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Relationship between quality of work-life, resilience and burnout among nursing professionals during COVID-19 pandemic in Iran: A cross-sectional study

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Abstract

Background: The COVID-19 pandemic and the increased workload and stress associated with the disease prevalence have posed a high risk of burnout to nurses. The effects of the workplace and environmental factors on resilience and burnout among nursing professionals have not been investigated in Iran.

Objective: Present study aimed to assess a model linking quality of work-life to the resilience and various dimensions of burnout among Iranian nursing professionals based on the health service workplace environmental resilience model.

Methods: This was a cross-sectional study performed on 202 Iranian nurses employed in three educational hospitals. Maslach burnout inventory, Brooks' quality of nursing work-life survey, and an abbreviated version of the Connor-Davidson resilience scale were used to collect data. The correlation between the study variables was assessed by conducting path analysis in AMOS 22.

Results: The final model demonstrated adequate fit. The quality of working life indirectly affected burnout via a direct impact on nursing professionals' resilience ($p < 0.001$, $\beta = 0.39$). In addition, resilience had negative, significant effects on all the dimensions of job burnout. The quality of work-life also had negative and significant effects on emotional exhaustion ($p < 0.001$, $\beta = -0.38$) and reduced personal accomplishment ($p < 0.001$, $\beta = -0.38$).

Conclusion: Resilience and quality of work-life are protective variables against burnout in nursing professionals. Nursing managers can increase resilience and decrease burnout among nursing professionals by adopting policies that can improve the quality of work life.

Keywords

COVID-19; burnout; resilience; quality of work-life; nursing staff; hospitals; Iran

With the spread of the coronavirus (COVID-19) on 9 May 2020 globally, the health sectors of all countries have suffered extreme psychological and physical pressures. The challenges faced by the health sector staff are not only limited to increased workload; they frequently experience issues such as the fear of infection and disease transmission to their families, dealing with the new treatment protocols that are constantly changing, lack of personal protective equipment, care of patients with severe

diseases whose condition deteriorates momentarily, and care of the co-workers diagnosed with the COVID-19 (Ho et al., 2020; Permarupan et al., 2020). In addition, the continuation of the current pandemic may increase the risk of burnout among the nurses on the frontline in fighting against the disease worldwide (Yildirim & Solmaz, 2020; Marzilli, 2021).

Burnout occurs when the individual is chronically exposed to excessive occupational stress beyond their

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adaptability level (Maslach et al., 2001). In research performed by Giusti et al. (2020) in Italy during the coronaviruses pandemic, 35.7% and 31.9% of healthcare employees had moderate and severe emotional exhaustion, respectively. In addition, 40.1% and 34.3% of the subjects had moderate and severe levels of decreased work performance, respectively (Giusti et al., 2020). Burnout is a significant cause of increased turnover intentions and reduced job satisfaction in nurses (Permarupan et al., 2020; Yildirim & Solmaz, 2020).

On the other hand, during the current global crisis, resilience could remarkably decrease stress and burnout potentially (Connor, 2006; Yildirim & Solmaz, 2020). Previous research has shown that professional protective factors like positive attitude toward the job and intimate relationships with colleagues can influence resilience at work (Cam & Büyükbayram, 2017). It is also shown that nurses are encouraged to engage in high-resilience activities without regard for the workplace and environmental factors. However, resilience-enhancing activities will not be effective if environmental factors in the workplace are not taken into account (Zhang et al., 2021). In addition, Quality of Work-Life (QWL) is one of the variables recently considered in burnout research (Jo et al., 2021).

In our study, the theoretical model (Figure 1) was designed based on the Health Service Workplace Environmental Resilience Model (HSWERM). According to HSWERM, a supportive and developmental workplace empowers nursing professionals and enables them to withstand workplace pressures that contribute to their psychological resilience (Zhang et al., 2021). In other words, the perception of high-quality work-life can build and maintain resilience in nursing professionals and have major potential to increase workplace outcomes like patient safety, quality of care, job satisfaction, and decrease job burnout.

