Burnout, Anxiety, and Professional Self-Concept in Nurses During the COVID-19 Pandemic in Iran

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Abstract- The aim of this study was to evaluate the burnout, anxiety, and professional self-concept of nurses according to their demographic and occupational information. 160 nurses from Razi and Poursina hospitals in Iran were selected as a sample in this cross-sectional online survey and answered the tools Demographic and Occupational Information Questionnaire (DOIQ), Maslach Burnout Inventory-Human Services Survey (MBI-HSS), Corona Disease Anxiety Scale (CDAS) and Nurse Self-Concept Questionnaire (NSCQ). Data analysis was performed in two descriptive and inferential sections using SPSS-19 statistics software. The participation rate in this study was 87.5% (n=140). The mean age was 32.56 (SD=7.26) years. The burnout rate in emotional exhaustion (EE) was 24.3%, depersonalization (DP) was 32.1%, and personal accomplishment (PA) was 60.7%, 21.4% of nurses had high anxiety, and 53.6% had low NSCQ. EE score was higher in nurses with less than ten years of experience (t=2.21) and single people (t=-3.18). DP score was higher in people under 35 years (t=3.20), with work experience of fewer than ten years (t=4.34), and single people (t=-3.07). Females in PA reported more burnout (t=-2.43). CDAS score was higher in females (t=3.20). NSCQ score was higher in married people (t=-3.07). CDAS was positively correlated with EE and DP and negatively correlated with PA. NSCQ was negatively correlated with EE and DP and positively correlated with PA. At first, a high CDAS score and then celibacy, less than ten years of work experience, and a low NSCQ score were effective in multiple linear regression analysis for MBI-HSS.

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Keywords: Coronavirus disease 2019 (COVID-19); Anxiety; Nurses; Burnout; Self-concept

Introduction

COVID-19 has spread rapidly around the world in late 2019 and has affected the lives of people in almost all countries (1). On February 18, 2020, the first case of COVID-19 was detected in Iran and then spread throughout Iran in less than a month (2). During this time, healthcare providers were at the forefront of the deadly virus, and unfortunately, some of them lost their lives (3). Nurses, meanwhile, played a key role in combating the epidemic. During this period, nurses were at greater risk of death than physicians in some countries (4).

The long epidemic period and the high number of people with COVID-19 have led to burnout (5); A study found that approximately 53% of healthcare providers had high levels of burnout (6) and nurses who treated patients with COVID-19 had higher levels of burnout (7). Nursing is classified as a high-burnout job due to its exposure to various exhausting conditions, and nurses are expected to empathize with and care for patients in the most difficult situations (8); The prevalence of COVID-19 due to the increase in new cases and deaths and increased stress, has significant psychological consequences in them and has increased the level of

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anxiety in them, which in turn can affect their job performance (9). In some studies, it has been shown that the level of anxiety of Iranian nurses was high during the COVID-19 epidemic (10-11). Another study showed that 33% of nurses have high anxiety, which has an effective role in their burnout (12).

Burnout is a syndrome associated with chronic work-related stress, which is associated with self-concept and negative attitudes toward work (13). Nurses' self-concept is as information and ideas that they have about their role, values, and behaviors and is an attitude of experiences that promotes their professional identity (14). Nurses with a positive professional self-concept describe their profession as satisfactory and consider their competence to perform responsibilities, and are ready to accept more responsibilities in any situation (15). Also, the results of some previous studies have shown that professional self-concept is a protective factor against nurses' burnout (16-17). However, the role of professional self-concept in nurses' burnout during the COVID-19 epidemic has not been considered by researchers.

Burnout can have unpleasant consequences for patients and nurses. In the first place, it can threaten their physical and psychological health and reduce their motivation to continue their activities. Second, it can impair nurses' performance and reduce the quality of their health care (18); These unpleasant consequences can impose great costs on the country's health care system (6). Investigating the burnout status of nurses and identifying the factors affecting it is of great importance and helps specialists in developing and providing empowerment interventions during and after the COVID-19 epidemic. This study was performed on nurses during the COVID-19 epidemic, and its purpose was to investigate the level of burnout, anxiety, professional self-concept, and some demographic and occupational factors.

