



## Research Paper

# Anxiety of Nurses working in the hospitals in Guilan Province, Iran and the Associated Factors



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## ABSTRACT

**Background:** The environment and activities related to nurses' work are factors that threaten their mental health and may result in anxiety.

**Objectives:** The present study was conducted with the aim of determining the level of anxiety of nurses in the hospitals of the west of Guilan Province and related factors.

**Materials & Methods:** In this cross-sectional analytical study, 388 nurses from West Guilan hospitals completed the Spielberger anxiety questionnaire. Data were analyzed using t-tests or non-parametric equivalent, and multivariate linear regression model.

**Results:** The mean age of the participants was 34.5±8.4 years. The mean score for state and trait anxiety were 45.4±5.3 and 43.7±3.9, respectively. In terms of state anxiety, more than half of the study's population (57%) had severe anxiety, while for trait anxiety, the majority of the sample (57.6%) had moderate anxiety. There was a significant relationship between walking and the reduction of anxiety levels.

**Conclusion:** The findings of this research highlight the importance of addressing nurses' anxiety in the health and treatment field. Given the impact of nurses' anxiety on job performance and the quality of patient care, it is crucial for planners to pay attention to this issue and develop necessary plans to improve the mental health of nurses.

**Keywords:** Anxiety, Nurses, State-trait anxiety inventory, Walking

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## 1. Introduction

The most common emotional reaction in human beings is anxiety [1]. Anxiety can be a normal reaction to stress or threat, and it can also help a person to cope with stressful or threatening situations, but when it becomes excessive and permanent, it turns into a debilitating condition called anxiety disorders. If left untreated, it worsens and results in physiological symptoms such as a headache, sweating, muscle spasms, palpitations, fatigue, and even weakness [2, 3]. Anxiety disorders adversely affect a person's quality of life, and in severe cases, they can be debilitating [4]. It is estimated that one eighth of the world's population suffers from inappropriate anxiety disorders [5].

Today, human power is considered the most valuable capital of any organization, but this capital faces many problems and issues that can have a negative impact on its quantitative and qualitative efficiency and ultimately on the overall performance of the organization [6]. Occupational stress is a harmful physical and psychological reaction that is caused by the interaction of a person with the environment and the lack of coordination between the work needs and the abilities and desires of the person. Although there is occupational stress in all occupations, this issue becomes more important and frequent in professions that deal with human health [7]. Nurses are constantly under stress due to their sensitive professional nature. The nursing profession is inherently stressful, and stress affects the quality of life and health of nurses. The pressure caused by workload, close relationship with patients, responsibility for their life and death, technological advances, and increasing dimensions of care are directly related to nurses' job stress [8]. Nurses play an important role in providing health care; because they constitute the largest active human resources of health care organizations [9]. The first line of dealing with certain epidemics are the health personnel of hospitals, who put their lives at risk to perform their assigned duties [10]. Studies show that the prevalence of anxiety among nurses is higher than the general population. Although, it may be very different between different countries and different nursing specialties [11, 12], for example, the prevalence of anxiety in Iranian nurses is the highest (43.2%) [13] and in Japanese nurses is the lowest (7%) [14]. Considering the relatively high prevalence of anxiety and the fact that the lack of primary prevention, early diagnosis, and timely control of this disorder lead to its onset and continuation, using preventive methods in the field of recognizing anxiety in the early stages and dealing with it correctly is important [15]. Considering the

pandemic of the COVID-19 disease in the world, and the effectiveness of all nursing activities due to this epidemic, there are concerns about the capacity of nurses in the field of care and caring behaviors [16]. In this regard, Nemati et al. report that nurses experience high anxiety in the context of COVID-19 for themselves and their families [17]. In some studies, it has also been determined that the level of stress has a positive correlation with depression and anxiety among hospital employees, as well as in therapeutic and administrative groups; and its relationship with depression and anxiety is significant [11].

The present study aimed to assess the anxiety levels of nurses in the western hospitals of Guilan Province during the COVID-19 pandemic. It also aimed to identify the factors associated with anxiety. The findings from this study can help provide solutions to reduce or adapt to anxiety by understanding its levels and related factors.

