.2
Exercises	Yes	104	33.6
	No	206	66.5
Smoking	Smoker	67	21.6
	Non-smoker	243	78.4
Chronic disease	Yes	40	12.9
	No	270	87.1

Table 2: *(Continued)*

Variable		N	%
BMI category	Underweight	18	5.8
	Normal	134	43.2
	Overweight	96	31.0
	Obese	62	20.0
Work shift	Night shift	15	4.8
	Day shift	174	56.2
	Rotating shift	100	32.2
	Unknown	21	6.8

Table 3: The relation between PPD and demographic data and menstrual and premenstrual characteristics

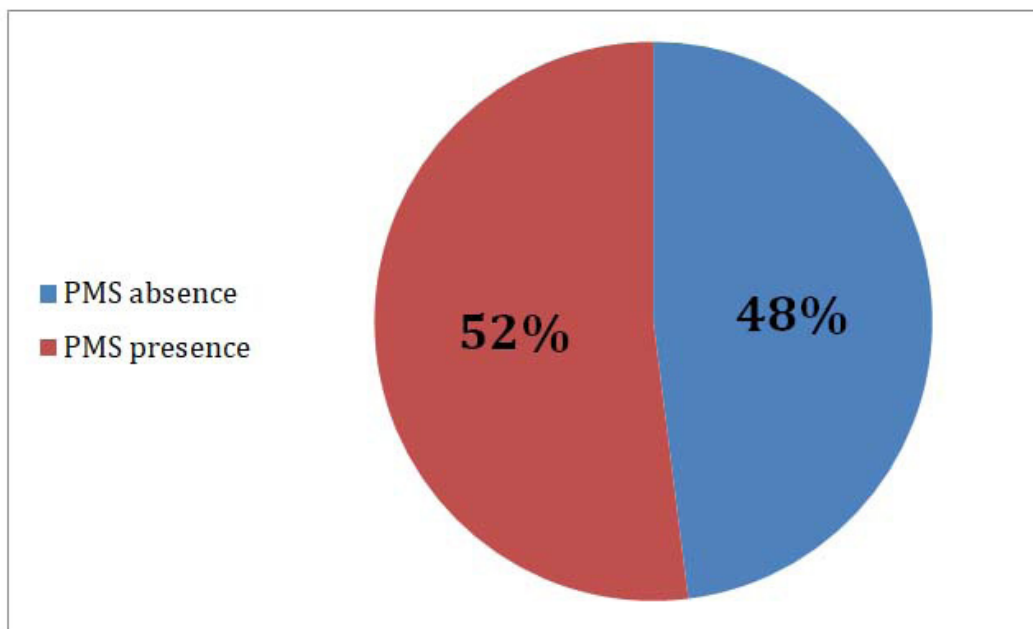| Variable		Mean	SD	p-value
Pain before and during M	Yes	113.6391	34.54542	0.002*
	No	94.1818	32.71415	
Regulated medication	Yes	133.7778	39.58868	.000**
	No	107.9151	32.91792	
Dysmenorrhea	Yes	123.2878	36.63534	.000**
	No	100.8658	28.96915	
Cramps	Mild	84.2703	27.82949	
	Moderate	110.3217	29.90751	.000**
	Sever	121.0750	37.57640	
Back pain	Mild	91.0976	29.02051	
	Moderate	108.2286	31.32295	.000**
	Sever	123.1217	36.88701	
Premenstrual syndrome treatment	Yes	134.6563	32.30261	.000**
	No	108.2068	33.92843	
Premenstrual syndrome affect daily work	Yes	122.8439	33.42788	.000**
	No	96.0328	30.43105	
Symptoms disappear before menstruation	Yes	106.0476	32.41688	0.015*
	No	115.7616	36.10239	
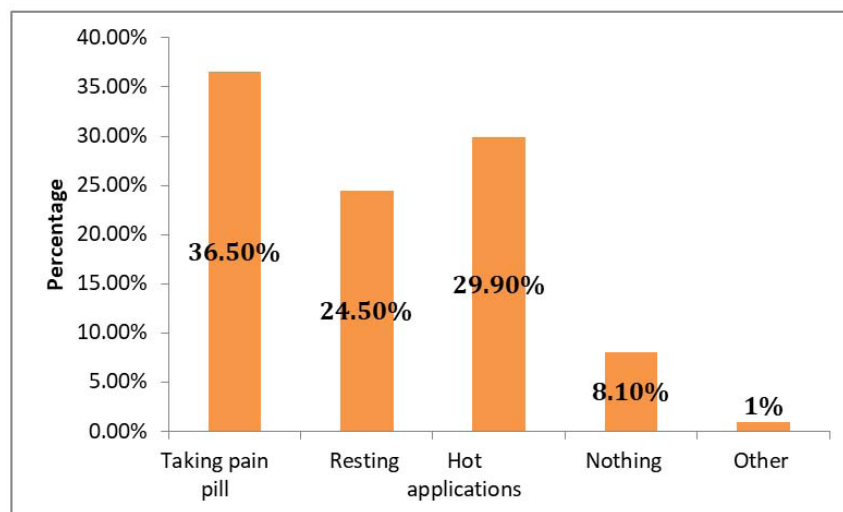
Figure 1: Pain relief methods.
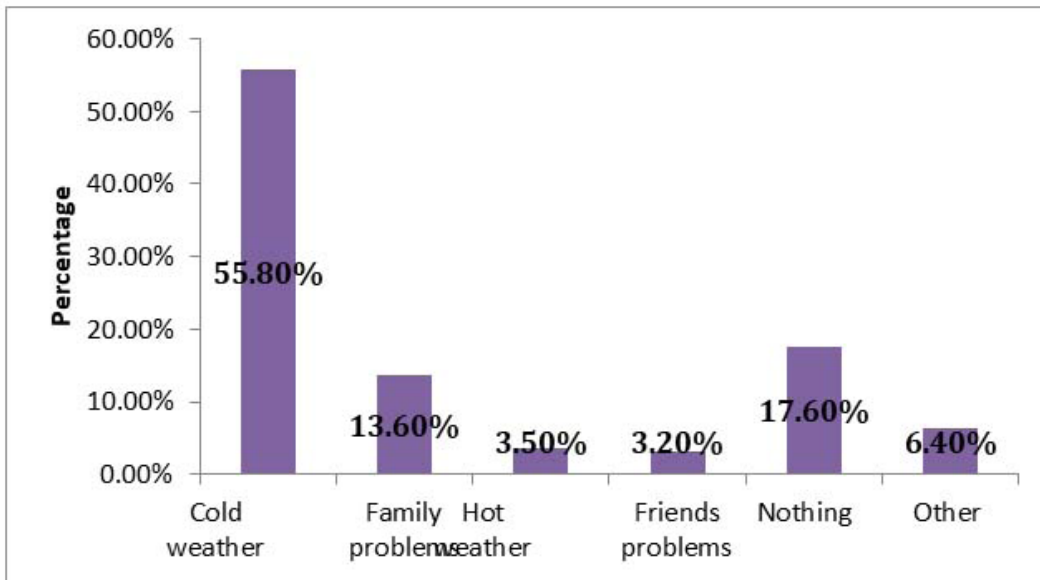
Figure 2: Factors increase pain.

Figure 3: PMS score category.