Perceived Stress and Eating Disorders in Iranian Nurses

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ABSTRACT

Aims Stressful conditions can lead to increased emotional and mental distress. This study aimed to evaluate perceived stress and eating disorders among a sample of Iranian nurses.

Instrument & Methods This cross-sectional study was conducted on 149 nurses from hospitals in Bojnurd City, Iran. Eating disorders and perceived stress were assessed using the valid Persian version of the Eating Disorders Scale and the valid Persian version of the Perceived Stress Scale, respectively.

Findings The nurses exhibited moderate to high levels of perceived stress. Overall eating disorder and anorexia nervosa scores were higher among single individuals compared to married ones. Overall eating disorder scores were elevated in individuals without personal experiences of illness or without experiences of losing family members due to illness, while bulimia scores were higher in nurses who had experienced the loss of family members due to illness compared to those without such experiences. Significant correlations were observed between the overall eating disorder (r=0.20, p=0.01) and anorexia nervosa (r=0.38, p<0.001) and physical activity level and age.

Conclusion The nurses demonstrate moderate to high levels of perceived stress, and their overall eating disorder is significantly correlated with their physical activity level and age.

Keywords Perceived Stress Scale; Eating Disorders; Nurses

CITATION LINKS

[1] The impact of COVID-19 on mental ... [2] Socioeconomic factors, perceived stress, and ... [3] Prevalence of mental health problems and sleep disturbances in nursing students ... [4] Predicting Covid Disease-19 anxiety based ... [5] Stress perception, sleep quality and work engagement of German outpatient ... [6] Psychological effect of COVID-19 ... [7] Differences between health workers and general population in risk perception, behaviors, and psychological ... [8] Perceived stress in nurses ... [9] Perceived stress and professional quality of ... [10] Anxiety, perceived stress and coping strategies ... [11] Disordered eating and job ... [12] Examination of eating and nutritional ... [13] Quality of life, sleep quality, depression, anxiety, stress, eating habits, and social bounds in nurses ... [14] Exercise, diet, and sleep habits of nurses working ... [15] Consequences of the COVID-19 syndemic for ... [16] Relationship between mental health and emotional eating ... [17] The examination of the relationship between nursing students' depression ... [18] Perceived stress and quality of life among frontline nurses ... [19] Perceived stress and affecting factors related to ... [20] Determining the perceived stress levels of nurses during ... [21] Perceived stress and intention to work ... [22] Stress and hair cortisol concentrations ... [23] Perceived stress and resilience levels during the COVID-19 pandemic ... [24] Psychological impact of COVID-19 pandemic on healthcare workers ... [25] Relationship between the COVID-19 pandemic, binge eating, and mental suffering in health ... [26] Evaluation of perceived stress level ... [27] COVID-19 and eating disorders ... [28] Eating behaviors, eating styles and body ... [29] The determining of relationship between ... [30] Guidelines for data processing and ... [31] The Iranian version of international ... [32] The construction and preliminary validation ... [33] Prevalence of eating disorders and their ... [34] A global measure of ... [35] Fear of COVID-19 higher among food-insecure households: A model-based study ... [36] Effect of stress management education on mood and perceived stress ... [37] The relationship between body mass index, perceived stress and health-related quality ... [38] Exploring the vulnerability of frontline nurses to COVID-19 and ... [39] Stress level and sleep quality of nurses during ... [40] The mental health of female physicians and nurses in Oman ... [41] Depression and eating disorders among health care ... [42] Emotional eating in relation to psychological stress during ... [43] Anxiety and stress over COVID-19 pandemic associated with ...

Introduction

Stress occurs when perceived demands exceed a person's coping abilities. Consequently, stress arises from the interaction between external and internal factors, involving the individual's perception and considering the ongoing relationship between the person and the environment [1]. Work-related stress is recognized as a reaction that individuals may experience when faced with job demands and conditions that are incompatible with their skills and abilities, particularly in stressful situations that challenge their ability to manage stress [1].

