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The predictive role of common symptoms of premenstrual syndrome in the clinical practice of nurses: a cross-sectional study

Parzhin Khazdoozi¹, Sorur Javanmardifard² and Zahra Keshtkaran^{2*}

Abstract

Background Female nurses with high occupational stress are one of the groups at risk of premenstrual syndrome (PMS). The symptoms of this syndrome may affect the reduction of work efficiency, accuracy in doing work, concentration, and increased absenteeism of nurses and can lead to significant economic losses. This study aimed to determine the predictive role of common PMS symptoms in the clinical performance of nurses in public hospitals in Sanandaj, Iran.

Methods The present study was a descriptive-analytical and cross-sectional study. In this study, 318 nurses participated in the census method based on the inclusion criteria. Data collection tools were premenstrual symptom screening questionnaires and nurses' clinical performance evaluations. Data analysis was done with Spearman's correlation tests, simple linear regression, multiple regression, t-test, one-way variance analysis, Tukey's post hoc tests, and LSD using SPSS version 22 statistical software.

Results The average PMS score of the participants was 30.8 ± 11.45 , which indicates severe PMS. Nurses' average clinical performance score was 45.78 ± 35.29 , indicating an average performance. The findings showed that PMS has a significant inverse correlation with clinical performance and its components. Simple linear regression showed that PMS can predict 26.5% of nurses' clinical performance variance. Simple regression showed that with an increase of one standard deviation in the PMS score, the nurses' clinical performance score decreased by 0.517 standard deviations and vice versa. However, by controlling confounding variables, with an increase of one standard deviation in the PMS score, the clinical performance score of nurses will decrease by 0.396 standard deviations and vice versa.

Conclusions Paying attention to reducing or controlling PMS symptoms may help improve nurses' performance. Therefore, hospital and nursing managers can improve the performance and efficiency of their workforce by identifying nurses and other employees suffering from PMS and planning and using different methods to reduce its symptoms.

Keywords Premenstrual syndrome, Clinical performance, Nurses

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Introduction

Premenstrual syndrome (PMS) is a common disorder among women of reproductive age [1, 2], including a wide range of physical, behavioral, and emotional symptoms [3]. The most common physical symptoms are fatigue, headache, bloating, breast tenderness, swelling, weight gain and skin rashes, irritability, anxiety, anger, and depression [4]. These symptoms occur continuously during the ten days before menstruation and disappear shortly before or after the start of bleeding [5]. About 3–10% of women suffer from severe PMS with significant distress or dysfunction [6, 7]. About 75% of women of reproductive age experience PMS symptoms mildly [8]. The prevalence of this syndrome has been reported as 47.8% worldwide [9, 10]. The frequency of this syndrome in Iran is reported to be 48% [11]. All age groups can be affected by this syndrome, but the most common age is 25–45 years old [12, 13]. It also seems that increasing age plays an essential role in increasing the symptoms of this syndrome [14].

Nowadays, many women are involved in various career, academic, family, and other responsibilities, and the stress caused by these responsibilities is related to health issues such as PMS [15, 16]. When accompanied by mental and emotional pressures caused by the inappropriate behavior of the spouse, family, and job stress, this syndrome creates unbearable conditions for women [17]. Furthermore, studies have shown that PMS causes a 17% decrease in job efficiency in working people, a 19% increase in absenteeism, a decrease in accuracy in doing tasks, and a lack of concentration in working women [18–20]. Meanwhile, the nursing job is vital due to the heavy responsibilities of nurses in clinical activities. Complicated and stressful job conditions, risks, and low job satisfaction may affect nurses' performance [21, 22]. Therefore, female nurses who experience high occupational stress are one of the groups at risk of this syndrome. Heavy work and high occupational stress on nurses may interfere with their endocrine function and accelerate menstrual cycle disorders and PMS occurrence [23]. Therefore, PMS is a significant health problem for nurses [21].

PMS symptoms may reduce job efficiency, decrease accuracy in doing work, decrease concentration, and increase nurses' absenteeism, thus leading to significant economic losses [19]. PMS negatively affects the quality of life related to work and the compatibility of nurses in working with other treatment team members. Also, distraction, moodiness, and irritability in nursing clinical activities due to PMS may cause irreparable health consequences. PMS in nurses hurts the communication and care of the nurse to the patient. Therefore, it threatens the quality of care and patient safety. In this regard, the frequency of PMS in nurses, which hurts the quality of

their work life, has been reported as 25.1% [21]. Furthermore, another study has shown that the severity of PMS in nurses who work in rotating shifts is higher than other nurses [24].

