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Relationship of Job Stress with Menstrual Bleeding Pattern in Nurses

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Abstract

Background and **Aim:** Environmental stresses, such as life and job stresses, may cause some changes in the menstrual bleeding pattern and the hormonal system. The objective of the present study was to assess the level of job stress in nurses and its relationship with their menstrual bleeding pattern.

Materials and Methods: This descriptive- correlational study was performed on 150 nurses working in teaching hospitals affiliated to Kurdistan University of Medical Sciences in 2016. The data collection tools included a demographic characteristics questionnaire, the Health and Safety Executive (HSE) job stress questionnaire, and a researcher-made questionnaire related to menstrual bleeding pattern. SPSS version 20 was applied to analyze the data.

Results: The mean age of participants was 30.92±0.41 years, and 68.7% of them had a bleeding duration between 3 to 7 days; the highest volume of bleeding ranged from 60 to 200 cc. The results indicated no significant relationship between job stress with duration of menstrual bleeding, and the time interval between menstrual bleedings ($P>0.05$); however, there was a significant relationship between job stress and the volume of menstrual bleeding ($P<0.05$).

Conclusion: The present results revealed job stress in nurses; therefore, adopting appropriate strategies to improve working conditions and reduce stressful situations appears to be necessary.

Key Words: Occupational Stress; Menstruation; Nurses

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Introduction

Women comprise the majority of the population of nurses. Menstrual disorders are one of the main reasons for women seeing a physician; thus this issue cannot be ignored in the nursing profession [1]. Menstrual disorders affect physical health, quality of life, fertility, and disposition of women and have adverse impacts on their health and financial status [2]. The majority of women (approximately 95%) have a regular 28-day menstrual cycle, and 5% have a menstrual cycle shorter than 21 days. The menstrual cycle of a small percentage of women lasts longer than 35 days [3]. The factors that affect the menstrual bleeding patterns include age, BMI, marital status, and environmental and occupational stresses [4]. The medical staff of hospitals especially midwives and nurses are at high risk of fatigue, illness, and stress [5]. The hospital environment can further contribute to physical and mental stress in the staff. In addition, since most nurses are women and are responsible for 80% of patient care, menstrual disorders are one of the most significant issues that needs to be addressed [6].

According to the available literature, some degrees of stress are required to succeed in work, but high degrees of stress can cause complications such as headache, fatigue, reduced physical resistance, and memory disorders [7]. The main stressors in a hospital setting include high workload, insufficient human resources, shift work, and disagreements and arguments [8]. A previous study conducted on stress and menstrual disorders reported that job stress was correlated with the menstrual bleeding pattern in nurses [9]. Another study showed that the most prevalent menstrual problems in the target population were strongly correlated with stress [3]. In addition, Song et al. [10] (2022) showed that 21% of nurses reported having irregular menstrual cycles. Also, menstrual distress, depressive symptoms, perceived stress, physical and mental fatigue, anxiety, and sleep problems were more prevalent in women with irregular menstrual cycles than in those with regular cycles [10]. Kennedy et al. (2021) showed that perceived stress was associated with irregular menstrual cycles [11].

Considering the increasing number of working women and the existing controversial results regarding the relationship of job stress and menstrual pattern in nurses, the current study was conducted aiming to investigate the Relationship of Job Stress with Menstrual Bleeding Pattern in Nurses.

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Methods

This descriptive- correlational study was conducted on 150 nurses working in teaching hospitals affiliated to Kurdistan University of Medical Sciences in 2016. The study was approved by the Ethics Committee of Kurdistan University of Medical Sciences (IR.MUK.REC. 1394/208).

The sample size was calculated to be 62 using the sample size calculation formula assuming the confidence interval of 95%, statistical power of 80%, and a correlation coefficient of 35% between the duration of menstrual bleeding and job stress in a pilot study. The sample size was increased by approximately 2.5 times in order to compensate for the effect of sampling method. Finally, 150 nurses were enrolled.

The inclusion criteria were: willingness for participation in the study, minimum educational level of Bachelor's degree, minimum of one year of work experience, no smoking, no alcohol consumption, no adverse experience in the past 6 months, no history of surgery of the uterus and ovaries, and no use of psychotropic drugs.