Healthcare professionals, such as nurses, can be among the groups at high risk for mental health problems and their consequences. This is due to the fact that they not only provide healthcare but also participate in patients' rehabilitation with limited resources and increasing responsibilities in their working environments. On the other hand, psychological disorders are becoming increasingly prevalent among healthcare workers, including nurses, in general [2]. Some possible stressors among nurses include the increased time spent with patients, high workloads, the emotional impact of experiencing the deaths of the patients they care for, constant exposure to disease and death, and low social support [1, 3-7].

Moreover, the complexity of certain nursing care approaches [8], demanding and disruptive behaviors from patients, tensions between caregivers and patients' families, fear of unknown situations, mistakes with patients, and the handling of technical equipment can contribute to a high perception of stress among nurses [9]. In addition, the perception of stress can vary among different nurses depending on their personal characteristics, experiences, workplace, and ability to cope. Various factors such as past work experiences, professional training, responsibilities, and each individual's personality style can also affect a person's response to stress. Furthermore, increased lifetime stress levels can be associated with mental and physical health problems, such as depression and anxiety [8, 9]. Stress can also result in or exacerbate maladaptive behaviors, such as dietary problems and eating disorders [11].

Disordered eating is characterized by disturbed eating behaviors due to concerns about body weight and body shape or maladaptive coping mechanisms. On the other hand, eating disorders (EDs) can appear as a coping mechanism to deal with personal or occupational stressors, as well as negative mood states. Additionally, EDs can be related to psychiatric and physical health problems, with high morbidity and mortality rates [11]. According to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), EDs include anorexia nervosa (AN), bulimia nervosa (BN), binge-eating disorder (BED), avoidant/restrictive food intake disorder (ARFID), pica, rumination disorder, other specified feeding or eating disorders (OSFED), and unspecified feeding and eating disorders (UFED). The emotional states of individuals, such as anxiety, stress, depression, fear, or sadness, can significantly affect nutrition, eating responses, food consumption, and eating behaviors [1, 12-16].

Furthermore, stressful conditions can lead to increased emotional and mental distress, such as anxiety, stress, depression, sadness, and fear in individuals, which can consequently elevate the risk of disordered eating [15-17]. For these reasons, nurses can be at high risk for psychiatric distress and its consequences, such as disordered eating, due to the stressful roles and heightened responsibilities within a high-stress environment. Therefore, studies on psychological disorders and their outcomes among nurses have received significant attention in the literature. However, the available evidence on assessing mental health problems and their consequences, such as eating disorders (EDs), is controversial. For example, the results of several studies from various countries, including Iran [18], Turkey [19, 20], West Sumatra, Indonesia [21], Germany [5], Slovakia [22], Saudi Arabia [23, 24], and Italy [7], indicated that healthcare workers, such as nurses, reported moderate to high levels of perceived stress (PS). Additionally, the findings of some studies have demonstrated a significant relationship between PS and EDs among healthcare workers, including nurses [12, 17, 25]. Conversely, other studies have reported no significant association between PS and EDs in healthcare professionals, such as nurses [26-28]. On the other hand, increased awareness regarding the psychological health status of nurses as a vulnerable group can help in the prevention and control of psychiatric problems and their outcomes, such as EDs, in this group. Therefore, in light of the controversy surrounding the available evidence on the evaluation of PS and EDs among nurses, the present research was conducted to assess PS and EDs among a sample of Iranian nurses from hospitals affiliated with North Khorasan University of Medical Sciences in Bojnurd city, Iran.

Instrument and Methods
Study design and participants

This cross-sectional study evaluated 149 nurses working in hospitals affiliated with North Khorasan University of Medical Sciences in Bojnurd, Iran, in 2022.

Nurses who were willing to participate in the study were included. The exclusion criteria included having a history of diseases, such as psychological disorders and EDs, as well as failure to complete the questionnaires and lack of necessary information.

The sample size was calculated based on the correlation between physical activity and stress, as studied by Can [29], along with a confidence interval of 95% and a power of 80%.

Data collection
The general characteristics of the participants were collected using a general questionnaire.

Physical activity assessment
Physical activity assessment was conducted using the valid Persian short form of the International Physical Activity Questionnaire (IPAQ). Physical activity levels were then categorized as low, moderate, and high based on MET/min/week, following the guidelines of the IPAQ [30, 31].

