INVESTIGATING THE FACTORS RELATED TO GENERAL HEALTH IN NURSES WORKING IN MILITARY HOSPITALS IN IRAN

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Abstract

Aim: To evaluate the general health and related factors of nurses in Tehran military hospitals.

Design: Cross-sectional study

Method: This study was performed on nurses working in military hospitals in Tehran, Iran. 332 nurses were selected by multi-stage from four military hospitals.

Results: Approximately 38.3% of nurses were in good general health. 90% were at the moderate and low level of Somatic symptoms, 44.8% were at the moderate and low level of

Anxiety/Insomnia. 43.6% were at moderate and low levels of social dysfunction. 37 % were at moderate and low levels of severe depression.

Conclusion: Marital status and workplace ward were two factors related to nurses' health.

Impact: A nurse's illness can inflict an irreparable impact on the body of the health system, so assessing the health status of nurses and identifying the related factors can help to improve general health, especially in military personnel.

Keywords: General health, Nurses, Military Hospitals, Cross-sectional study, Tehran

Introduction

The World Health Organization considers health to be not only the absence of disease and disability but also the enjoyment of complete physical, mental and social well-being (Hanefeld & Fischer, 2021). Health is an effective factor in the development and evolution of human beings and the inner feeling of being good and ensuring their efficiency and relying on their abilities and increasing their capacity and talents (Dastoorpoor et al., 2021). Therefore, health is effective in all aspects of personal, social, and professional life.

One of the dimensions of health is being happy. Unfortunately, by 2030, depression is predicted to become the second leading cause of disability in developing countries (Lépine & Briley, 2011). Social problems, family and work conditions can be among the factors affecting the level of health (Buldur & Güvendi, 2020). Decreased levels of general health and mental health problems can severely impair social functioning and employment status, and in more severe cases can lead to isolation, suicide, and death (Bado et al., 2022).

Studies have shown that employees spend more than two-thirds of their useful time in the workplace, so health, which is a multidimensional issue, can also be affected by the workplace (Eng et al., 2016; Huber et al., 2015; Nilsson et al., 2012). Depending on the task, the employee can bear the burden, if this responsibility is heavy, it can endanger the person's health. Due to the direct relationship with the health of people in the community, health care personnel have a heavy responsibility. Sometimes the occurrence of negative emotions in the workplace can have irreversible psychological effects on their health (Feinberg et al., 2020).

Job stress is a factor that has been mentioned in many studies for its role in employee health (Day et al., 2010; Fujishiro & Heaney, 2009). Nursing is one of the main service sections in any hospital. This job is associated with a lot of stress and anxiety (McNeely, 2005). Nurses are prone to a variety of physical and mental problems due to the presence of stressors and

long work shifts and fatigue (Roberts & Grubb, 2014). On the other hand, considering the inevitability of stressors in military hospitals, recognizing these factors and improving working conditions in the organizational environment to maintain and promote the general health of the organization's employees seems necessary.

Frequent contact with patients, feelings of helplessness at the time of death, feelings of emptiness and hopelessness are all factors that affect the general health of nurses (Oyama & Fukahori, 2015). Inefficiency and ineffectiveness of the nurse in the workplace, absenteeism, reduced patient satisfaction, leaving the job family problems, drug addiction, reduced creativity, incompatibility with colleagues, depression, reduced quality of service, even suicide can be considered as consequences of reducing the general health of nurses (Alotaibi et al., 2016; Dutheil et al., 2019; Ferri et al., 2016).

In 2015, Khamisa et al. by investigating 1,200 nurses from four hospitals in South Africa and concluded that nurses' general health was directly affected by job stress, burnout, and job satisfaction (Khamisa et al., 2016). Jordan et al. in 2016, 120 nurses from the United States were studied to examine the effect of job stress on nurses' health, and less than 10% of them were in good level of general health, 92% had stress, 78% lacked sleep, and 69% lacked regular exercise (Jordan et al., 2016). In 2021, Afshar et al. examined 208 nurses at Bushehr Hospital in Iran, 46.5% had acceptable general health (Farokhnezhad Afshar et al., 2021).

Considering the importance of nurses working in hospitals having a favorable general health status and their essential role in patient care, as well as the existence of few studies on the mental, physical and social health status of nurses working in selected military hospitals. This study aimed to investigate the general health level of nurses working in military hospitals in Tehran, Iran.

Methods

This cross-sectional analytical study was performed in 2021 on nurses working in military hospitals in Tehran, Iran. Sampling of this study was multi-stage so that first using cluster sampling (Basti & Madadizadeh, 2021; Ranaei et al., 2021), considering each hospital as a cluster, four clusters (four hospitals) were randomly selected from the clusters (hospitals). Then, in these four hospitals, information on the number of nurses working in each ward and information on the total number of hospital nurses was obtained through consultation with hospital officials, and then the total number of nurses in 4 hospitals was calculated. In the

second stage, stratified sampling was performed according to the number of nurses in each hospital (proportion to size sampling).

