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Comparison of Anxiety among Nurses Working in COVID-19 and non-COVID-19 Wards

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ABSTRACT

This study aimed to compare anxiety levels among nurses working in COVID-19 wards and other wards at Gorgan Army Hospital. This descriptive comparative study was conducted in 2021 with 59 nurses employed at Gorgan Army Hospital using the census method. Of these, 28 emergency and internal medicine department nurses worked in COVID-19 inpatient wards, and 31 worked in non-COVID-19 wards. Data were collected using Spielberger's State-Trait Anxiety Inventory. The data were analyzed using SPSS software version 22, employing descriptive statistical tests (frequency, percentage, mean, and standard deviation) and inferential tests (chi-square, independent t-test, Fisher's exact test, and Mann-Whitney test). The study found that 98.3% of nurses experienced state anxiety, with 67.8% reporting moderate to high levels of state anxiety and 77.9% experiencing relatively severe trait anxiety. The level of state anxiety was significantly higher in the internal medicine department with COVID-19 patients (P = 0.020). While trait anxiety was higher in the emergency department, the difference was insignificant (P = 0.606). The results suggest that the uncertainty surrounding COVID-19 and the lack of definitive treatment have contributed to high levels of anxiety among nurses. Therefore, it is essential to implement appropriate policies and plans to alleviate nurses' anxiety.

Keywords: Anxiety; Nurses; COVID-19

Introduction

Anxiety has emerged as a significant occupational health issue among nurses, reaching unprecedented levels during the COVID-19 pandemic [1]. As frontline caregivers, nurses encounter persistent stressors, including exposure to life-threatening infections, excessive workloads, and ethical dilemmas in resource-limited settings [2, 3].

The psychological impact is particularly severe in COVID-19 wards, where nurses exhibit higher rates of generalized anxiety (32.1%) compared to other departments (18.7%) [4].

Anxiety is a natural response to life-threatening situations, and in the context of COVID-19, health-related concerns may manifest as anxiety [5]. Anxiety about COVID-19 is prevalent, primarily due to the unknown nature of the virus and the cognitive ambiguity surrounding it; fear of the unknown diminishes perceived safety and has historically been a source of anxiety for humans. The lack of

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scientific information about COVID-19 exacerbates this anxiety [6].

Individuals seeking more information to alleviate their anxiety may encounter misinformation or distressing news, such as death tolls and new virus variants, which can further increase anxiety [7]. The fear and anxiety of potential infection create a substantial psychological burden, leading to mental health issues, weakened immune systems, and reduced ability to combat diseases, including among healthcare workers [8].

Nurses are the primary caregivers in the healthcare team, constituting over 75% of the team. They are the first group on the front lines of the COVID-19 pandemic [9]. The work environment of nurses involves prolonged and continuous stress [9]. The National Institute for Occupational Safety and Health (NIOSH) ranks nursing as one of the top 12 most stressful professions and likely the most stressful among healthcare jobs [10].

The health of nurses working in COVID-19-related wards is at risk due to the nature of their work, heavy protective gear, the use of N-95 masks, and the risk of infecting themselves and others, which can lead to psychological disorders [11]. A study by Cavanaugh et al. demonstrated that nurses are exposed to more stressors than other professions, and their physical and mental health affects the quality of care and patient satisfaction [12]. A study by Wang et al., which focused on 10 years of research, identified workplace risk factors such as patient pain, suffering, death, job difficulty, sensitive working conditions, chemicals, and various disinfectants as sources of stress and anxiety [13].

In addition to the physical pain of patients, nurses also witness their emotional and psychological pain, which affects their mental state and increases anxiety, leading to reduced quality of healthcare services, treatment errors, and clinical mistakes [14]. Therefore, this study compares the anxiety levels of nurses working in COVID-19 wards and other wards of Gorgan Army Hospital.

Materials and Methods

This comparative descriptive study was conducted among the nursing staff at Gorgan Army Hospital during the 2021 calendar year to investigate differences in psychological outcomes between personnel in COVID-19 and non-COVID-19 wards. The research employed a comprehensive census sampling methodology, initially encompassing the hospital's nursing workforce of 63 individuals across all clinical departments.

The inclusion criteria were deliberately structured to ensure a representative sample while maintaining scientific rigor: active clinical nursing staff with direct patient care responsibilities, Bachelor of Science in Nursing (BSN), a minimum of six months of continuous service in their current ward assignment to ensure adequate exposure to ward-specific stressors, and voluntary written informed consent. Exclusion criteria included administrative nursing personnel and those on extended leave during the study period.

After implementing these parameters, the final study comprised 59 eligible participants (93.7% of the total nursing staff), consisting of two distinct groups: 28 frontline nurses working in COVID-19 designated wards (emergency department and COVID-19 specialized internal medicine units), and 31 nurses working in various non-COVID-19 departments (including surgery, pediatrics, and outpatient clinics). All participants received standardized assurances regarding their rights, including voluntary participation without coercion, freedom to withdraw at any study phase without professional repercussions, and ironclad confidentiality protections with data anonymization protocols.