The exclusion criterion was quitting the study at any time during the study. Data were collected using a demographic characteristics questionnaire, the Health and Safety Executive (HSE) job stress questionnaire, and a researcher-made questionnaire related to menstrual bleeding pattern. The amount of bleeding was estimated based on staining of the pads and reported in cubic centimeters (cc), such that a very dirty pad was recorded as 20 cc, semi-dirty was recorded as 5 cc and one spot was recorded as 1 cc. Demographic characteristics included age, level of education, work shift, height, name of working department, duration of employment, number of children, marital status, and weight. The HSE job stress questionnaire is a standard job stress questionnaire developed by the Great Britain HSE institute responsible for health and safety (1990), which includes 35 questions with 7 subscales of demand, control, authority support, colleague support, interpersonal relationships, role, and change, with 5-point Likert scale answer choices (never, rarely, sometimes, often, always). Translation and evaluation of the validity and reliability of the questionnaire have been previously conducted [12]. The content validity of the questionnaire was evaluated by 13 faculty members of Kurdistan University of Medical Sciences, and revisions were applied if necessary. In addition, its reliability was ensured with a Cronbach's alpha coefficient of 0.88. In this

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questionnaire, each scale was scored from 1 to 5. The average scores of items in each subscale represent the measured value and can range from 1 to 5; the score of 1 is desirable and the score of 5 indicates a stressful and undesirable state. Menstrual characteristics included: duration of menstrual bleeding, amount of menstrual bleeding, and bleeding intervals. SPSS version 20 was used to analyze the data. To describe job stress and menstrual pattern, the mean and standard deviation, and the percentage and frequency of variables were reported. Independent t-test was used for the purpose of comparison for normally distrusted data while the non-parametric Mann Whitney test was used for non-normally distributed data. The Spearman and Pearson's correlation coefficients were used to analyze the correlation of job stress with other variables. The Chi-square test and ANOA were also applied. The significance level was considered as 0.05.

Results

A total of 150 questionnaires distributed among the nurses were analyzed. Tables 1 and 2 display some of the demographic characteristics and working conditions of the nurses working in hospitals of Sanandaj city in 2016. There was no significant relationship between demographic variables and job stress (Tables 1 and 2). The Chi-square test and ANOVA indicated that bleeding intervals and amount of bleeding had no significant correlation with weight, number of children, duration of employment, height, age, marital status, working hospital, level of education, or work shift (P>0.05, Tables 1 and 2).

Table 1: Distribution of demographic characteristics of nurses and their relationship with job stress and menstrual bleeding pattern

Variables	Minimum	Maximum	Mean ± std. deviation	Correlation with the level of job stress (P value)*	Correlation with duration of bleeding (P value)*	Correlation with the amount of bleeding (P value)*	Correlation with bleeding intervals (P value)*
Age (yrs.)	25	49	30.92±0.41	0.28	0.06	0.061	0.3
Height (cm)	153	180	164.79±0.40	0.2	0.09	0.96	0.26
Weight (kg)	42	100	65.51±0.8	0.075	0.445	0.28	0.47
Duration of employment (yrs.)	2	2	7.52±0.41	0.41	0.05	0.56	1.00

*Significant at 0.05

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Table 2: Frequency distribution of some other variables in nurses and their relationship with job stress and menstrual bleeding pattern

variables		Frequency	Percentage	Correlation with the level of job stress (P value)*	Correlation with duration of bleeding (P value)*	Correlation with the amount of bleeding (P value)*	Correlation with bleeding intervals (P value)*
Hospital	Tohid	79	52.7	0.39	0.24	0.24	0.052
	Besat	71	43.3				
Education	Bachelor's degree	138	92	0.39	0.056	0.4	0.49
	Master's degree	12	8				
Work shift	Morning	40	26.7	0.77	0.654	0.5	0.82
	Evening	57	38				
	Night	53	35				
Number of children	0	94	26.7	0.35	0.142	0.56	0.132
	1	31	20.7				
	2	21	14				
	3	4	2.7				
Marital status	Single	65	43.3	0.3	0.362	0.67	0.075
	Married	84	56				

*Significant at 0.05.

Analyzing the job stress by the HSE questionnaire indicated that 23.97% of the nurses had a favorable condition, 20.38% had slight stress, 17.25% had moderate stress, 18.15% had severe stress, and 20.34% had very severe stress. The Pearson's test analyzed the relationship between stress subscales and total stress score among the nurses and indicated a significant relationship between the role, support, colleague support, control, and demand, with job stress ($P<0.05$, Table 3); while the relationships and change subscales had no significant correlation with job stress ($P>0.05$). According to the results, nurses had variable levels of job stress ($p<0.05$) (Table 3). ANOVA showed no significant correlation of age with the severity of job stress.

