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Original Article

Study of the Effect of COVID-19 on Nurses' Job Burnout and its Consequences

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Abstract

Background: During the COVID-19 pandemic, nurses experience a high workload and stressful psychological stimuli that affect their mental and emotional health, which may lead to burnout symptoms. Therefore, this study aimed to analyze the effect of COVID-19 on nurses' job burnout and investigate its consequences.

Methods: The present study is an applied descriptive study, and data collection was performed using surveys. The study was conducted on 107 nurses working in Shahid Mohammadi and Khalij-e-Fars hospitals of Bandar Abbas, Hormozgan. The level of job burnout was measured using the Oldenburg Burnout Inventory (OLBI), job satisfaction by Job Satisfaction Questionnaire, and depression by Beck Depression Inventory (BDI). The data were analyzed via structural equation modeling by PLS 3 software.

Results: Overall, the mean job burnout level was higher than the average (3.45). The results, at the 95% confidence level and the significance value of > 1.96, showed that poor organizational resources and traumatic events have a direct and significant effect on nurses' job burnout; however, the impact of workload on job burnout was not confirmed. The results also showed that nurses' job burnout has a direct and significant relevance with depression, job dissatisfaction, and low quality of care.

Conclusion: Poor organizational resources and traumatic events increased job burnout. Job burnout increased depression, and also reduced job satisfaction and quality of care. Situational and personal factors have a significant role in decreasing nurses' job burnout. It is necessary to provide a better work environment, good intrapersonal relationships, and personal skills training courses.

Keywords: Job burnout, COVID-19, Job stress, Nurses

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Introduction

COVID-19 evoked the nurses to have a vital role in controlling the virus. In spite of different attempts to control pandemics by health officials worldwide, the number of affected cases is increasing significantly and has weakened the health system of various countries (1). Health systems face challenges such as increasing demand for the care of COVID-19 patients, fear, false information, and constraints that interfere with the process of giving health services in all circumstances. COVID-19 has led to a unique series of stressful factors and mental challenges associated with psychological damage to the healthcare workforce. These challenges include unreliability in case of spread, the duration and effects of this crisis, concerns about the provision level of the private sector and public healthcare organizations, unavailability of sufficient personal protective equipment, the potential threats to personal health (2), inappropriate work conditions, and time shortage to fulfil the patients' requirements (3,4). Nurses are under considerable pressure from the stressful and limited-resource (5) healthcare system; such conditions cause them to experience stress far beyond their coping capacities (4). Severe job stress has a negative effect on health and rehabilitation when nurses try to deal with the exposure to increasing job demands as well as the limited-resource setting (6).

Wu et al also showed that doctors and nurses who work in COVID-19-related departments experience more burnout compared to those who work in other parts of hospitals (7). This is due to the stress of contracting COVID-19, heavy workload, lack of sleep and social psychological support (8), wearing heavy protective clothing, and most importantly, being away from family and the thought of contaminating their family members (9), and also direct communication with patients during the outbreak of COVID-19 (10,11). Since nurses are exposed to various diseases, traumatic events, and emergency conditions, they do not have enough time

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to rehabilitate themselves and bear different strains. Burnout is a result of long-term exposure to special job demands, and it is accounted as a reaction indicating that the person is not able to withstand his/her stress.

Previous studies have listed two categories (personal and organizational) of consequences for burnout during the outbreak of COVID-19, which are related to each other. The most important consequences are depression (12,13), decreased job satisfaction, and reduced quality of care (11,14). Considering the unpredictable nature of the COVID-19 pandemic and in order to reduce the effects of a long period of COVID-19 spread and to establish sustainable infectious disease control systems, it is necessary to identify the factors that affect the mental anxiety of medical staff (15). Previous research indicates high exhaustion levels and job burnout burden among the investigated cases. In comparison with nurses working in other departments, nurses exposed to COVID-19 show a higher degree of exhaustion and job burnout (16). Another descriptive study reported that nurses whose health is one of their organizations' priorities are more likely (three to nine times) to face less or no physical and mental health matters, stress, job burnout, and higher life quality compared to those who have less or no support in their work settings. Also, working longer shifts showed lower physical health in nurses. These findings suggest that supporting health in the work setting and working in shorter shifts positively affect physical and psychological health and lead to a higher quality of professional life during COVID-19 (17). Farì et al found that during the COVID-19, women face depression, anxiety, and stress more than men. Therefore, it is necessary to assure the psychological health level of healthcare staff to obtain the desirable work standards and to increase response and efficiency of the healthcare system when needed, especially during outbreaks (18). Findings of a cross-sectional study in Poland indicated that job burnout occurs multilaterally (emotional exhaustion, depersonalization disorder, job satisfaction) among nurses and surgeons. Also, it is approved that the working life areas (workload, control, society, rewards, equity, and values) are the predictable factors for job burnout among the respondents. This study demonstrated that job burnout is notable among surgical ward staff; therefore, it may help them identify this condition and encourage them to make changes to prevent it (19).