## 2. Materials and Methods

### Study type and study population

The present study was cross-sectional analytical research conducted among nurses working in hospitals in the Western region of Guilan Province, North of Iran, in 2019. The sample size was calculated using Equation 1:

$$1. N = z^2 pq / d^2$$

With  $P=0.515$  and  $d=0.05$  [18]. A total of 388 nurses were selected for the study. First, a list of all nurses working in the seven hospitals in the region was prepared. Then, eligibility criteria were applied to determine the participants for the study. The sample size for each hospital (strata) was determined proportional to the strata. Then the sample were selected using simple random sampling method on nurses' sampling frame. Once the objectives of the research project were explained and written consent was obtained, the research units were given a self-administered questionnaire to complete. The inclusion criteria included having work experience of at least 6 months in the desired center, no use of neuroleptics for the last 6 months, and no vacation lasting more than two weeks in the last 30 days. Nurses who were on leave, transferred to another hospital, or faced with a stressful crisis such as death of relatives and divorce, as well as nurses who expressed their unwillingness to participate in the study were excluded from the study. The research data was collected over a period of about 74 days from January 1 to mid-March 2019.

The data was collected using a questionnaire consisting of two parts. The first part included the personal and demographic characteristics of the research units such as age, work experience, education, marital status, housing status, work shift, recreation activities such as going to the park, cinema, hanging out with friends, etc. and walking for at least 20 minutes a day so that the heart rate increases. The second part was Spielberger's state-trait anxiety questionnaire (STAI) with 40 questions [19], which has been standardized in Iran by Gholami et al. [20] and measures anxiety in two status of "state (STAI-S)" and "trait (STAI-T)" anxiety. This questionnaire, which can be used in a self-administered form, can be implemented both individually and in groups, and has no time limit for completion. The STAI-T scale consists of 20 statements that ask people to describe how they generally feel. The STAI-S scale also consists of 20 statements, but the instructions require subjects to indicate how they feel at a particular moment in time. Each question is rated on a 4-point scale (not at all, somewhat, moderately so, very much so). The range of possible scores for the STAI varies from a minimum score of 20 to a maximum score of 80 on both the STAI-T and STAI-S subscales. STAI scores are commonly classified as: "No or low anxiety" (20-37), "moderate anxiety" (38-44), and "high anxiety" (45-80) [21, 22]. The calculated reliability of both state and trait anxiety scales to be implemented on subjects based on Cronbach's  $\alpha$  formula is reported to be 0.93 for the state scale and 0.90 for the trait scale, and 0.93 in general [20]. In order to determine the validity of the questionnaire, an expert

panel consisting of seven academic staff members of the universities consisting of 3 experts in health education and health promotion, nursing, statistics, epidemiology, and health management reviewed the questionnaire for relevance and clarity of the items. The value of content validity ratio (CVR=1) and content validity index (CVI=1) indicated the appropriateness of the questionnaire from the panel members' point of view. The reliability of the questionnaire was also measured by the test re-test method and its correlation coefficient was 0.80.

### Statistical analysis:

The information was analyzed using SPSS software version 22. Central and dispersion indices along with frequency and percent were used to describe data. The t-tests and analysis of variance or their non-parametric equivalent, and multiple linear regression test also used to investigate the association of demographic characteristic with anxiety score.

## 3. Results

The findings of the present study regarding the demographic characteristics of the research samples, according to Table 1 showed that the minimum age of the nurses participating in this research was 19 years and the maximum age was 63 years. The Mean $\pm$ SD age of the participants was 34.5 $\pm$ 8.4 years. More than 90% of the research sample were female. In terms of marital status, 24.7% were single, and the rest were married. The mini-