The hospital administration guaranteed that participation status would not affect employment conditions or access to institutional resources. To enhance methodological robustness, the study incorporated several quality control measures: (1) uniform data collection procedures across all wards, (2) validated assessment tools administered by trained research assistants, (3)

scheduled data collection times to control for shift-related variability, and (4) regular audits of consent documentation.

The research design specifically accounted for potential confounding variables such as shift patterns, years of experience, and prior mental health history through stratified sampling where feasible.

This rigorous approach ensured that the study's findings would provide reliable, actionable insights into the differential psychological impacts of COVID-19 ward assignments while upholding the highest standards of research ethics and scientific validity. The methodology was designed to yield data that could inform immediate institutional support strategies and longer-term mental health policies for healthcare workers in military hospital settings.

Data Collection Tools

Demographic Questionnaire: Included age, gender, employment status, marital status, position, work experience, year of starting nursing, shift type, and number of children. Spielberger's State-Trait Anxiety Inventory (STAI) consisted of 40 questions measuring state and trait anxiety. Scores for each participant were calculated based on their responses, with higher scores indicating higher anxiety levels. The reliability of the Persian version of the STAI was confirmed by Mehram [13], and its reliability in the study by Zare Mobini [14] was reported with a Cronbach's alpha of 0.889. In this study, the reliability was determined to be 0.81.

Data Analysis:

Data were analyzed using SPSS software version 22. Descriptive statistics (frequency, percentage, mean, and standard deviation) and inferential tests (chi-square, independent t-test, Fisher's exact test, and Mann-Whitney test) were used.

Ethical consideration

Following approval from the ethics committee (IR.IAU.SARI.REC.1399.040, Project No:9040), potential participants received detailed briefings about the study's objectives, methodology, potential risks/benefits, and data confidentiality protocols.

Results

The study included 59 nurses aged 23 to 50, with a mean age of 31.86 ± 6.72 years. Among them, 15 nurses (25.4%) worked in the internal medicine department, 15 (25.4%) in the surgical department, 13 (22%) in the emergency department, and 16 (27.2%) in the operating room and anesthesia department. Of these, 28 nurses worked in COVID-19 inpatient wards (emergency and internal medicine), and 31 worked in non-COVID-19 wards.

Among the participants, 40 (67.8%) were male, and 19 (32.2%) were female. Most nurses (57.6%, 34 nurses) had 11 to 20 years of work experience (Table 1).

The comparison of state anxiety scores based on position showed that head nurses had higher anxiety levels, which was statistically significant (P = 0.011).

The comparison of trait anxiety scores based on work experience showed that nurses with 11 to 20 years of experience had higher anxiety levels, which was statistically significant (P = 0.009) (Table 1)

The comparison of state anxiety scores based on hospital wards showed that anxiety levels were significantly higher in the internal medicine department where COVID-19 patients were hospitalized (P = 0.020).

The comparison of trait anxiety scores showed that anxiety levels were higher in the emergency department, but there was no significant difference (P = 0.606) (Table 2).

In this study, the prevalence of state anxiety was 98.3%. Based on findings, 67.8% (40 nurses) experiencing moderate to high state anxiety and 77.9% (46 nurses) experiencing relatively severe trait anxiety.

Table 1. Description and Comparison of Anxiety Subscale Scores Based on Demographic Variables Among Nurses Working at Gorgan Army Hospital

Variable		State Anxiety	P-value	Trait Anxiety	P-value
Gender	Male	51.55 ± 4.36	0.730	54.53 ± 3.21	0.632
	Female	51.95 ± 3.49		54.66 ± 3.01	
Age	23–30 years	51.17 ± 4.55	0.493	54.53 ± 3.21	
	31–40 years	51.91 ± 3.29		54.66 ± 3.01	
	41–50 years	53.14 ± 4.29		54.53 ± 3.21	
Employment Status	Permanent	51.78 ± 3.52	0.687	54.70 ± 3.18	0.844
	Contractual	51.25 ± 5.94		54.50 ± 3.03	
Education Level	Associate Degree	50.64 ± 3.83	0.280	55.93 ± 3.43	0.082
	Bachelor's Degree	52.52 ± 4.13		54.27 ± 2.95	
Marital Status	Single	50.81 ± 5.20	0.537	54.50 ± 2.85	0.967
	Married	52.07 ± 3.64		54.73 ± 3.33	
	Divorced	50.05 ± 2.12		54.50 ± 0.71	
Position	Head Nurse	57.57 ± 2.94	0.011*	52.00 ± 3.37	0.135
	Staff Nurse	54.50 ± 2.38		56.50 ± 3.41	
	Ward Nurse	50.86 ± 4.07		54.50 ± 2.86	
	Operating Room Nurse	51.59 ± 2.89		55.78 ± 3.13	
Work Experience	Less than 10	50.67 ± 5.32	0.325	54.67 ± 3.18	0.009*
	11–20 years	51.88 ± 3.49		55.32 ± 2.90	
	More than 21	53.28 ± 2.56		51.43 ± 2.22	
Shift Type	Morning	52.83 ± 3.69	0.497	53.67 ± 3.82	0.243
	Night	52.00 ± 2.83		53.75 ± 2.19	
	Rotating	51.25 ± 4.39		55.15 ± 3.13	
Number of Children	No Children	51.86 ± 3.71	0.922	54.76 ± 2.68	0.338
	One Child	51.21 ± 4.44		54.57 ± 2.41	
	Two Children	51.60 ± 4.68		55.15 ± 3.62	
	More than two	52.75 ± 1.26		52.00 ± 4.69	