For the time being, most of the conducted studies on COVID-19 focus on epidemiologic research, prevention, control, identification, and treatment. Also, the number of studies analyzing the problems associated with the emotional health of nursing staff is increasing. Therefore, the psychological outcomes of burnout among nurses who provide care during the COVID-19 pandemic become an important issue that needs to be addressed (20). Real-world evidence about the relationship between job burnout, job satisfaction, depression, and care quality can enlighten the discussions and improve the quality of nursing services. Based on the above discussions, this study aimed to analyze the effect of COVID-19 on nurses' job burnout and investigate its consequences.

Methods

This is an applied descriptive study, and data collection was performed using surveys. The statistical population of the study consisted of 180 nurses working in the wards assigned to COVID-19 in the Shahid Mohammadi and Khalij-e-Fars hospitals of Bandar Abbas, Iran. These hospitals had the most nursing services for COVID-19 patients. Based on Krejcie and Morgan's table, a sample size consisting of 118 people was selected using the convenience sampling method. After removing incomplete questionnaires, 107 complete questionnaires were analyzed.

For gathering data, Oldenburg Burnout Inventory (OLBI), Minnesota Job Satisfaction Questionnaire (MSQ), and Beck Depression Inventory (BDI) were used. Demerouti et al (21) developed OLBI. To put the study in the frame of job burnout associated only with COVID-19, the phrase "resulted from COVID-19" was added to each item. The inventory consisted of two subsets: "emotional exhaustion" and "job leaving" with 16 items. The response to each item was evaluated using the five-point Likert Scale from 1 (totally disagree) to 5 (totally agree); a high score indicated a high level of job burnout. In the Minnesota questionnaire, three questions were used to evaluate job satisfaction. Question ranking was done by a five-point Likert scale from 1 (totally disagree) to 5 (totally agree) (22). Also, BDI was used to facilitate fast execution in clinical and research situations, which included 13 items corresponding to certain depression symptoms. The reliability and validity of this inventory are satisfying, hence it can be used as a tool for the stable and valid evaluation of depression (23). In this research, to evaluate depression, nine BDI questions were applied. Instruments' reliability was calculated using Cronbach's alpha and composite reliability (CR). To assess validity, convergent and discriminant validity were used.

Gathering data was done through the online questionnaire on Porsline website. The questionnaire link was sent to nursing managers of the hospitals through a social network; eventually, it was sent to the nursing groups. For data analysis, structural equation modeling and SPSS and PLS 3 software packages were used. To test the relationships between the variables, Smart PLS 3 software was used in three steps: (a) assessing the measurement model by calculating reliability and reliability, (b) assessing the structure model by assessing the significance of the factor loads via the boostrapping (BT) method, and (c) assessing the model overall fit. To assess the quality of the model, the Goodness of Fit

(GOF) test was used. More details on each step and assessing criteria with the software output are mentioned in the following sections.

Results

Sample Description

The demographic characteristics include gender, marital status, age, education level, and work experience which are given in Table 1.

The mean scores of independent variables were scored higher than the average (poor organizational resources = 3.12, traumatic events = 4.38, workload = 3.82); these results, according to the report of surveyed participants, indicate the unfavorable condition of the surveyed hospitals in this regard. Meanwhile, traumatic events have a more unfavorable situation compared to other variables. This has caused job burnout to score higher than the average (3.45). As a result, decreases in the quality of care (with an average score of 3.42), occupational depression (with an average score of 3.19), and mean job dissatisfaction were observed. In the meantime, dissatisfaction has a relatively better situation.

Hypotheses test

The procedure to test the relationships between the variables is the following:

First step: assessing the measurement model

At first, the reliability and validity of the measurement model were assessed (Table 2).

Reliability: The reliability is approved since $\alpha > 0.7$ and CR > 0.7. The representatives have enough reliability too. Table 2 represents the results.