Assessment of eating disorders
EDs were evaluated using the valid Persian version of the Eating Disorders Scale (Ahwaz Eating Disorders Scale) [32, 33]. This questionnaire contained 31 items with true and false options. Of the 31 items, 22 were designed to assess anorexia nervosa, and nine were for assessing bulimia. Final scores for EDs were computed overall and separately for each dimension of anorexia and bulimia, based on the guidelines of the questionnaire. Higher scores indicated more symptoms of EDs [32, 33].

Assessment of perceived stress
PS was assessed using the valid Persian version of the Perceived Stress Scale (PSS-14) [34-37]. This scale consists of 14 items and is completed using a five-point response scale: never=zero; almost never=one; sometimes=two; fairly often=three; very often=four. Questions 4-7, 9-10, and 13 are scored in reverse. The final score for each participant is calculated by summing the scores of all 14 items. The final PS score for each individual ranges from 0 to 65, with higher scores associated with higher PS levels. PS levels were categorized as low, moderate, and high based on the guidelines of the PSS-14 [34-37]. Scores of 11-26 indicated low stress, 27-41 indicated moderate stress, and 42-56 indicated high stress.

Statistical analysis
SPSS version 21 was used for statistical analysis. Frequency and percentage were employed to describe qualitative data. Quantitative data were described using either mean and standard deviation, or median and interquartile range, depending on their distribution normality. The Chi-square test was used to compare qualitative parameters. Comparisons for quantitative data were conducted using the Mann-Whitney U test or the Kruskal-Wallis test. Additionally, Spearman's rank correlation coefficient was applied to evaluate the correlation between EDs and various parameters. A p-value of <0.05 was considered the significance level.

Findings
The mean age of participants was 35.33±7.93 years and they had a mean work experience of 10.36±7.76 years. The majority of nurses were female (77.9%), married (87.2%), and held a bachelor's degree (90.6%). Furthermore, most nurses either had personal experiences with diseases (72.5%) or had

family members who experienced diseases (81.2%).

Table 1. Frequency of general characteristics in the studied nurses (N=149)

Parameter	Values
Sex	
Male	30(20.1)
Female	119(77.9)
Marriage status	
Married	130(87.2)
Single	19.00(12.80)
Education	
Associated degree	7(4.7)
Bachelors' degree	135(90.6)
Masters' degree	7(4.7)
Experience of contracting diseases among the nurses themselves	
Yes	108(72.5)
No	41(27.5)
Experience of contracting diseases among the families of nurses	
Yes	121(81.2)
No	28(18.8)
Experience of losing their families due to diseases	
Yes	17(11.4)
No	132(88.6)
History of chronic diseases	
Yes	14(9.4)
No	135(90.6)
Turning to smoking or alcohol using	
Yes	4(2.7)
No	145(97.3)
Physical activity level	
Low	10(6.7)
Moderate	45(30.2)
High	94(63.1)

However, the experience of losing family members due to diseases was reported by only 11.4% of the nurses. A history of chronic disease and the use of smoking or alcohol were observed in only 9.4% and 2.7% of the subjects, respectively. Most nurses (63.1%) also had high levels of physical activity (Table 1).

Table 2. Perceived stress status according to various parameters among the studied nurses (N=149)

Parameter	Median (quartile range)	p-value
Sex		
Male	32.00(29.75, 34.25)	0.15
Female	33.00(30.00, 36.00)	
Marriage status		
Married	33.00(30.00-35.00)	0.64
Single	33.00(29.00-36.00)	
Education		
Associate degree	30.00(29.00-34.00)	
Bachelors	33.00(30.00-35.00)	0.79
Masters	32.00(31.00-35.00)	
Experience of contracting diseases among the nurses themselves		
Yes	32.50(30.00-35.00)	0.48
No	33.00(29.00-36.50)	
Experience of contracting diseases among the families of nurses		
Yes	33.00(30.00-35.00)	0.40
No	33.00(30.50-35.50)	
Experience of losing their families due to diseases		
Yes	33.00(31.00, 34.00)	0.76
No	33.00(30.00-35.00)	

Table 3. Eating disorder scores according to various parameters among the studied nurses