QWL is the main requirement for the empowerment and performance of nursing professionals in healthcare systems (Dehghan Nayeri et al., 2011; Hemsworth et al., 2020). Lack of opportunities for professional advancement, inadequate salaries, poor communication with colleagues, and an unsuitable work environment are the main reasons for poor QWL in nursing (Hemsworth et al., 2020). In addition, studies have shown that low QWL has been related to extremely high levels of turnover and mental workload, which also leads to the significant reduction of performance and quality of care (Brooks & Anderson, 2005). Most researchers consider the quality of work-life to be the attitude and perception of individuals towards work, organization, and employers (Vagharseyyedin et al., 2011).

In addition, the literature review results showed that the effect of quality of work-life on resilience in nursing had not been studied so far. Early resilience researches focused on personal characteristics, but recent studies have emphasized the quality of work-life and support systems to promote resilience (Hietapakka et al., 2013). A supportive work environment and culture can moderate stressors and

increase the adaptability of nurses in stressful conditions (Jose et al., 2020). According to Ghimbulut and Opre (2013), resilience is the capacity of the individual to have psychological health in dire situations from society's perspective. However, given the challenges faced by nurses daily (e.g., care of patients on the verge of death or with severe illnesses, labor shortage, and emotional exhaustion) and for the healthcare sector to have a healthy workforce, more attention should be paid to the concept of resilience (Turner, 2014).

In Iran, from 3 January 2020 to 23 September 2021, there have been 5,477,229 confirmed cases of COVID-19 with 118,191 deaths (World Health Organization [WHO], 2021). Iranian nurses are still more exposed to burnout than ever due to the slow pace of public vaccination, the high prevalence of disease and mortality, the lack of health care workers and resources, and the high level of physical and mental workload (Afshari et al., 2021). Studies conducted in Iran during the outbreak of COVID-19 among Iranian nurses have shown that burnout in nurses is associated with reduced quality of care and increased rates of medication errors (Kakemam et al., 2021). Ariapooran et al. (2021) showed that 51% of Iranian nurses suffer from secondary traumatic stress during COVID-19. Increasing the number of stressors and mental and physical workload of nurses can reduce the quality of work-life of nurses. In addition, a study conducted before the outbreak of COVID-19 in Iran showed that two-thirds of Iranian nurses do not have a good quality of working life (Nikeghbal et al., 2021). However, the literature review results showed that few studies had examined the nurse's quality of work-life during the outbreak of COVID-19. According to the HSWERM, it seems that by improving the quality of nurses' working life, it is possible to improve resilience and reduce nurses' burnout. However, the literature review results showed that so far, no study evaluating this model has been found in the Iranian nursing population, especially in critical conditions.

Therefore, considering the issues mentioned above and theoretical assumptions of HSWERM, the current study intended to assess the association between QWL, resilience, and various dimensions of burnout in Iranian nurses using path analysis (Figure 1). The research hypotheses were as follows: **H1:** QWL has a direct and positive correlation with resilience in nursing professionals, and **H2:** There are significant and reverse correlations between resilience and various dimensions of job burnout among nursing professionals.



Figure 1 Theoretical Model

Methods

Study Design

This cross-sectional study intended to evaluate a hypothetical model linking QWL, resilience, and burnout in nursing professionals based on theoretical assumptions of the health service workplace environmental resilience model (HSWERM).

Participants

The research population consisted of the nurses working in the three instructional hospitals affiliated with one of the clinical universities in Tehran, Iran. The required sample size for model testing is calculated by parameter estimation. It is suggested to include 5 to 20 observations for each parameter (Kline, 2015). Based on having 11 parameters in the study model, 220 subjects were enrolled in the current research. The inclusion criteria were: 1) having at least one year of work experience; 2) bachelor's degree in nursing or higher.

A total of 202 questionnaires completed by the nurses were returned (response rate was 92%). Participants were selected using multistage sampling from three hospitals in Tehran, Iran, from 1 May 2020 -14 June 2020. All selected hospitals were referral centers for patients with COVID-19, and all participants were either caring for patients with COVID-19 or had cared for them in the past month. The nurses were randomly selected via proportional sampling based on the inclusion criteria. To this end, a quota was allocated to each hospital and its units based on the number of nurses in each hospital and the total sample size. According to the allocated quota, the research samples in each unit were selected via convenience sampling.