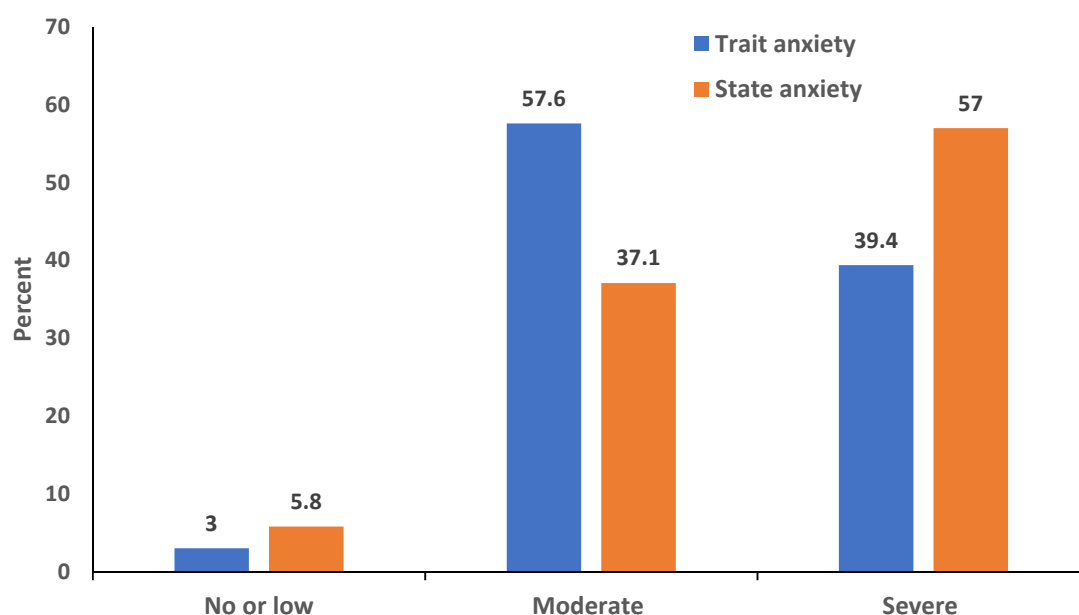


Figure 1. Frequency distribution of state and trait anxiety

**Table 1.** Demographic characteristics of nurses in West Guilan hospitals

Variables	Subgroup	No. (%)
Age (y)	<30	142(36.6)
	30-39	145(37.4)
	40-49	85(21.9)
	≥50	16(4.1)
Gender	Female	39(10.1)
	Male	346(89.9)
Work experience (y)	<10	197(50.8)
	10-20	158(40.7)
	≥20	33(8.5)
Marital status	Married	96(24.7)
	Widowed	292(75.3)
Housing situation	Property	272(70.8)
	Rental	75(19.5)
	Other	37(9.7)
Shift	Fixed morning shift	80(20.7)
	Fixed evening shift	11(2.8)
	Circulating shift	294(76)
Recreation	Once a week	97(25.1)
	1-2 times a month	102(26.4)
	Sometimes	151(39)
	Never	37(9.6)
Walking	Yes	155(39.9)
	No	233(60.1)



maximum work experience of the participants was one year and the maximum was 33 years. The mean work experience of the participants was  $9.8 \pm 6.8$  years. The highest percentage of sample (76%) had a shift-work and had at least one night-shift during the month. (Table 1).

The mean of state and trait anxiety was  $45.4 \pm 5.3$  and  $43.7 \pm 3.9$ , respectively. Regarding to state anxiety, 57% of the studied subjects had severe anxiety and 37.1% had moderate anxiety. The relevant percentage for trait anxiety was 39.4% and 57.6%, respectively. Only 5.8% of

nurses had no state anxiety and 3% had no trait anxiety (Figure 1).

The result of multivariate linear regression model adjusted for demographic and socioeconomic variables showed that walking was independently associated with total and trait anxiety score. Nurses who walk three times a week had significantly lower total ( $\beta = -14.9$ , 95% CI, -28.5%, -1.4%,  $P = 0.03$ ) and trait ( $\beta = -6.5$ , 95% CI, -12.35%, -0.75%,  $P = 0.03$ ) anxiety scores compared to those who walk every day.

#### 4. Discussion

The present study was conducted with the aim of determining the anxiety levels of nurses in the western hospitals of Guilan Province and the associated sociodemographic factors. Based on the results of this study, the mean score for state anxiety was  $45.4 \pm 5.3$ , and for trait anxiety, it was  $43.7 \pm 3.9$ , which is almost similar to the results of other studies [21, 22]. However, in Sonmez et al.'s study, which investigated the level of anxiety among nursing students in Antalya, Turkey, the mean state anxiety was much lower than the mean trait anxiety [23]. This difference can be attributed to the variation in the research population between the two studies. Since apparent anxiety reflects the amount of anxiety a person shows at the moment, nursing students may exhibit slightly more restraint in these situations and have better control over their anxiety under the supervision of their instructors.

The results of our study showed that 94.1% of the research participants experienced moderate to severe state anxiety, and 97% had moderate to severe trait anxiety. Various studies conducted to measure the anxiety levels of nurses, whether during the COVID-19 pandemic or before, have consistently demonstrated the high levels of anxiety experienced by this group of healthcare professionals. In a cohort study conducted by Maharaj in Australia in 2018, the level of anxiety among nurses was examined, revealing that 41.2% of nurses experienced moderate anxiety [24]. Ghods et al. evaluated the anxiety levels among nurses at Semnan University of Medical Sciences in Iran. The results of their research indicated that 71.18 percent of nurses suffer from moderate anxiety [12]. The results of a study conducted in a general hospital in Qazvin showed that more than half of the participants experienced higher-than-mean levels of anxiety [25]. In 2020, Chen et al. conducted a study investigating the anxiety levels of Chinese healthcare workers. The findings of this study, which included approximately 35% nurses among the research participants, indicated that 24.5% of individuals experienced moderate to high anxiety [26]. The results of the study conducted by Mosolova et al., investigating the levels of anxiety among nurses in Moscow, Russia during the COVID-19 pandemic, also indicated the presence of state anxiety in 71% of nurses and trait anxiety in 25.5% of nurses [27]. The study by Li and his colleagues on the levels of anxiety among Chinese nurses during the COVID-19 pandemic indicates the presence of anxiety in 77.3% of nurses, with 27.3% experiencing mild to moderate anxiety and 50% experiencing severe anxiety [28]. As it could be expected, the level of anxiety among