Based on the study of Rajabzadeh et al. (Rajabzadeh et al., 2016) which was conducted to evaluate the mental health of all nurses working in Behbahan hospitals in 2016, the results showed that 75% of nurses were unhealthy and 25% of them were healthy. Using this information, the value of the prevalence (p) was considered to be 0.25, and using the following formula, considering the significance level of 5% and the error rate of estimating 5 (d=0.05), the sample size was equal to 288 people.

$$n_0 \geq \frac{z^2_{1-\frac{\alpha}{2}} \, p \times (1-p)}{d^2} = \frac{1.96^2 \times 0.25 \times 0.75}{(0.05)^2} = 288$$

with considering 10% probability of non-response rate, the final sample size of at least 320 people was obtained.

The instrument used in this study was a 28-item general health questionnaire (GHQ-28) introduced by Goldberg and Hiller in 1979 and had four dimensions: physical symptoms, anxiety and insomnia, social dysfunction and depression (Sterling, 2011). Its validity and reliability were reported in Iran in the study Najafi et al. and internal consistency (Cronbach alpha) was equal to 0.85(Najafi et al., 2018).

Statistical analysis

Frequency, percentage, mean and standard deviation indices were used to describe the data. To examine the relationship between demographic factors and general health score, based on the cut-off point of 24, the general health score was divided into two parts less than 24 and greater than equal to 24. A score less than 24 was called healthy and a score greater than 24 was considered unhealthy, meaning it had at least one general health disorder. Multiple logistic regression model was used to analyze the factors affecting general health status. The scores of each of the subscales were divided into three categories: 0-9, 10-15, and 16-21 with low, moderate and high names. Considering a cut-off score of 24 on a general health score so that scores below 24 have good general health. To implement the logistic regression model, first univariate regression was performed and according to the Hosmer-Lemeshow rule,

variables with p-value less than 0.2 were entered into the multiple logistic regression model. All analyzes were performed in SPSS software version 24 with a significance level of 5%.

Ethical considerations

All ethical principles are considered in this article. The participants were informed of the purpose of the research and its implementation stages. They were also assured about the confidentiality of their information. All experimental protocols were approved by licensing committee of REDACTED. All methods were carried out in accordance with relevant guidelines and regulations. The informed consent was obtained from all subjects and their legal guardians.

Results

In total, out of 332 participants in the study, 41.6% (138 people) were in the age range of 30 to 40 years, 30.7% (102 people) were in the age range of 40 to 50 years, 53.9% (179 people) were women, 68.1% (226 people) were married, 74.1% (246 people) had a bachelor's degree, 68.1% (226 people) had less than 15 years of work experience, 15.4% (51 people) were employed in the surgical department. For more details see Table 1.

Please insert Table 1 here.

The results showed that 38.3% (127 people) were in good general health. According to Table 1, 90% (299 people) were at the moderate and low level of Somatic symptoms, 44.8% (149 people) were at the moderate and low level of Anxiety/Insomnia. 43.6% (145 people) were at the moderate and low level of social dysfunction. 37% (123 people) were at the moderate and low level of Severe depression.

A description of the general health score as well as the scores of its subscales is provided in Table 2. According to Table 2, the highest and lowest health scores of nurses in military hospitals belonged to the anxiety/ insomnia and depression dimensions, respectively.

Please insert Table 2 here.

The results of multiple logistic regression showed that only the variables of marriage and workplace are effective on health in nurses. Married people are 45% less likely to have health problems than single people. Nurses working in the operating room had a 77% lower chance

of developing health problems than nurses working in the pediatric and neonatal wards. Nurses working in Para clinics and diagnosis were about 86% less likely to develop health problems than nurses working in pediatric and neonatal wards (Table 3).

Please insert Table 3 here.

Discussion

Health is a multidimensional issue, if it is endangered can disrupts a person's life and the person suffers in all aspects (Hanefeld & Fischer, 2021). Nurses are hard-working therapists who have a heavy responsibility to maintain and care for patients. Workload and job stress in nursing can cause mental health problems and reduce health (Fujishiro & Heaney, 2009; Khamisa et al., 2016). Awareness of nurses' health status can help future plans of hospital managers and officials. Therefore, the present study examined the general health status and related factors in nurses working in military hospitals.