Table 2. Description and Comparison of Anxiety Subscales Among Nurses Based on COVID-19 and non-COVID-19 Wards at Gorgan Army Hospital

	Ward	State Anxiety	P-Value	Trait Anxiety	P-Value
COVID-19	COVID-19 Wards	53.33 ± 3.72	0.020*	54.87 ± 3.39	0.606
	Specialized Internal Medicine	52.54 ± 2.63		52.23 ± 2.74	
non-COVID-19	Specialized Clinic (Surgery)	52.00 ± 3.27		53.73 ± 3.13	
	Operating Room & Anesthesia	49.12 ± 5.03		54.87 ± 3.26	

Discussion

This study aimed to compare the anxiety levels of nurses working in COVID-19 wards and other wards of Gorgan Army Hospital. The findings showed that state anxiety levels were significantly higher in the internal medicine department and trait anxiety levels were higher in the emergency department, but there was no significant difference. A study by Lai et al. (2020) conducted on hospital doctors and nurses in Wuhan, China, during the COVID-19 outbreak showed that healthcare workers experienced high levels of depressive symptoms (50.4%) and anxiety (44.6%) [2]. The results of Koh et al. (2005) reported that more than half of the nurses (56%) experienced stress [15]. Another study conducted during the SARS epidemic in Hong Kong found that nurses experienced higher anxiety after direct contact with SARS-infected patients [16], which is consistent with the findings of this study. A study by Norouzi et al. examined nurses' general health and emotional responses in intensive care units of two hospitals affiliated with Baqiyatallah University of Medical Sciences. In their study, the levels

of stress, anxiety, and depression among nurses were 33%, 33.9%, and 30.8%, respectively [17]. The lower levels of stress, anxiety, and depression in this study compared to the current study may be because nurses working in COVID-19-related wards are at higher risk of psychological disorders due to the nature of their work [18].

The results of Huang et al. in 2020 among healthcare professionals in a COVID-19 infectious disease hospital in China indicated a high prevalence of anxiety and stress disorders among frontline medical staff dealing with COVID-19 patients [19].

Consistent with the findings of this study, the results of Karimi et al. showed that the stress, anxiety, and depression scores of nursing staff were higher than those of non-nursing staff [20]. In a study by Parvin et al., the level of death anxiety among nurses working in COVID-19 wards was significantly higher than that of nurses working in other wards [21]. The results of Sharifi Fard et al. showed an increase in anxiety among nurses facing the coronavirus. Additionally, Sharifi Fard's study found an increase in psychological and emotional damage among individuals with children and those who were married [22]. In a study by Huang et al., most nurses (72%) experienced severe anxiety. Huang's study found that the high prevalence of COVID-19 and poor sleep quality during the pandemic were factors contributing to anxiety among nurses [5]. In a study by Li et al., nurses working in high-risk wards were at increased risk of developing at least one mental health problem, including anxiety, due to the higher likelihood of exposure to the disease [23]. Therefore, healthcare professionals dealing with COVID-19 are under significant psychological pressure and experience high levels of psychological symptoms similar to those experienced during epidemics [24]. Despite the alignment of findings with other studies, no study was found that contradicted the findings of this study.

Conclusion

The results of this study suggest that COVID-19 has caused anxiety among nurses working in COVID-19 wards. Given that anxiety and stress are risk factors for physical and mental health problems, it is essential to provide psychological support and training to nurses to help them cope with COVID-19-related anxiety during the current crisis. This will help reduce negative emotions and alleviate stress and anxiety. This study had a small sample size from one hospital, potentially limiting generalizability. Selection bias may exist due to the non-participation of highly anxious nurses. The cross-sectional design prevents causal conclusions. Future multi-center studies with larger, longitudinal samples are recommended.

Conflict of Interest

The authors declare no conflict of interest.

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