Materials and Methods

Participants

This cross-sectional online survey was performed on nurses in selected hospitals in Rasht. The sample size was calculated at 126 people based on the score of the Corona Disease Anxiety Scale (CDAS) in the study of Aziziaram and Basharpoor (10); the sample size was increased to 160 to prevent possible falls. Purposefully, two public hospitals, Poursina and Razi, which were the main centers for the hospitalization of patients with COVID-19 virus, were selected as the sampling unit, and 80 people from each of them were randomly selected based on the list of nurses. Conscious consent to participate in research, work experience for at least one year, and receiving the COVID-19 vaccine were the criteria for entering the research, and the lack of completion of at least 10% of the questions of each questionnaire was an exit criterion. Collecting data from April 25 to May 5th 2021, continued at the height of the fourth wave of the COVID-19. Considering the requirement of social distance and preventing non-important traffic to the hospital, research questionnaires that continue to explain them will be implemented online. The web page link is an informed consent form and questionnaires for nurses via SMS and requested them, if you have conscious consent, respond to questions in 15 minutes.

Measures

Demographic and occupational information questionnaire (DOIQ)

Some demographic and occupational data were collected with a researcher-made questionnaire: age, gender; marital status; the employment status of the working unit, employment history, and workplace hospital.

Maslach burnout inventory-human services survey (MBI-HSS)

MBI-HSS is a self-reporting tool developed by Maslach *et al*.; This tool has 22 items that are stored on the Likert scale of 6 factors from never=0 to every day=6. The instrument has three subscales of emotional exhaustion (EE), depersonalization (DP), and personal accomplishment (PA), and their total scores indicate the rate of burnout. The minimum and maximum scores in MBI-HSS are zero to 132; higher scores in EE and DP and lower scores in PA indicate higher burnout (19). In Iranian nurses, the validity of this instrument was confirmed by Exploratory factor analysis, and its internal consistency for EE, DP, and PA was calculated as α=.71, α=.73, and α=.75, respectively (20). The internal consistency was calculated for all three components EE, DP, and PA α=.62 in the present study.

Corona disease anxiety scale (CDAS)

CDAS was designed by Alipour *et al*., In Iran (21). It has 18 items and measures two subscales of psychological and physical symptoms of anxiety. This scale is scored based on the performance scale of four factors (never=0 to always=3), the minimum score is 0, the maximum is 54, and higher scores indicate more anxiety (21). The validity of this tool has been confirmed by Exploratory factor analysis, and its internal consistency has been reported as α=0.91 (21). The

internal consistency α=.93 was calculated in the present study.

Nurse self-concept questionnaire (NSCQ)

NSCQ is designed by Cowin to measure the professional nurses' self-concept. This tool has 6 subscales General Nursing, Care, Staff Relations, Communication, Knowledge, and Leadership (22). The Persian version of this tool has 36 questions, and based on the Likert spectrum, six factors are completely disagree=1 and completely agree=6, the minimum score in this questionnaire is 36, and the maximum score is 216. More scores represent a more professional self-concept. The content validity index of this questionnaire was reported, and its internal consistency was reported as α=0.91 (23). The internal consistency was calculated at α=0.97 in the present study.

Ethics

Participants in this research were aware of our goals and confirmed the form of informed consent form before completing the questionnaires. This study did not have any danger to participants, and they were volunteered and anonymous. All ethical principles of the declaration of Helsinki were respected by researchers at all stages of research. This Study Was Approved by the Ethics Committee of Guilan University of Medical Sciences, Iran (REF. NO. Ir.gums.rec.1400.033).