Parameter	Median (quartile range)	p-value
Overall eating disorder		
Sex		
Male	26.00(23.75, 27.00)	0.52
Female	25.00(23.00, 28.00)	
Marriage status		
Married	24.00(23.00-27.00)*	0.02*
Single	27.00(26.00, 28.00)*	
Education		
Associated diploma	26.00(24.00-30.00)*	
Bachelors	25.00(23.00-28.00)*	0.03*
Masters	23.00(21.00-25.00)*	
Experience of contracting diseases among the nurses themselves		
Yes	25.00(23.00, 27.00)*	0.03*
No	27.00(24.00-28.00)*	
Experience of contracting diseases among the families of nurses		
Yes	25.00(23.00-27.00)	0.33
No	26.00(24.00-28.00)	
Experience of losing their families due to diseases		
Yes	24.00(22.00-24.00)*	0.01*
No	26.00(23.00-28.00)*	
Anorexia		
Sex		
Male	11.00(10.00, 11.00)	0.34
Female	10(9.00, 12.00)	
Marriage status		
Married	10.00(9.00, 11.00)*	0.01*
Single	12.00(10.00-13.00)*	
Education		
Associated diploma	10.00(8.00-20.00)	
Bachelors	11.00(9.00-12.00)	0.47
Masters	9.00(9.00-11.00)	
Experience of getting diseases among the nurses themselves		
Yes	10.00(9.00-12.00)	0.14
No	11.00(9.00-12.00)	
Experience of getting diseases among the families of nurses		
Yes	11.00(9.00-12.00)	0.32
No	10.00(10.00-12.75)	
Experience of losing their families due to diseases		
Yes	10.00(9.00-11.00)	0.54
No	10.50(9.00-12.00)	
Bulimia		
Sex		
Male	15.00(13.00, 16.00)	0.78
Female	15.00(13.00, 16.00)	
Marriage status		
Married	15.00(13.00-16.00)	0.78
Single	15.00(14.00-16.00)	
Education		
Associated diploma	16.00(10.00-16.00)	
Bachelors	15.00(13.00-16.00)	0.53
Masters	12.00(12.00-16.00)	
Experience of contracting diseases among the nurses themselves		
Yes	15.00(13.00-16.00)	0.62
No	15.00(14.00-16.00)	
Experience of contracting diseases among the families of nurses		
Yes	16.00(13.00-16.00)	0.24
No	14.50(13.00-16.00)	
Experience of losing their families due to diseases		
Yes	14.00(11.00, 15.00)*	0.008*
No	16.00(13.25, 16.00)*	

*Significant

The mean score for PS levels was 32.77±3.97. All nurses reported experiencing moderate (88.6%) or high (11.7%) levels of PS. However, no significant relationships were observed regarding PS status based on the considered parameters (Table 2).
The mean score for overall EDs was 25.24±3.19. Furthermore, the mean scores for anorexia and bulimia were 10.71±2.69 and 14.53±2.26, respectively. There were significant differences in ED scores concerning marital status, education level, personal experiences with diseases, and experiences of losing family members due to diseases. Specifically, overall ED scores were significantly higher among single individuals, those with lower education levels, and individuals without personal experiences of diseases or without experiences of losing family

members due to diseases (p<0.05). Additionally, anorexia scores were higher in single subjects compared to married ones (p<0.05). For bulimia scores, higher scores were observed in nurses who had experienced losing family members due to diseases compared to those without this experience (p<0.05; Table 3). A significant correlation was observed between the overall eating disorder score and physical activity levels (r=0.20, p=0.01), as well as the age of participants (r=-0.23, p=0.005). Furthermore, the anorexia score was significantly correlated with physical activity levels (r=0.38, p<0.001) and the age of individuals (r=-0.20, p=0.01). However, the assessment of the correlation between the bulimia score and various parameters showed no significant results (Table 4).

Table 4. Correlation between eating disorder scores and various parameters among the studied nurses

Parameter	Perceived stress		Physical activity		Age	
	Correlation coefficient	P-value	Correlation coefficient	P-value	Correlation coefficient	P-value
Overall eating disorder	-0.28	0.73	0.20*	0.01*	-0.23*	0.005*
Anorexia	-0.05	0.51	0.38*	<0.001*	-0.20*	0.01*
Bulimia	0.04	0.63	-0.09	0.23	0.12	0.13

*Significant.