The results of our study showed that about 38% of nurses had good general health, while in the similar studies such as of Kalantari et.al, the general health of emergency nurses was 24.9% (Kalantari & Hosseinzadeh, 2017) and in the study of Rajabzadeh et al. it was 25%(Rajabzadeh et al., 2016). This difference may be due to the different locations of the studies. Our results showed that in general, the general health level of nurses in military hospitals was not at the desired level, and this can be due to workload and job stress and even night shifts.

The study of general health in terms of its subscales showed that 90% of nurses were not in good somatic symptoms. This could be due to the exhausting work of nursing and lack of mobility and regular exercise, which was reported in similar studies of insufficient exercise in nurses (Farag et al., 2021; Khamisa et al., 2016). Also, in terms of anxiety and insomnia, about half of the nurses had anxiety and lack of sleep, which was also studied in similar studies, and about 30% of nurses had less than 8 hours of sleep (Min et al., 2021). Consistent with our study, Qalawa et al. in 2017, in a study of nurses' health in midwifery and intensive care units concluded that 77.2% of nurses did not get enough sleep (Qalawa & Hassan, 2017). Other studies have reported nurses lacking sleep (Min et al., 2021; Rajabzadeh et al., 2016; SH, 2019). Insomnia can cause a lot of psychological damage and disorders in people because nurses have risk factors for stress and workload along with insomnia (Min et al., 2021). This issue can cause serious damage to nurses' health.

Social dysfunction was examined as another subscale of general health in this study. About 44% of nurses had this complication. Coinciding with our study in Prasanty et al. 2018 study, the prevalence of social dysfunction among nurses was 43% and they stated that there was a significant inverse linear relationship between social dysfunction and job stress (Prasanty et al., 2018). If exacerbated, social dysfunction can lead to severe psychiatric disorders such as depression and psychosis in nurses (KashaniLotfabadi et al., 2018). The results of our study examining the dimension of severe depression in public health stated that 37% of nurses suffer from severe depression. Fereydoni et al. in 2018, Conducted a review and meta-analysis of the prevalence of depression among nurses and estimated it at 26.8 (Fereidouni et al., 2018). The reason maybe that working in military hospitals can have special conditions and work environments are usually devoid of any entertainment and happiness for staff and due to the military nature of hospitals are subject to inflexible rules.

Our results in examining the factors related to health based on the cut-off point of 24 in the general health questionnaire showed that among the factors age, gender, marital status, level of education, work experience, hospital type, workplace ward, only married status and the nurse's workplace ward had a significant effect on the nurse's health. Consistent with our study in the study of Boshaq et al. 2021, gender was not recognized as a significant factor in the general health of nurses (Boshaq et al., 2022). Contrary to our study, the study of Landa et al. considered age and gender as effective factors on the general health of nurses (Landa et al., 2008). Also, Akbari et al. 2020 found that gender were a significant factor in nurses' general health and job satisfaction (Akbari et al., 2020). The reason for the difference between this study with our study can be mentioned the difference in sampling location because workload and job stress are not the same in all hospitals.

Our results showed married people were 45% less likely to be unhealthy than single people, regarding the role of marital status in the general health of nurses, there was no consensus among the studies (Farag et al., 2021; Min et al., 2021; Ortega et al., 2018; SH, 2019). Some studies were in line with our findings (Min et al., 2021; Ortega et al., 2018) and some, contrary to our findings (Min et al., 2021; Prasanty et al., 2018), considered the marital factor to be ineffective. In justification, it may be said that in our study, due to controlling the effect of other confounding variables through multiple logistic regression model, the results are closer to reality. Our result also showed nurses in the intensive care ward, operating room, and diagnostic Para clinic were 79%, 77%, and 86% less likely to be unhealthy than nurses in

the neonatal ward, respectively. In similar studies (Eng et al., 2016; Ferri et al., 2016; Huber et al., 2015; Khamisa et al., 2016; Min et al., 2021; Nilsson et al., 2012; Prasanty et al., 2018), there was no consensus on the impact of the workplace on nurses' health. However, in our study, considering the control of the effect of other variables through multiple logistic regression, the result is largely reliable. Perhaps larger and multicenter studies can provide a more reliable result in this regard. Considering the time spent in the workplace and communication with other colleagues, the role of this factor in the health of nurses seems reasonable.

One of the strengths of this study was the study of the general health of nurses in military hospitals because so far limited studies have been conducted in this field in Iran. This study used several hospitals for sampling. One of the limitations of the study is the lack of cooperation between nurses and the corona virus pandemic during data collection. Comparing the health level of nurses working in military hospitals and ordinary hospitals is one of the suggestions of this study that can be used in future research.

Conclusion

The results of our study showed that nurses in military hospitals, especially single ones and nurses working in the neonatal ward, do not have good general health. Marital status and workplace ward were two factors related to nurses' health.