Thus, according to the effect of this syndrome on the performance of working women [25–27], as well as the difficulty of work, job stress and the special characteristics of the nurses' work environment, and the fact that the care of patients is mainly dependent on the health of nurses, and the health of nurses affects the provision of professional care by them [28, 29]. It is essential to pay attention to the health of women of reproductive age as one of the vulnerable groups of society. Also, according to previous studies, the existence of adverse effects of PMS on the quality of personal and work life of working women is undeniable [21, 30]. As a result, the presence of PMS in female nurses can also be one of the possible causes of job efficiency reduction and adverse care outcomes related to hospitalized patients. Due to the importance of the subject, few and limited studies in Iran and the world have investigated this important health issue and its effects and complications. Also, the range of common symptoms of PMS is broad, and predicting the impact of these symptoms on the clinical performance of nurses can be of crucial help in organizational and national planning. Therefore, the present study was conducted to determine the predictive role of common PMS symptoms in the clinical performance of nurses in public hospitals in Sanandaj, Iran.

Methodology

The present study is a analytical – cross sectional study. This study was approved by the Ethics Committee of Shiraz University of Medical Sciences and approved by the National Ethics Committee (Ethical code: IR.SUMS.NUMIMG.REC.1401.115). So all methods were carried out in accordance with relevant guidelines and regulations.

The research environment was three government hospitals of Sanandaj located in the west of Iran. There were 530 female nurses working in these hospitals, which constituted entire research population. The inclusion criteria were female nurses of reproductive age, having regular menstruation in the last six months, no history of hysterectomy (removal of the uterus), no physical and mental diseases known to affect the subject of the study, no occurrence of stressful events such as death of relatives, divorce, severe crises in the family, accidents, and other unfortunate events were from 3 months before the start of the study. Moreover, the exclusion criteria were failure to complete the questionnaire and transfer from the studied hospitals or any interruption of cooperation with the studied hospitals at the time of the study.

Based on this, 88 nurses did not meet the inclusion criteria. Therefore, the questionnaire was distributed among 442 nurses, and finally 387 questionnaires were returned (87.5% return rate), and finally the answers of 318 nurses could be analyzed. In other words, 72% of the nurses who met the inclusion criteria were analyzed. Written informed consent was obtained from all the participants before participating in the study. All participants were assured of the confidentiality and privacy of the collected data. They were also given the right to withdraw from the study at any stage.

The research population was 530 female nurses working in the three government hospitals of Sanandaj located in the west of Iran, and due to the limited population, the entire research population was included in the study by census method and based on the inclusion criteria. Based on this, the researcher visited the target hospitals and a questionnaire was given to all the nurses who met the entry criteria.

In this study, the data collection tools were demographic information questionnaires, Premenstrual Symptoms Screening Tool (PSST), and clinical performance evaluation of nurses. In the demographic information section of the questionnaire, the variables of age, height, weight, work experience, and the number of days of menstrual bleeding were collected.

Premenstrual Symptoms Screening Tool (PSST): In 2013, Sieh Bazi et al. designed and psychometrically analyzed this questionnaire for the first time in Iran. In their study, to determine the internal reliability of the questionnaire, they obtained Cronbach's alpha coefficient of 0.9 for the whole test and the values of content validity ratio and content validity index of 0.7 and 0.8, respectively [31]. This questionnaire contains 19 items that have two parts. The first part includes 14 mood, physical, and behavioral symptoms, and the second part measures the impact of these symptoms on people's lives and includes five items. Each question is considered on a 4-point Likert scale, scored from zero to three. Based on the score obtained by the participants from this questionnaire, the severity of PMS was classified into three groups: low (0–19), moderate [20–28], and severe (Higher than 28). Also, the reliability of this questionnaire in the present study was calculated as 0.902.