Validity of the model: Tables 3 and 4 represent the results.

To assess the convergent validity, the average variance extraction (AVE) was used (Table 3).

The validity of all structures was > 0.5, so all of them have convergent validity. When the square root of the AVE (colored chambers) is greater than the highest correlation of each structure with the other internal ones, the convergent validity is indicated (as observed in Table 3). Therefore, the convergent validity of the measurement models is also approved.

Table 1. Sample demographic characteristics

	Level	Percent
Gender	Female	93.5
	Male	6.5
Marital status	Single	28
	Married	72
Age	>30	33.66
	30-40	47.66
	41-50	14.95
	51-60	3.73
Work experience	>5	28.97
	5-10	15.88
	11-15	31.77

Discriminant validity: Fornell- Larcker's benchmark

After confirming the reliability and validity of the measurement models, the significance of the factor loadings is assessed by the BT method in order to obtain the t-value (Table 5). As observed, all of them are significant (t > 1.96). Hence, with 95% assurance, it can be stated that there is a significant relationship between all of the considered parameters with correspondent implicit variables.

The second step: Assessing the structure model

After assessing the measurement models with the aid of validity and reliability values, the significance of the factor loads was assessed using the BT method in order to obtain the statistical values of *t* (Table 6).

Based on the obtained results, the relationship between the model constructs is significant except for the one between workload and job burnout (Figure 1). So, the workload structure is eliminated because the correspondent structural path is not significant. Then, according to the modified model, the relationship between the model constructs is reassessed.

Modified model

To improve the research model, a path lacking a significant ratio can be deleted which is shown in Table 6. Since the workload effect on job burnout is not meaningful, it is deleted in order to conduct the BT method for this structure.

The final chart of the modified model is given in Figure 2.

Based on Table 7, the significance values of each path are > 1.96. So, the related hypothesis of each path is 95% approved.

Now, it can be concluded that 5 out of 6 main hypotheses are approved except one.

The third step: Assessing the model's overall fit

To assess the quality of the model, GOF is used and its calculations are given in the following formula.

$$GOF = \sqrt{\overline{AVE} * \overline{R^2}} = \sqrt{0.715 * 0.3275} = 0.4839$$

According to Wetzel et al, the values of 0.1, 0.25, and 0.36 represent small, average, and large amounts of GOF, respectively (Wetzels, Odekerken-Schroder & Van Oppen, 2009). The GOF-value for the model is > 0.36, so it can be concluded that the designed structural model has a desirable performance in this research (24).

Table 2. Reliability of the model variables and representatives

Construct Reliability Indicators		
0.7 < CR	**0.7 < α**	**Construct**
0.88	0.81	Workload
0.9	0.84	Poor organizational resource
0.88	0.73	Traumatic events
0.95	0.95	Job burnout
0.91	0.86	Job dissatisfaction
0.91	0.81	Decreased quality of care
0.93	0.91	Depression
Indicator Reliability > 0.6		
Factor loading	**Question No.**	**Construct**
0.89	1	Poor organizational resource
0.92	2	
0.78	3	
0.94	4	Traumatic events
0.83	5	
0.86	6	Workload
0.73	7	
0.90	8	
0.71	9	
0.91	10	Decreased quality of care
0.93	11	
0.72	12	Job burnout
0.85	13	
0.84	14	
0.70	15	
0.77	16	
0.70	17	
0.70	18	
0.71	19	
0.70	20	
0.74	21	Job burnout
0.78	22	
0.84	23	
0.65	24	
0.64	25	
0.83	26	
0.72	27	
0.89	28	Job dissatisfaction
0.89	29	
0.87	30	
0.71	31	Depression
0.78	32	
0.74	33	
0.82	34	
0.73	35	
0.77	36	
0.75	37	
0.83	38	
0.72	39	

Table 3. Convergent validity

Construct	0.5 <AVE
Workload	0.65
Poor organizational resource	0.75
Traumatic events	0.78
Job burnout	0.56
Job dissatisfaction	0.78
Decreased quality of care	0.84
Depression	0.58