Table 3: Subscale scores and their correlation with total stress level

Subscale	Mean ± Std. deviation	P value
Role	4.07 ± 0.6	0.00
Relationships	2.9 ± 0.7	0.1
Support	3.21 ± 0.7	0.001
Peer support	3.38 ± 0.7	0.00
Control	3.17 ± 0.6	0.001
Demands	3.4 ± 0.7	0.00
Change	3.04 ± 0.7	0.48
Total Stress	3.35 ± 0.3	0.00

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Of all, 68.7% of the nurses had a bleeding duration of 3 to 7 days; bleeding duration was less than 3 days in 17.3%, and 12% had a bleeding duration of more than 7 days. Additionally, the highest amount of bleeding was between 60 and 200 cc. This amount was less than 60 cc in 11.3% of the nurses and more than 200 cc in 39.3% of them (Table 4).

Table 4: Menstrual profile of the nurses

Variable		Frequency	Percentage
Duration of bleeding	Less than 3 days	26	17.3
	Between 3-7 days	103	68.7
	More than 7 days	18	12
	Not known	2	1.3
Amount of bleeding	Less than 60 cc	17	11.3
	Between 60-200 cc	72	48
	More than 200 cc	59	39.3
Bleeding intervals	Less than 21 days	31	20.7
	Between 21-35 days	105	70
	More than 35 days	8	5.3
	Not known	5	3.3

The results indicated that nurses had job stress. The Chi-square test indicated no significant relationship between job stress with duration of bleeding, or bleeding interval (P>0.05, Table 5). According to the Chi-square test, there was a significant relationship between job stress and bleeding, such that the higher the intensity of the stress, the higher was the amount of bleeding.

Table 5: Relationship between job stress level and menstrual bleeding pattern

Subscale	Duration of bleeding (P value)	Amount of bleeding (P value)	Bleeding intervals (P value)
Role	0.45	0.14	0.71
Relationships	0.17	0.04*	0.28
Support	0.24	0.12	0.51
Peer support	0.74	0.09	0.6
Control	0.35	0.23	0.62
Demands	0.59	0.02*	0.14
Change	0.16	0.66	0.87
Total Stress	0.75	0.01*	0.34

*Statistically significant

Discussion

The current study was conducted to investigate the relationship between job stress and menstrual bleeding pattern in nurses. The results showed that there was a significant relationship between job stress and the amount of menstrual bleeding. Nurses had variable levels of job stress. Lowson et al. [13] demonstrated that 16% of the participants in their study had

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irregular menstrual cycles; additionally, extra hours, night shift, and long working hours led to menstrual disorders. Nishikitani et al. [14] indicated a significant relationship between a short interval time (less than 11 hours a day) and mental and menstrual health indicators of women in the workforce. In addition, they demonstrated that menstruation was affected more by the biological factors rather than the psychosocial factors. A long-term job and short breaks can increase anxiety and discomfort in female workers and may worsen their menstrual cycle. Mehdad et al. [15] found a significant correlation between the components of job stress (demand and authority support) with physical symptoms, as well as the components of colleague and authority support with the symptoms of anxiety. In explaining this finding, it can be debated that job stress is affected by the severity of work, low income, formal leadership style, working time, environmental noise, occupational density, type of clients, unrelated expectations of the authorities, ill-organizational culture, and ineffective communication (lack of support, unfriendly encounters, etc.) that cause mental stress in employees and over time, may lead to development of mental and physical disorders [15]. Racial differences, as well as differences in jobs and countries surveyed, hospital system, and hospital policies can be mentioned as reasons for the inconsistency of the results of the present study with other studies.

Concerning the final objective of the current study, the findings indicated that there was no significant relationship between the stress level of nurses with their menstrual bleeding pattern, which is not consistent with the findings of Song et al, [10] in their study on Korean nurses. Also, the results of Rafique and Al-Sheikh [3] in Saudi Arabia were not in line with our findings. Nurses are the largest healthcare workforce [16] who are subjected to a challenging work environment (e.g., shift work and physically demanding tasks) [17]. Therefore, different job stress levels and different job conditions of nurses and midwives can be regarded as the reasons for the inconsistency in the results of studies. Also, differences in job status and time of studies may contribute to differences in the results.

Possible inaccuracies in answering the questions, and lack of cooperation of some nurses were among the limitations of this study.

Conclusion

The majority of nurses had some levels of job stress in the present study. It is necessary to pay attention to decrease the

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stress level of nurses through social communication, decreasing the physical and psychological pressure in hospitals, and increasing the support of the authorities and colleagues. Future studies are recommended to investigate the efficacy of stress reduction methods such as relaxation, biofeedback, yoga, meditation, breathing exercises, mental imaging and cognitive-behavioral therapy for nurses.

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Conflict of Interest

The authors declare no conflict of interests.

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