Clinical performance evaluation of nurses' questionnaire: This questionnaire was designed based on the synergy model by Karimyar in 2013. The questionnaire has 65 questions in 8 subtopics, including clinical judgment (17 items), support (7 items), care activities (7 items), coordination (8 items), systems thinking (8 items), responding to conflicts (4 items), clinical review (8 items), and facilitating learning (6 items). The answers to the questions are "yes," "no," and "no case." It does not have a case option; it is also for actions that there was

no reason to do. To determine the quality score of the nurse's performance, yes [1] was given, and no (0) was given. The data in the column "does not have a case" is removed. Finally, the individual's score from the entire questionnaire is multiplied by a fraction whose numerator is 100 and whose denominator is the number of questions the nurse had to answer. Therefore, the minimum total performance score is zero, and the maximum is 100. To determine the level of performance based on the scores obtained, they were divided into three levels: weak (0–33), moderate (34–66), and good (67–100). Good performance was determined as favorable, weak and moderate performance was determined as unfavorable. The face validity and content validity of this questionnaire were checked and confirmed by Karimyar in 2012. The reliability of this questionnaire was checked by the test-retest method that Pearson's correlation coefficient equal to 0.83 [32]. Also, Its reliability has been confirmed by Rostami Ardestani with Cronbach's alpha of 0.89 [33]. Also, the reliability of this questionnaire in the present study was confirmed with Cronbach's alpha 0.98.

After approving the plan, obtaining permission from the Ethics Committee of Shiraz University of Medical Sciences, and receiving the letter of introduction, the researcher went to the public hospitals of Sanandaj City and presented the letter of introduction and permission to implement the project to the hospital authorities, she started collecting data. The researcher first explained the project's purpose to the nurses, and if they were willing to cooperate, he provided them with an informed consent form to participate in the study and research project questionnaires. The questionnaires were paper based that completed self-administered. After completing and collecting the questionnaires from February 2023 to May 2023, the collected data were coded and entered into SPSS-22 statistical software for analysis.

The collected data were coded and entered into SPSS-22 statistical software for analysis. Mean (standard deviation) was used to describe quantitative data, and frequency (percentage) was used to describe qualitative data. Considering the non-normality of PMS data and nurses' clinical performance, a non-parametric Spearman correlation test evaluated the correlation between quantitative variables. The simple linear regression model analyzed the effect of the prognostic variable (PMS) on clinical performance. Finally, a multiple regression test was used to adjust the effect of confounding variables. A significance level of $P < 0.05$ was considered.

Results

In this study, 318 nurses from 24 hospital departments, including internal medicine, oncology, nephrology, neurology, cardiology, surgery, elective, neonates, children, ENT, CCU, ICU, NICU, infectious, psychosomatic,

neurosurgery, emergency, gastroenterology, obstetrics, dialysis, lung, orthopedics, burns, and skin were involved. According to Table 1, their average age was 30.22 ± 6.4 years; their body mass index was 24.14 ± 2.88 , their work experience was 6.42 ± 5.43 years, work experience of 79.6% was 1–10 years, 52.8% of them are married, 87.1% of them have bachelor's degrees, 39.3% of them are officially employed, 31.1% of them have a monthly household income between 15 and 20 million tomans, and 64.8% of them have a standard body mass index. Furthermore, according to the findings, 62.3% of them use drugs, 95% of them use tobacco, 85.8% of them have a history of certain diseases, 75.5% of them have a history of taking drugs that reduce PMS symptoms, and 84.6% of them had no history of drug use in connection with the current or previous disease. The study's results showed that 76.7% of nurses had regular menstrual cycles, 67.3% experienced moderate bleeding volume, 43.1% experienced moderate menstrual pain, and 67.9% experienced bleeding for 5–7 days.

According to Table 2, the results show that nurses reported the best performance in the clinical evaluation component (55.96 ± 31.9) and the lowest performance in the coordination (38.36 ± 41.13) and system thinking (38.84 ± 40.15) components. The average score of nurses'

clinical performance was 45.78 ± 35.29 . Regarding the level of functional components, the findings showed that in all components and the total clinical performance, most nurses evaluated their performance at an average level (34–66). Also, the findings showed that 53 (16.7%) and 217 (68.2%) people had mild and severe PMS, respectively. Also, the average PMS score of the participants was 30.8 ± 11.45 , which indicates severe PMS.

According to the findings of Table 3, PMS has a significant and inverse correlation with clinical performance and its components ($P < 0.001$). In other words, as the severity of PMS increases, the clinical performance of nurses and its components decreases and vice versa.

The results of univariate linear regression showed that PMS could predict 26.5% of nurses' clinical performance variance ($ADJ.R^2 = 0.265$). The P value also shows that PMS significantly predicts nurses' clinical performance ($P < 0.05$). Also, the regression findings show that with an increase of one standard deviation in the PMS score, the clinical performance score of nurses will decrease by 0.517 standard deviations and vice versa (Table 4).