Discussion

This study aimed to evaluate PS and EDs among a sample of Iranian nurses. Nurses had moderate to high levels of PS. Consistent with our results, several studies have reported moderate PS levels among nurses in Germany [5], the Hail region of Saudi Arabia [38], and Saudi Arabia more broadly [23, 24]. Additionally, some studies from Iran [18], Turkey [19, 20, 39], West Sumatra, Indonesia [21], and Oman [40] have found high PS levels among nurses. Similarly, several studies on nursing students demonstrate that most individuals have moderate [6] or high [17] levels of PS. Furthermore, according to Rajcani *et al.* in Slovakia, nurses have a high level of PS [22].

The overall ED score was significantly higher in single individuals, those with lower education levels, and individuals without personal experiences of diseases or experiences of losing family members due to diseases. Furthermore, the anorexia score was significantly higher in single individuals compared to married ones. For bulimia scores, the scores were significantly higher in nurses who had experienced losing family members due to diseases compared to those without this experience. Additionally, a significant direct correlation was found between the overall ED score and the anorexia score with the physical activity levels of individuals. A significant inverse correlation was also observed between the overall ED score and the anorexia score with the age of individuals. Consistent with our research, a study from Morocco involving a group of healthcare professionals indicated that eating disorder scores are higher in younger and obese participants. It was also reported that EDs and age have a significant inverse association [41]. Based on the study by Güneşer & Him in a sample of sports college students, although higher emotional eating scores are related to higher PS scores, these findings are not statistically significant [26].

In contrast to our study, a significant association has been reported between higher stress levels and a greater risk of disordered eating behaviors [17]. There is a significant relationship between an increased risk of binge ED and psychiatric disorders in a group of Brazilian health professionals [25]. Yaman & Hocaoğlu also reported that higher levels of PS are significantly related to an increased risk of emotional eating in a sample of healthcare workers in Turkey [12]. Additionally, there is a significant association between higher levels of PS and a greater risk of emotional eating among students, employees, and staff at the Faculty of Medicine, Tanta University, Egypt [42].

As previously discussed, nurses are among the groups at high risk for psychological disorders and their consequences due to various factors, including increased time spent with patients, high workload [1], low social support [8], demanding and disruptive behaviors from those being cared for, tensions between caregivers and patients' families, constant exposure to disease and death [9], and challenging situations regarding patient treatment and interactions with their families [10]. Furthermore, nurses may be at risk for EDs due to their stressful roles, numerous responsibilities, and a challenging work environment [11].

The hypothalamic-pituitary-adrenocortical axis is a physiological pathway that responds to emotional and stressful situations, which can affect food intake and eating behaviors [15, 16, 26]. Activation of the hypothalamic-pituitary-adrenal axis by both acute and chronic stress, along with its effects on the reward/motivation system and the inhibitory-control pathways of food intake, can interfere with normal eating behaviors depending on the type, frequency, and number of stressors, as well as individual differences, including personality [16, 43].

Evidence has shown that abnormal eating behaviors, such as restrictive eating, emotional eating, uncontrollable eating/external feeding, binge eating, anorexia, or bulimia may occur following negative emotions, such as stress, anxiety, fear, and sadness [15, 16]. Additionally, stressful conditions can lead to increased emotional and mental distress, including anxiety, stress, depression, sadness, and fear, which may consequently increase the risk of disordered

eating behaviors [15-17].

Our study was one of the first in Middle Eastern countries to evaluate PS and EDs among nurses. However, the present study had some limitations. We cannot properly justify the causality of the associations due to the cross-sectional nature of the study. Although data were collected using valid questionnaires, the possibility of response bias cannot be ignored because self-administered questionnaires were used. Another limitation is that data were collected online, which may have increased the likelihood of selection bias and response bias. Moreover, we evaluated the nurses over the short term and did not assess them in the long term. Thus, habituation effects related to changing conditions over the long term, as well as new coping strategies that individuals may develop, could affect the outcomes in the long term. Other factors that may influence our outcomes, such as sleep quality, work engagement, personality, economic conditions, social relationships, and anthropometric measurements, were not evaluated in our study.

Conclusion
The nurses demonstrate moderate to high levels of perceived stress, and their overall eating disorder is significantly correlated with their physical activity level and age.

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