Discussion

This study was conducted to analyze the effect of COVID-19 on nurses' job burnout and its consequences. The research findings correspond with previous research. In their research, Galanis et al, indicated that the effective main factors of job burnout for nurses are: lower age, insufficient social support, low readiness of family and colleagues to fight against COVID-19, the recognized rising threat of COVID-19, longer working hours in the quarantine divisions, working in high-risk environments, working in hospitals with insufficient materials and human sources, workload increase, and low level of professional education in case of COVID-19 (25). Their findings correspond with the findings of our study regarding traumatic events and poor organizational resources. It is approved by Jang et al that the highly challenging work environments infected with COVID-19 can increase the mental health matters of the nursing staff. Heavy workload exacerbates the staff's job burnout and can threaten their psychological health (15). The mentioned findings correspond with the ones in the traumatic events in our study, although there was no significant relationship between workload and job burnout. Algunmeeyn et al demonstrated that the main identified factors for job burnout in healthcare staff include job stress, staff and resources deficiency, fear of being infected with COVID-19, and professional relationships in the healthcare efforts (26), which are correspondent with our findings of traumatic events and shortages. Kabunga and Okalo found that nurses with more workload experienced more job burnout than those with less workload. The nurses' workload is automatically increased due to the increased number of COVID-19 cases. As a result of the extra workload, nurses had no time to rest or rehab which led to job burnout (27). However, our study's results reject the hypothesis of the relationship between workload and job burnout; this finding can be interpreted using the effort-reward imbalance model, which is one of the most important models related to the impact of work environment characteristics on employee burnout. This model is rooted in medical sociology and emphasizes both structures of effort and reward. It expresses the meaning of interactive social relationships and claims that a job with attributes of many efforts and

Table 4. Discriminant validity

Depression	Decreased quality of care	Job dissatisfaction	Job burnout	Traumatic events	Poor Organizational resource	Work load	Construct
						0.8	Workload
					0.87	0.15	Poor organizational resource
				0.88	0.15	0.52	Traumatic events
			0.75	0.32	0.54	0.27	Job burnout
		0.88	-0.61	-0.17	-0.55	-0.17	Job dissatisfaction
	0.92	-0.40	0.33	0.42	0.36	0.44	Decreased quality of care
0.76	0.18	-0.45	0.69	0.28	0.37	0.25	Depression

Table 5. Significance of the observable variables in assessing the correspondent latent variables

T-values	Question	T-values	Question	T-values	Question
15.26	Q27	24.40	Q14	30.23	Q1
33.49	Q28	7.5	Q15	57.84	Q2
40.35	Q29	19.99	Q16	11.61	Q3
26.58	Q30	11.65	Q17	22.57	Q4
12.44	Q31	12.54	Q18	8.69	Q5
16.89	Q32	14.31	Q19	12.45	Q6
10.43	Q33	10.36	Q20	7.38	Q7
25.33	Q34	14.83	Q21	18.12	Q8
10.81	Q35	17.51	Q22	7.01	Q9
16.57	Q36	22.85	Q23	22.48	Q10
14.30	Q37	11.82	Q24	13.89	Q11
28.99	Q38	9.49	Q25	13.66	Q12
16.81	Q39	21.64	Q26	32.09	Q13

Table 6. Relationships between the research constructs and their significance

Paths	*P* values	Interpretation
Poor Organizational Resource→ Job Burnout	5.78	Significant
Traumatic Events→ Job Burnout	2.55	Significant
Work load→ Job Burnout	0.93	Non- Significant
Job Burnout → Job Dissatisfaction	7.91	Significant
Job Burnout → Decreased Quality of Care	2.73	Significant
Job Burnout → Depression	9.99	Significant

low rewards has a mutual deficiency of input-outcome. This imbalance evokes stable and long-term reactions (28). According to this model, situational and personal factors can affect the relationship between workload and job burnout.

With respect to the situational factors, different studies show that in work environments with reward-effort imbalance, it is more probable that people suffer from cardiovascular diseases; on the other hand, rewards like money, job promotion, self-esteem, and respect can make the work setting pleasant. According to the effort-reward imbalance model, staff efforts such as overtime work, tension, and response to the increasing job demands should be answered appropriately by creating a better

Table 7. Test results of the modified model

Paths	*P* value	Interpretation
Poor Organizational Resources→ Job Burnout	6.47	Significant
Traumatic Events→ Job Burnout	3.23	Significant
Job Burnout → Job dissatisfaction	8.21	Significant
Job Burnout → Decreased Quality of Care	2.83	Significant
Job Burnout → Depression	9.86	Significant

work environment by paying money, respect, employee appreciation, and job security (28). It can be concluded that the supportive organizational conditions and work settings for the nurses (personnel support, manager support) in these hospitals are not so undesirable, and so, the high workload had no influence on their job burnout. Furthermore, it can be noted that one of the probable factors in rejecting the association between workload and job burnout can be the good intrapersonal relationships among the nurses of the aforementioned hospitals.