Considering that some variables had a significant correlation with clinical performance, they may impact the predictive effect of PMS on clinical performance. Therefore, a multiple regression test was used to adjust

Table 1 Frequency distribution of qualitative demographic variables of participants in the study

Variables		N	%	Variables		N	%
Age	21–30	199	62.6	Work experience	1–10	253	79.6
	31–40	95	29.9		11–20	59	18.6
	41–55	24	7.5		21–30	6	1.9
Marital status	Single	136	42.8	Education level	Advanced Diploma	7	2.2
	Married	168	52.8		bachelor	277	87.1
	Divorced	13	4.1		Masters	33	10.4
	Death of spouse	1	0.3		PhD	1	0.3
Employment status	Formal	125	39.3	Monthly household income	5–10 million	66	20.7
	Agreement	50	15.7		10–15 million	93	29.2
	Contractual	29	9.1		15–20 million	99	31.1
	temporary	114	35.8		Above 20 million	60	18.9
Body Mass Index	Underweight	7	2.2	Drug use	continuous	21	6.6
	normal	206	64.8		sometimes	99	31.1
	Overweight	92	28.9		I do not have	198	62.3
	fat	13	4.1	History of certain diseases	Yes	45	14.2
Smoking	Yes	16	5		No	273	85.8
	No	302	95	History of taking other drugs in connection with the current disease	Yes	49	15.4
History of taking drugs that reduce symptoms of PMS	Yes	78	24.5		No	269	84.6
	No	240	75.5	Volume of menstrual bleeding	Low	56	17.6
State of the menstrual cycle	regular	244	76.7		medium	214	67.3
	Irregular	74	23.3		severe	48	15.1
Amount of menstrual pain	severe	130	40.9	Number of days of menstrual bleeding	2–4	76	23.9
	medium	137	43.1		5–7	216	67.9
	mild	32	10.1		8–10	26	8.2
	I do not have	19	6				

Table 2 The average score of nurses’ clinical performance, its components, and the severity of PMS in nurses of public hospitals in Sanandaj City 2022

Indicators components	performance level	frequency	percentage	mean	standard deviation (±)
Clinical evaluation	Weak	93	29.2	55.96	31.9
	Moderate	106	33.3		
	Good	119	37.4		
Support	Weak	141	44.3	46.77	41
	Moderate	56	17.6		
	Good	121	38.1		
Care activities	Weak	156	49.1	45.91	40.97
	Moderate	44	13.8		
	Good	118	37.1		
Coordination	Weak	169	53.1	38.36	41.13
	Moderate	56	17.6		
	Good	93	29.2		
Systems thinking	Weak	169	53.1	38.84	40.15
	Moderate	57	17.9		
	Good	92	28.9		
Responding to conflicts	Weak	159	50	42.06	42.1
	Moderate	44	13.8		
	Good	115	36.2		
Clinical researches	Weak	173	54.4	39.43	40.99
	Moderate	46	14.5		
	Good	99	31.1		
Facilitating learning	Weak	165	51.9	45.7	42.41
	Moderate	27	8.5		
	Good	126	39.6		
Total clinical performance	Weak	143	45	45.78	35.29
	Moderate	70	22		
	Good	105	33		
PMS	Low	53	16.7	30.8	11.45
	Moderate	48	15.1		
	Severe	217	68.2		

Table 3 Correlation between PMS and nurses’ clinical performance and its components

Variables	PMS	
	r*	P-value
Clinical evaluation	-0.496	<0.001
Support	-0.487	<0.001
Care activities	-0.501	<0.001
Coordination	-0.555	<0.001
Systems thinking	-0.519	<0.001
Responding to conflicts	-0.502	<0.001
Clinical researches	-0.54	<0.001
Facilitating learning	-0.501	<0.001
Total clinical performance	-0.555	<0.001

*Significance at $P < 0.01$ level

the effect of these variables (Table 5). Due to the significance of the P-value ($P < 0.001$), the multiple regression model has a good fit, which shows that the independent variables significantly predict the clinical performance of nurses. The simultaneous multiple regression analysis

results indicated that PMS variables, income, smoking, drug use, menstrual pain, and number of menstrual bleeding days among the predictor variables have significant predictive power for nurses’ clinical performance variables ($P < 0.05$). The analyses show that these six variables predict 50% of the variance of the clinical performance variable ($ADJ.R^2 = 0.501$).