nurses has increased during the COVID-19 pandemic [16, 17, 26]. However, this increase varies in different regions. In the current study, the level of severe anxiety among nurses was higher compared to other studies. Perhaps the reason for the nurses' extreme anxiety is their exposure to a larger number of patients and experiencing a higher number of patient deaths, especially considering the higher death rate in Guilan Province at the beginning of the pandemic compared to other provinces. Based on the results of the studies conducted during the spread of SARS and Ebola, the prevalence of psychological disorders such as anxiety, stress, and depression has been reported to be high [29], and the anxiety of nurses decreased by 18.1% during the period of COVID-19 compared to the period of SARS [30]. It is possible that the experience of the SARS disease in China has caused Chinese nurses to be less anxious during the COVID-19 pandemic.

To justify the high level of anxiety in nurses, other studies' results can be mentioned. For example, the results of Demir's study showed that low salaries, insufficient tools and equipment, long working hours, and caring for a large number of patients are factors that can have a negative effect on the working conditions and physical and mental health of nurses [31]. Additionally, Liu (2003) showed the cases that cause anxiety in nursing personnel, including exposure of nurses to infection, death of a patient in critical conditions, long-term separation from the family, and observation of the patient in a state of stress. The COVID-19 pandemic has presented numerous challenges for nursing personnel. Fighting infectious diseases poses a serious challenge for health team employees, especially nurses, who bear the heavy responsibility of caring for patients while dealing with a stressful workload. Additionally, the lack of nursing staff exacerbates environmental, mental, and physical tensions, leading to a mental burden, emotional problems, and anxiety, as observed in the present study [32].

In the present study, the level of anxiety was influenced by walking, and nurses who walk three or more times a week had better control over their overall level of anxiety and trait anxiety. This finding is consistent with the results of other studies in the field of investigating the effect of walking on reducing anxiety symptoms [33-35]. Various studies on different age groups such as young people and the elderly indicate the positive effect of walking on the level of anxiety and other psychological symptoms of these people. In this context, we can refer to the studies that proved the effect of regular walking on the improvement of the obvious anxiety of the elderly [36, 37].

In an 8-year study on young Japanese women, Song and his colleagues showed that daily leisurely walks in forest or urban areas can significantly reduce the symptoms of depression, tension and anxiety, anger and fatigue in these people [38]. The findings of Chu's study show the effect of walking on reducing anxiety symptoms, increasing self-image satisfaction and reducing posttraumatic symptoms in women with breast cancer after breast surgery treatment [39]. In a mindfulness-based intervention study, La Torre et al. proved the reduction of anxiety symptoms in Chinese nurses by emphasizing yoga and walking. The biggest decrease was related to obvious anxiety, which decreased from a mean of 62 before the intervention to a mean of 45.5 after the intervention [40].

One of the limitations of the current research was the collection of information by self-reporting method, except for asking the participants to be honest and accurate in answering the questions, the researcher had no control over the rest of the cases. Also, the large number of questions in the questionnaire, the coincidence of the study with the COVID-19 pandemic and the shifts in work schedules for nurses can potentially affect the quality of the data.

## 5. Conclusion

In the present study, a high proportion of nurses experience moderate to severe anxiety. Regular walking was related to the improvement of general symptoms of anxiety and trait anxiety. These findings showed the importance of paying attention to the mental health of nurses as the largest group providing medical care to people in the community. It is necessary to pay attention to the issues that cause anxiety in nurses and to plan measures to reduce them. Although this study was conducted during the COVID-19 pandemic and the peak of tension and anxiety of the nursing group, considering the stressful nature of this profession, planning to reduce their anxiety at any time can bring good results for nurses and society. The presence of a psychiatric nurse or a psychologist is suggested for consultation with nurses in hospitals. Also, planning to take a regular daily walk even in the hospital environment can be used as an easy and achievable solution.

## Ethical Considerations

### Compliance with ethical guidelines

This article is the result of a research project approved by the Vice President of Research and Technology of [Guilan University of Medical Sciences](#) (Code: IR.GUMS.REC.1399.412).

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## Authors' contributions

All authors have equally contributed in preparing the article.

## Conflict of interest

The authors declared no conflict of interest.

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