Statistics analysis

For quantitative variables, descriptive indices (mean, standard deviation, range, and median) were calculated. Qualitative variables were reported based on frequency and percentage. Kolmogorov-Smirnov test was performed to evaluate the normal distribution of the main variables MBI-HSS, CDAS, and NSCQ. Independent t-test, variance analysis, Mann-Whitney U, and Kruskal Wallis were used in order to compare the main variables' scores with demographic and occupational information of nurses. The Pearson correlation test was used to examine the relationships between the main variables. A stepwise multiple Linear regression test was used for the prediction of MBI-HSS in nurses based on the main variables and demographic information. All analyzes were performed in SPSS statistical software V.19 (IBM). The findings were reported according to Strengthening the Reporting of the Observational Studies in Epidemiology (24).

Results

Participation Rate in this study was 87.5% (n=140). The mean age of the participants was 32.56±7.26 years, with an average work experience of 8.26±5.95 years. All participants had a bachelor's degree. 91.4% of female participants. Most were married (53.6%). 57.1% of the participants (n=80) were contractual forces (contract and temporary). Most of them (n=67) were working simultaneously in the COVID and Non-COVID units (Table 1).

Table 1. Descriptive data on socio- demographic and occupational (n=140)

Item		n (%)	M(SD)	Range
Age			32.56 (7.26)	20-51
	< 35	91 (65)		
	> 35	48 (34)		
Years of work experience			8.15 (5.73)	1-20
	< 10	89 (63.6)		
	> 10	51 (36.4)		
Sex	**Female**	128 (91.4)		
	Male	12 (8.6)		
Marital status	**Married**	75 (53.6)		
	Single	65 (46.4)		
Employment type	**Permanent**	60 (42.9)		
	Contract and temporary	80 (57.1)		
Working Unit	**COVID**	31 (21.1)		
	COVID and Non- COVID	67 (47.9)		
	ICU	12 (8.6)		
	Non- COVID	30 (21.4)		
Hospital	**Poursina**	70 (50)		
	Razi	70 (50)		

Note: n=frequency; M=mean; SD=standard deviation; Z=Kolmogorov–Smirnov test; *P*=significance level

According to the results of Table 2, the rate of burnout is emotional exhaustion (EE) was 24.3%,

depersonalization (DP) was 32.1% and personal accomplishment (PA) was 60.7%, 21.4% of nurses had high anxiety, and 53.6% had low NSCQ.

Table 3 shows that the EE score was higher in nurses with less than ten years of experience (t=2.21; *P*=0.02,) and single individuals (t =-3.18; *P*=0.1). DP score in less than 35 years (t=3.20; *P*=0.01), less than ten years of work experience (t=4.34; *P*=0.01) and single people (t=-3.07; *P*=0.01) was more. Female had more burnout in PA (t =-2.43; *P*=0.01). CDAS score was higher in female (t = 3.20; *P*=0.02). NSCQ score was higher in married people (t=3.07; *P*=0.02).

Table 4 shows the correlation between EE, DP, and PA with CDAS and NSCQ scores. CDAS is positively correlated with EE and DP and negatively correlated with PA. NSCQ is negatively correlated with EE and DP and positively correlated with PA.

In multiple linear regression analysis for MBI-HSS, high CDAS in the first place and then being single, less than ten years of experience, and low NSCQ were effective, and in total, these variables were 0.45 EE, 0.32 DP, and 0.08 PA. Explained (Table 5).