Discussion

This study was conducted to determine the predictive role of common PMS symptoms in nurses’ clinical practice in public hospitals in Sanandaj, Iran. The findings showed that 53 (16.7%) and 217 (68.2%) people had mild and severe PMS, respectively. Also, the average PMS score of the participants was 30.8 ± 11.45 , which indicates severe PMS. Butsripoom et al.’s study showed that the prevalence of PMS in Thai nurses is 16.8% [23]. The study by Sut and Mestogullari reported the prevalence of PMS in Turkish nurses as 38.1% [21]. In Kanwal et al.’s study, 76% (152 people) of health service providers had PMS

Table 4 Results of univariate linear regression analysis to predict the clinical performance of nurses through PMS

Indicator variable	R	R ²	ADJ.R ²	F	B	SE	β	t	P*
constant					61.675	3.168		19.47	0.000
PMS	0.517	0.268	0.265	54.12	-1.037	0.096	-0.517	-10.75	0.000

*Significance at P<0.05 level

Table 5 Measuring the real effect of PMS on clinical performance and removing the effects of confounding variables

Indicator variable	B	SE	β	t	P*	R	R ²	ADJ.R ²	P*
Constant	104.56	11/97		8.74	0.000	0.718	0.515	0.501	0.000
PMS	-0.793	0.088	-0.396	-8.97	0.000				
Income	-5.26	0.924	-0.235	-5.69	0.000				
Smoking	-8.8	4.21	-0.084	-0.088	0.038				
Drug use	-5.37	1.81	-1.44	-2.965	0.003				
Menstrual pain	8.276	1.316	0.305	6.29	0.000				
Number of menstrual bleeding days	-3.403	0.689	-0.225	-4.94	0.000				
History of certain diseases	2.446	3.66	0.037	0.668	0.505				
History of other drugs	-3.7	3.49	-0.058	-1.058	0.291				
Volume of bleeding	2.57	1.86	0.064	1.38	0.169				

*Significance at P<0.05 level

[27]. The study of Ramezani Tehrani and Rabab Allameh on women aged 18–45 years showed that 52.9% of the participants suffered from PMS, of which 34.5% were suffering from its severe type [34]. In the study of Siehbazi et al., the results showed that 15.9% of students have severe PMS [31]. In Hanani et al.’s study, 57.1% of operating room technologists had moderate to severe PMS [19], less than the present study.

Regarding the level of functional components, the findings showed that in all components and the total clinical performance, most nurses evaluated their performance at a moderate level (34–66 Score). Also, the results showed that nurses have the best performance in the clinical evaluation component and the lowest performance in the coordination and system thinking components. However, in Karimyar Jahormi’s study, nurses expressed the best performance in the components of coordination and care activity and the lowest performance in the areas of clinical research and response to conflict. In addition. The average score of the total performance of nurses was evaluated [32], which is inconsistent with the present study. Khoviniha et al. also showed that the field of clinical examination has the lowest level of clinical performance of nurses in teaching and non-teaching hospitals. Also, nurses had the highest level of clinical performance in teaching hospitals in the support component, non-teaching hospitals in the support component, and non-teaching hospitals in responding to conflicts. In general, 84.9% of nurses in teaching hospitals and 89.7% of nurses in non-teaching hospitals had good performance, and there was no significant relationship between performance and type of hospital (P=0.43, X²=0.608) [35]. In the study of Ardestani-Rostami et al., 75.5% of nurses evaluated their

performance as average [33], which is consistent with the present study. In Ghamari Zare et al.’s study, which examined the quality of nurses’ performance in special cardiac departments, the results showed that nurses’ educational and communication performance is poorer than other functions, and their therapeutic performance is of higher quality than other areas. In total, the performance quality level of 64% of nurses is average, and only 8% of them are evaluated as good [36], which is consistent with the present study. Udod et al.’s study also showed that using the synergy model increases nurses’ awareness of patients’ comprehensive care needs [37].