Another explanation is related to the personal and situational factors that affect job burnout. Different psychological attributes play an important role in raising or decreasing psychological challenges. Some research indicated that in the cases of health-related manners, lifestyle modification, decreasing physical and psychological pressures, and being optimistic and positive have a great influence on dealing with psychological pressure and overcoming life failures (27). Furthermore, the research findings also approved that training nurses in personal skills like positive thinking and abilities such as courage, optimism, intrapersonal relationship, morality, and hope can decrease their job burnout (29). The expressed factors should be analyzed in future studies.

Bellanti et al found that most nurses faced job burnout during the first period of COVID-19. Job burnout in nurses is not just associated with demographic features or job factors like working in the infected settings with COVID-19 or direct contact with the infected patients; it is also associated with emotional support, consideration of leaving their job, workload, and stress, that corresponds with job dissatisfaction results in our study.

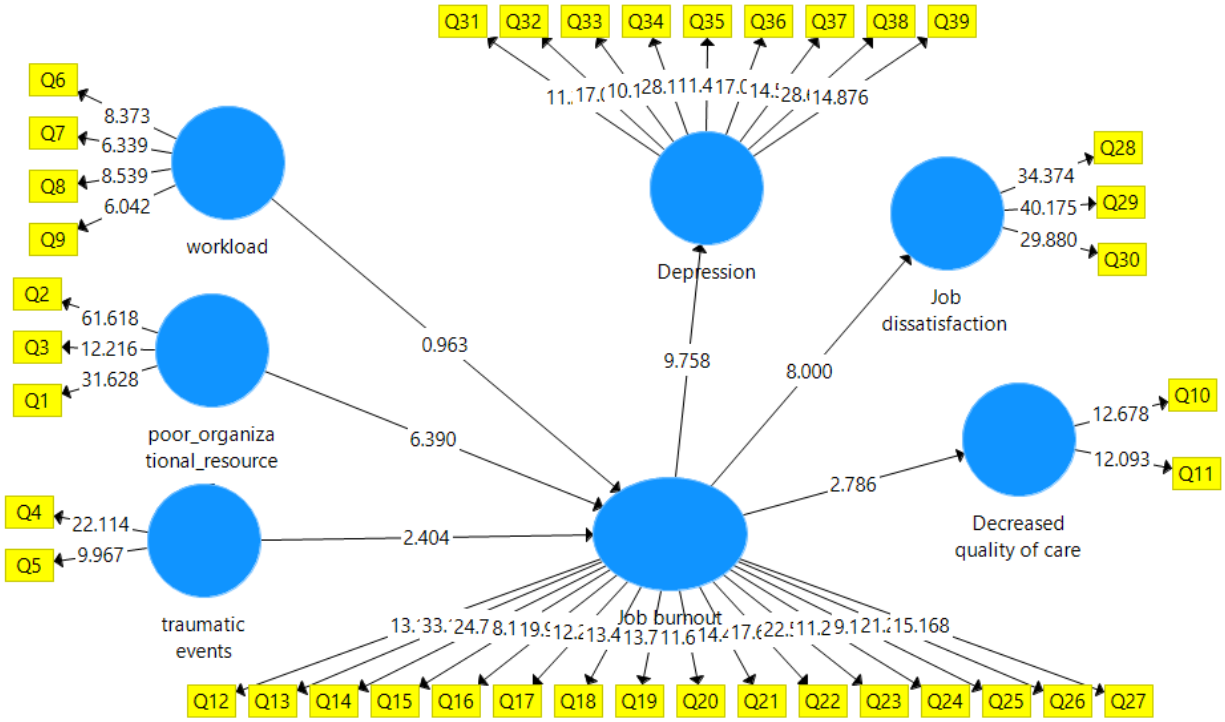

Figure 1. Research estimated model with the path ratios

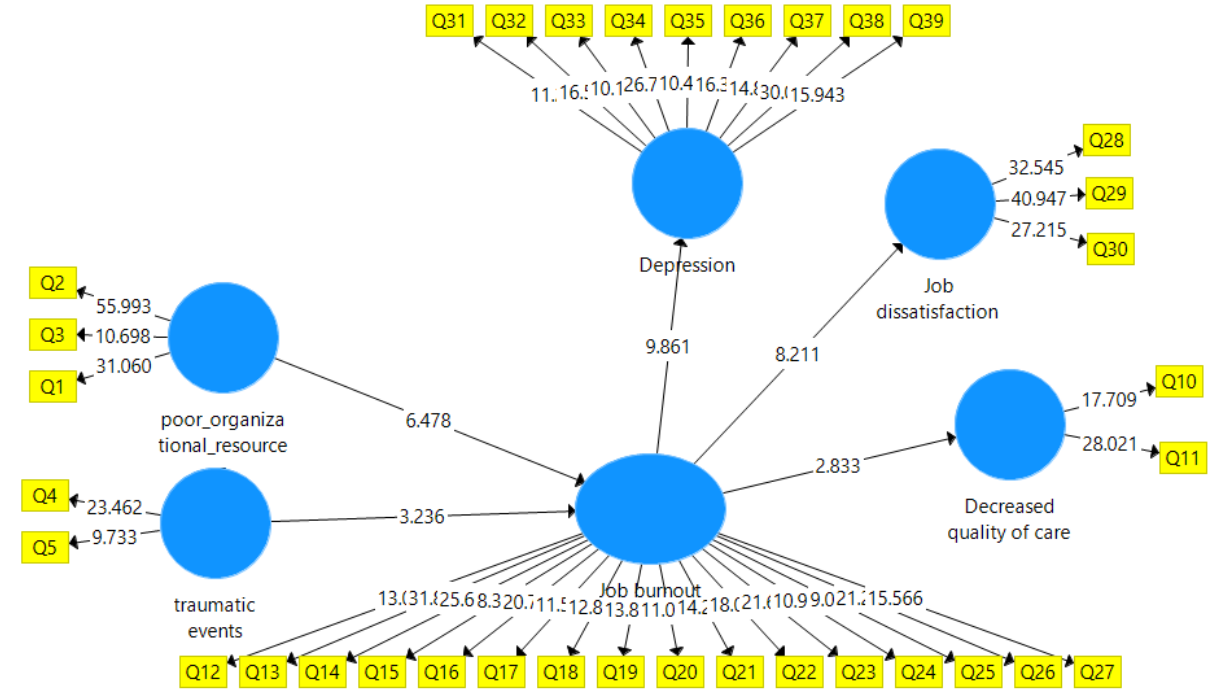

Figure 2. the modified research model

However, in the present study, workload increase is associated with job burnout, which does not correspond with the previous research findings (30). According to Bruyneel et al, during the first period of COVID-19, there was a high spread of job burnout observed among the nurses working in ICU wards (68%) in Belgium. The most negative effect of job burnout was emotional exhaustion, followed by a decrease in personal success and depersonalization. Also, some factors increase the risk of job burnout, such as low nurse-to-patient