Table 2. Levels of CDAS, MBI-HSS, and NSCQ scores (n=140)

Item	n (%)	M(SD)	Range	Median	Z(p)
MBI-HSS					
Emotional exhaustion (EE)		19.22(9.26)	0-41	19	.729 (.662)
High ≥27	34 (24.3)				
Moderate 19-26	38 (27.1)				
Low 0-18	68 (48.6)				
Depersonalization (DP)		7.30(6.15)	0-25	6	1.120 (.059)
High ≥10	45 (32.1)				
Moderate 6-9	30 (21.4)				
Low ≤5	65 (46.4)				
Personal accomplishment (PA)		32.62(4.66)	24-47	32	.885 (.413)
High ≤33	85 (60.7)				
Moderate 34-39	44 (31.4)				
Low ≥40	11 (7.9)				
CDAS		20.68(10.81)	0-49	19	1.229 (.098)
High ≥ 30	30(21.4)				
Moderate 17< 29	55(39.3)				
Low ≤ 16	55(39.3)				
NSCQ		161.05(32.10)	72-215	171	1.772 (.005)
High ≥170	26 (18.6)				
Moderate 141-169	39 (27.9)				
Low ≤140	75 (53.6)				

Note: n=frequency; M=mean; SD=standard deviation; Z = Kolmogorov–Smirnov test; p= significance level

Table 3. Mean differences in MBI-HSS, CDAS, and NSCQ scores by socio- demographic and occupational variables

Item		n (%)	EE		DP		PA		CDAS		NSCQ	
			M (SD)	t*/F** (p)	M (SD)	t*/F** (p)	M (SD)	t*/F** (p)	M (SD)	t*/F** (p)	M (SD)	U*/H** (p)
Age	**< 35**	91 (65)	20.13 (9.71)	1.77	8.25 (6.09)	3.208	32.26 (4.64)	.076	19.75 (10.79)	-1.444	158.70 (34.59)	-.970
	> 35	48 (34)	17.41 (7.97)	(.07*)	5.1 (5.64)	(.01*)	32.56 (4.79)	(.93*)	22.54 (10.82)	(.15*)	164.68 (26.52)	(.33*)
Years of work experience	**< 10**	89 (63.6)	20.51 (9.77)	2.21	8.91 (6)	4.340	32.55 (4.71)	-.236	19.70 (10.59)	-1.418	160.24 (34.01)	-.141
	> 10	51 (36.4)	16.96 (7.89)	(.02*)	4.49 (5.39)	(.01*)	32.74 (4.62)	(.81*)	22.39 (11.08)	(.15*)	162.45 (28.73)	(.88*)
Sex	**Female**	128 (91.4)	19.29	.314	7.17 (6.06)	-.804	32.33 (4.57)	-2.403	21.55 (10.52)	3.207	160.71 (31.54)	-.462
	Male	12 (8.6)	(9.20)	(.75*)	8.66 (7.15)	(.42*)	35.66 (4.83)	(.01*)	11.41 (9.76)	(.02*)	164.66 (38.99)	(.64*)
Marital status	**Married**	75 (53.6)	16.97 (8.46)	-3.184	5.85 (5.60)	-3.078	33.26 (4.86)	1.770	22.04 (11.44)	1.60	166.05 (28.58)	-3.071
	Single	65 (46.4)	21.81 (9.52)	(.01*)	8.96 (6.36)	(.01*)	31.87 (4.34)	(.07)	19.12 (9.89)	(.11*)	155.27 (35.08)	(.02*)

Cont. table 3

Employment type	**Permanent**	60 (42.9)	18.56 (8.52)	-.723 (.47*)	6.45 (5.92)	-1.421 (.15*)	31.80 (4.73)	-1.817 (.071*)	22.21 (11.12)	1.450 (.14*)	162.06 (29.75)	-.550 (.57*)
	Contract and temporary	80 (57.1)	19.71 (9.80)		7.93 (6.27)		33.23 (4.55)		19.53 (10.49)		160.28 (33.92)	
Working Unit	**COVID**	31 (21.1)	20.80 (9.90)	.989 (.40**)	7.90 (6.89)	.197 (.89**)	33.12 (4.31)	1.308 (.27**)	23.41 (13.15)	1.260 (.28**)	159.32 (36.70)	1.060 (.78**)
	COVID and Non-COVID	67 (47.9)	19.49 (10.05)		7.08 (6.64)		32.98 (4.54)		20.56 (10.41)		158.49 (33.06)	
	ICU	12 (8.6)	15.66 (6.31)		6.50 (3.98)		30.33 (5.17)		16.83 (6.88)		166.25 (22.57)	
	Non-COVID	30 (21.4)	18.40 (7.46)		7.46 (5.51)		32.20 (5.01)		19.66 (10.05)		166.46 (25.82)	
Hospital	**Poursina**	70 (50)	19.67 (9.15)	.573 (.56*)	8.12 (6.25)	1.772 (.07*)	32.25 (4.64)	-.923 (.35*)	19.87 (8.98)	-.890 (.37*)	158.40 (33.38)	-1.361 (.17*)
	Razi	70 (50)	18.77 (9.41)		6.38 (5.95)		32.98 (4.70)		21.50 (12.39)		163.70 (30.78)	