The results of the present study showed that PMS has a significant inverse correlation with clinical performance and its components (P<0.001). In other words, as the severity of PMS increases, the clinical performance of nurses and its components decreases and vice versa. Also, based on univariate linear regression, the results showed that PMS can predict 26.5% of nurses’ clinical performance variance (ADJ.R²=0.265). The P-value also shows that PMS significantly predicts nurses’ clinical performance (P<0.05). Also, the regression findings show that with an increase of one standard deviation in the PMS score, the clinical performance score of nurses will decrease by 0.517 standard deviations and vice versa. Evidence has shown that women with PMS have a 27.5% lower work performance, and 23.1% experience disruptions in their work relationships [38]. Heinemann et al.’s study showed a significant relationship between the severity of PMS symptoms and higher average levels of absenteeism, which indicates the economic burden of this syndrome on society through reduced productivity [39]. A study by Hardy and Hunter in the UK also

confirmed that PMS was associated with higher absenteeism rates [30]. Sut et al.'s study showed that the total score of PMS was significantly negatively correlated with the total score ($P < 0.001$, $r = -0.341$) and all the subscale scores of work-related quality of life and ranged from 0.207 to 0.402 ($P < 0.05$ for all). Their findings showed that nurses with PMS have reduced work-related quality of life in their professional lives [21].

In general, the evidence indicates that PMS increases the vulnerability of women, especially working women [25], and affects their health by disrupting their personal and professional lives [26, 27]. Employees with PMS experience low work-related quality of life, frequent absence from work, and reduced productivity, which can hurt work efficiency and sustainability [21, 40]. These occupational effects of PMS are associated with direct and indirect economic consequences. So, women with PMS lose 15% of their work productivity on average and are absent for 3.6 ± 7.8 h [38]. In addition, PMS can also be aggravated by work-related factors such as work stress, long working hours, variable work shifts, and excessive responsibility at work [40, 41]. Therefore, it can be said that PMS has a two-way causal relationship with the work and performance of employees [25]. In other words, both duties and responsibilities can lead to an increase in the risk of PMS, and PMS can lead to a decrease in performance and productivity. Therefore, strategies are suggested to help cope with PMS symptoms and thus increase work-related productivity and quality of life.

Meanwhile, PMS is a common menstrual problem in nurses, and more than half feel uncomfortable at work [42]. One of the aggravating reasons for the occurrence of PMS in nurses is occupational stress and anxiety, which is unavoidable due to the special conditions of the work environment [43]. Therefore, by reducing nurses' occupational stress and anxiety and meeting their job needs, nursing managers can provide the basis for reducing the occurrence of PMS symptoms and thus improve their clinical performance. In addition to the necessity of planning and implementing supportive interventions by the organization and managers, there are currently treatments for PMS and reducing its symptoms. These include reducing stress, such as maintaining a healthy diet, exercising regularly to improve abnormal hormone secretion, and engaging in psychological interventions such as decompression therapy [44]. Some studies also consider emotional freedom techniques as a quick and efficient non-drug intervention and self-treatment to reduce PMS symptoms [45]. In severe cases, anti-anxiety and contraceptive drugs can also be used [43]. In addition, evidence suggests that herbal medicine, acupressure, acupuncture, massage, and aromatherapy may help reduce PMS symptoms and improve patient's quality of life [45, 46]. In another study, the effect of group cognitive behavioral

therapy on PMS symptoms in female nursing/midwifery students showed an improvement in PMS symptoms in the experimental group after the intervention [47]. In addition, training can also be effective in reducing PMS symptoms. For example, Marfuah et al.'s study showed that physical and emotional symptoms caused by PMS were significantly reduced through distance education (mobile-based) [48].

Conclusion

The study's findings showed that PMS is common among the studied nurses, the clinical performance of nurses is average, and PMS hurts the clinical performance of nurses. Based on this, reducing or controlling PMS symptoms may help improve nurses' performance. Therefore, hospital and nursing managers can improve the performance and efficiency of their workforce by identifying nurses and other employees suffering from PMS and planning and using different methods to reduce its symptoms.

Abbreviations

PMS	Premenstrual Syndrome
PSST	Premenstrual Symptoms Screening Tool
UK	United Kingdom

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Author contributions

ZK and SJ conceived, designed the study, validated the data, and edited the original draft. ZK administrated the project and supervised data interpretation. PKh gathered, investigated, analyzed, and interpreted data and wrote the original draft. The final article has been reviewed and approved by all authors.

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Data availability

All data generated or analyzed during this study are included in this published article.

Declarations

Ethics approval and consent to participate

This study was approved by the Ethics Committee of Shiraz University of Medical Sciences and approved by the National Ethics Committee. The ethics approval code is IR.SUMS.NUMIMG.REC.1401.115. Written informed consent was obtained from all participants to take part in the study.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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