Conflict of interests

The authors declare that they have no competing interests.

Ethical considerations

All ethical principles are considered in this article. The participants were informed of the purpose of the research and its implementation stages. They were also assured about the

confidentiality of their information. All experimental protocols were approved by licensing committee of AJA University of Medical Sciences with the ethical number IR.AJAUMS.REC.1400.270. All methods were carried out in accordance with relevant guidelines and regulations. The informed consent was obtained from all subjects and their legal guardians.

TABLE 1: **Description of demographic variables and dimensions of health score**			
Variables	**Levels**	**N**	%
Age (Years)	20-30	45	**13.6**
	30-40	138	**41.6**
	40-50	102	**30.7**
	50-60	47	**14.2**
Gender	Female	179	**53.9**
	Male	153	**46.1**
Marital status	Married	226	**68.1**
	Single	106	**31.9**
Educational level	Diploma	7	**2.1**
	Associate Degree	8	**2.4**
	Bachelor	246	**74.1**
	MSc	68	**20.5**
	Ph.D	3	**0.9**
Work Experience (Years)	<5	76	**22.9**
	5-10	76	**22.9**
	10-15	74	**22.3**
	15-20	52	**15.7**
	20-25	29	**8.7**
	25-30	25	**7.5**
Hospital type	Beasat	69	**20.8**
	501	77	**23.2**
	Khanevadeh	93	**28.0**
	Golestan	93	**28.0**
Workplace ward	Internal	42	**12.7**
	Intensive Care	37	**11.1**
	Obstetrics and Gynecology	21	**6.3**
	Surgery	51	**15.4**
	Operating room	40	**12.0**
	Chemotherapy	44	**13.3**

	Para clinical and diagnostic	19	**5.7**
	Outpatient	38	**11.4**
	Neurology	20	**6.0**
	Neonatal and pediatric	20	**6.0**
Somatic symptoms	Low	185	**55.7**
	Moderate	114	**34.3**
	High	33	**9.9**
Anxiety/Insomnia	Low	183	**55.1**
	Moderate	116	**34.9**
	High	33	**9.9**
Social dysfunction	Low	187	**56.3**
	Moderate	107	**32.2**
	High	38	**11.4**
Severe depression	Low	209	**63.0**
	Moderate	96	**28.9**
	High	27	**8.1**
General health status	<24	128	**38.6**
	>=24	204	**61.4**

TABLE 2: Description of the overall general health score and break down each sub-scale

Health scores	Mean	Standard deviation	Minimum	Maximum	Percentiles		
					25	50	75
Somatic symptoms	8.37	4.89	0.00	19.00	4.00	8.00	12.00
Anxiety/insomnia	8.61	4.85	0.00	20.00	5.00	8.50	12.00
Social dysfunction	8.33	5.071	0.00	21.00	4.00	8.00	12.00
Severe depression	7.71	5.01	0.00	20.00	3.00	8.00	11.00
General health status	33.02	18.80	0.00	71.00	17.00	33.00	47.00

TABLE 3: Multiple logistic regression results in determining health-related factors

Variables	Levels	P-value	OR adj	95% CI for OR	
				Lower	Upper
Age	20-30	0.886	0.906	0.235	3.493
	30-40	0.267	1.770	0.646	4.850
	40-50	0.321	1.591	0.635	3.984
	50-60	--	1	--	--
Gender	Female	0.965	0.988	0.583	1.676
	Male	--	1	--	--
Marital status	Married	0.046	0.554	0.309	0.990
	Single	--	1	--	--
Work experience	<5	0.143	2.962	0.694	12.651
	5-10	0.653	0.751	0.216	2.612
	10-15	0.131	0.389	0.114	1.326
	15-20	0.806	0.862	0.264	2.818
	20-25	0.756	0.830	0.256	2.689
	25-30	--	1	--	--
Workplace ward	Internal	0.247	0.422	0.098	1.819
	Intensive Care	0.037	0.213	0.050	0.913
	Obstetrics and Gynecology	0.918	1.100	0.179	6.743
	Surgery	0.082	0.282	0.067	1.176
	Operating room	0.047	0.231	0.054	0.983
	Chemotherapy	0.359	0.501	0.114	2.193
	Paraclinical and diagnostic	0.017	0.137	0.027	0.700
	Outpatient	0.059	0.246	0.057	1.055
	Neurology	0.380	0.487	0.098	2.426
	Neonatal and pediatric	--	1	--	--

Conclusion

The results of our study showed that nurses in military hospitals, especially single ones and nurses working in the neonatal ward, do not have good general health. Marital status and workplace ward were two factors related to nurses' health.

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