*Note: M=mean; SD=standard deviation; Y=years; *F=ANOVA; **t= Independent Samples Test; p= significance level; *H = Kruskal–Wallis test; **U = Mann–Whitney U test*

Table 4. Bivariate correlations between MBI-HSS, CDAS, and NSCQ

	EE	DP	PA
CDAS	.556 *P* < .001	.358 *P* < .001	-.216 *P*>.010
NSCQ	-.269 *P*<.001	-.273 *P*>. 001	.205 *P* < .015

Note: P=significance level

Table 5. Stepwise multiple linear regression for MBI-HSS

		B	Error t.	β	t	*P*	R^2	D
EE	**Constant**	4.307	3.366		1.289	.200		1.98
	CDAS	.521	.055	.613	9.501	<.001	.309	
	MS	5.489	1.291	.297	4.251	<.001	.433	
	YoWE	-2.807	1.333	-.147	-2.106	<.037	.451	
DP	**Constant**	15.607	2.725		5.727	<.001		2.14
	CDAS	.210	.041	.371	5.120	<.001	.127	
	YoWE	-4.981	.908	-.392	-5.484	<.001	.287	
	NSCQ	-.036	.014	-.188	-2.614	<.010	.322	
PA	**Constant**	37.280	1.486		25.093	<.001		1.92
	CDAS	-.103	.036	-.239	-2.886	<.005	.046	
	MS	-1.735	.777	-.185	-2.234	<.027	.080	

Note: D= Durbin-Watson; MS= Marital status; YoWE= Years of work experience

Discussion

The aim of this study was to evaluate burnout, anxiety, and professional self-concept in nurses during the COVID-19 epidemic. The results showed that the lowest rate of burnout of nurses was in EE (24%) and the highest rate was in PA (60.7%), and the rate of burnout in DP was 32.1%. In a similar study in Chinese nurses, the rate of burnout for EE, DP, and PA was reported to be 60.5%, 42.3%, and 60.6%, respectively (25), which is almost similar to the results of our study. The results indicate a high prevalence of burnout in nurses. During the COVID-19 epidemic, the number of hospitalized patients increased, followed by an increase in the number of nurses; Studies indicate that an increase in the number of patients admitted to the hospital is associated with burnout of nurses (26).

The results showed that the scores of most nurses in CDAS were low to moderate, and 21.4% had high anxiety; Which is inconsistent with the studies of Aziziaram and Basharpoor (10) and Asadi *et al*., (11); In fact, the nurses participating in these two studies reported more anxiety. In one possible explanation, the reduction of nurses 'anxiety can be attributed to the increase in nurses' knowledge and understanding of the COVID-19 as well as vaccination. Nurses at the beginning of the epidemic attributed one of their concerns to the unknowingness of the virus and the lack of a definitive

cure (27).

In the study, 53.6% had low NSCQ. Some studies have shown that low self-concept is a factor in reducing commitment. In fact, when people do not have a positive view of their profession, they are more likely to burn out and have a less organizational commitment (28-29). Professional self-concept is a moderating factor against stress and burnout (30); Therefore, one of the possible reasons for the high burnout of nurses can be attributed to their low self-esteem.