ratio, heavy workload, the high mortality rate of COVID-19 patients, and lack of personal protection and equipment against COVID-19 (31), which correspond with the results of this study. In line with a study conducted by Ahmadi et al (32), our findings show that psychological effects caused by COVID-19, such as job burnout, cause

some behavioral abnormalities in people, like depression.

Conclusion

Based on the research findings, it can be mentioned that there is a significant association between poor organizational resources, traumatic events, and job burnout. Job burnout evokes increases in job satisfaction and care quality and an increase in depression. Our findings also reject the hypothesis of the relationship between workload and job burnout. These data can show the impacts of situational and personal factors. Based on the above-said results, the structural model is designed appropriately.

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Authors' Contribution

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Validation: Vahid Makizadeh, Maryam Nekooeezadeh.
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Writing – review & editing: Vahid Makizadeh, Maryam Nekooeezadeh, Ellahe Shahabi.

Competing Interests

The authors declare that they have no conflict of interest.

Disclaimer

The views and opinions expressed in this paper are those of the authors. They do not purport to reflect the opinions or views of the Hormozgan University of Medical Sciences or its departments.

Ethical Approval

This study was approved by the Ethics committee of the Hormozgan University of Medical Sciences (Date: August 26, 2020, ID: IR.HUMS.REC.1399.298). Informed consent to participate in the study was obtained without any pressure, voluntary participation in the project was guaranteed, and respondents were provided with anonymity and confidentiality.

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