EE and DP scores were higher in individuals with less than ten years of work experience; Our results are inconsistent with the studies of Dimunová and Nagyová (31) and Ravari (32). As previous studies have shown, the longer the work experience, the greater the burnout. However, a study conducted during the COVID-19 epidemic showed that burnout was higher in younger nurses (8). One possible reason could be a greater association between singleness and burnout, which in our study confirmed the relationship between EE and DP and singleness; Studies by Mudallal *et al*., (33) and Ortega *et al*., (34) also showed that singleness is a risk factor for burnout in nurses. Because being married due to the existence of an emotional support network can play an effective role in modulating stress, based on this, it can be expected that environmental stresses have less effect and intensity in married people (35). Therefore, it is possible that low work experience due to its high coexistence with singleness has led to an increase in burnout scores.

Our results showed that females in PA had more burnout, Which is consistent with the study (36), but no significant difference was observed in the study (37). Overall, previous studies have shown that burnout is higher in females than males (38) and that being a female is a higher risk factor for burnout. Given that females have to play the role of mother and wife well at home and also play an active role in the workplace, they have more responsibility and work pressure on them and are more prone to burnout (36).

The results showed that anxiety scores were higher in females than males; The present result is consistent with the studies of Savitsky *et al*., (39) and Simonetti *et al*., (40). In contrast, Labrague *et al*., (41) and Mo *et al*., (42) did not observe a significant difference between males and females. Previous studies have shown that the rate of anxiety in females is almost twice that of males, and stress is a possible factor in increasing stress in females (14). Also, one possible reason for this increase in anxiety in females can be attributed to more of them; More than 90% of the participants in this study were them.

In this study, we found that married people have a higher self-concept; Kelly and Courts (14) and Arthur (43) reported similar results. Another study showed that the lower the self-concept, the less likely a person is to get married (44). In fact, it can be understood that one of the reasons for staying single is the low self-concept that can manifest its profession even in more specific areas.

In this study, we found that anxiety is positively associated with burnout, which is consistent with the results of previous studies (8,5). Burnout is a consequence of nurses' long-term exposure to job stress; during the COVID-19 epidemic, due to high morbidity and mortality and exhausting work shifts, the rate of burnout in nurses has intensified (8). In this study, it was found that burnout is inversely related to self-concept; this result is consistent with previous studies (17,16). Our results and previous studies confirm that strengthening the level of professional self-concept can reduce the incidence of burnout in nurses. In fact, professional self-concept has an effective role in nurses' efficiency by strengthening the sense of competence and success in the specialized field.

In this study, we found that high anxiety, celibacy, less than ten years of work experience, and low professional self-concept have an effective role in nursing burnout, respectively. As mentioned earlier, the long-term experience of stress in the workplace is the most important risk factor in predicting nursing burnout, which peaked during the COVID-19 epidemic. Also, being married due to an emotional relationship can play a moderating role in the face of job stress. Low work experience can be explained by its high coexistence with celibacy, but in one possible hypothesis, it can be attributed to low experience in the face of stressful situations; In other words, the more experienced nurses are at work, the more resilient they can be in stressful situations such as the COVID-19 epidemic, resulting in less burnout; This hypothesis should be considered by researchers in future studies. Regarding the importance of professional self-concept, it can be said that the more nurses have a better understanding and attitude towards their profession, the more they persevere in stressful situations and the less they suffer from burnout.

Overall, the results of this study showed that increasing anxiety and decreasing professional self-concept are associated with burnout in nurses. But in explaining burnout, the role of demographic and occupational factors should also be considered. The sample of the present study had several special characteristics (young age, female, bachelor's degree, and corona vaccine injection) that make it difficult for other nurses to generalize the results. The findings of the

present study suggest the need for intervention programs to reduce anxiety and improve professional self-concept in order to prevent burnout of nurses due to demographic and occupational variables.

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