Instruments

Resilience

Resilience refers to the process, capacity, or result of a successful coping despite challenging or threatening conditions (Masten et al., 1990). In the present study, resilience was measured by the abbreviated scale version of Connor and Davidson (2003) and by ten questions. The initial version of the questionnaire has 25 items. Campbell Sills and Stein (2007) normalized the scale by selecting 10 out of 25 items and testing the tool on 511 individuals. The construct validity of the new resilience scale was determined to be within the range of 44-93% based on confirmatory factor analysis, which indicated the acceptable construct validity of the scale. Keyhani et al. (2015) translated the 10-item Connor-Davidson resilience scale into Persian and confirmed its validity and reliability in the Iranian population. The content validity index and Cronbach's alpha measured were 0.84 and 0.67, respectively. The scoring of the questionnaire was based on the Likert scale (Never = 0, Almost Always = 4); the higher scores indicated the higher resilience of the nurses. In the current study, the internal consistency of the scale was confirmed by Cronbach's alpha of 0.84.

Burnout

Burnout is a psychological disorder incorporating emotional exhaustion (a feeling of physical and mental emptiness caused by occupational stress, which makes work boring and meaningless), depersonalization (negative and hard-hearted response, emotionlessness, and excessive indifference to clients), and a sense of diminished personal accomplishment (understanding that individual's performance is not associated with success) (Malach-Pines, 2000; Duarte & Pinto-Gouveia, 2017).

Burnout in this study was measured using Maslach and Jackson (1981) with 22 questions and in three dimensions (emotional exhaustion, depersonalization, and diminished personal accomplishment). The scoring of the questionnaire was based on a seven-point Likert scale (Never = 0, Very High = 6); the higher scores indicated the higher burnout of the nurses. The scores in this questionnaire range from 0 - 132 divided by the number of questions (i.e., 22), resulting in a score of 0-6. Also, further to the total burnout score, which is obtained through the total score of the dimensions, the score of each dimension is reported separately as well. The tool is specifically used for the assessment and prevention of job burnout in professional groups, such as nurses and teachers (Maslach et al., 2001). Moalemi et al. (2018) translated the MBI into Persian and reported the content validity index and Cronbach's alpha of 0.91 and 0.88, respectively. In this study, the Cronbach's alpha coefficient of this tool was 0.91.

QWL

QWL is defined as the ability of employees to satisfy their important personal needs while also achieving the goals of the organization (Brooks & Anderson, 2005; Brooks et al., 2007). In this study, QWL was measured by the Brooks' quality of nursing work life survey with 40 phrases and four subscales to evaluate the QWL of nurses, including work-life/home life, work plan, work area, and work world. The internal reliability of the tool was estimated to be 0.56-0.88 (Brooks et al., 2007). The scoring of the questionnaire was based on a six-point Likert scale (Completely Disagree = 0, Completely Agree = 5). The higher scores indicated the higher QWL of the nurses. Azarrang et al. (2013) translated the Brooks questionnaire into Persian and measured the content validity index and Cronbach's alpha of 0.97 and 0.70, respectively. In the current study, the Cronbach's alpha coefficient of this tool was 0.78.

Data Analysis

We used the path analysis method to test the theoretical model of the study. SPSS version 22.0 was used to describe the characteristics of the participants and scales, and AMOS version 22.0 was selected to conduct the path analysis. A significance level less than 0.05 was considered, and two-tailed statistical tests were used. Before starting the statistical analysis, the database was screened for the presence of missing data. Data were expressed as mean and standard deviation for the

continuous variables and number and percentage for the categorical variables. Modification indices were used to free constraints on the parameters and improve the final model fit. In order to test the fitness of the model, Root mean square error of approximation (RMSEA) <0.08, Chi-square/degrees of freedom (CMIN/DF) $\chi^2/DF < 3$, comparative fit index (CFI) >0.9, goodness-of-fit index (GFI) >0.9, adjusted goodness-of-fit index (AGFI) >0.9, Tucker-Lewis index (TLI) >0.9, and normed fit index (NFI) >0.9 were used (Bentler & Bonett, 1980; Straub, 1989). Notably, with the normal distribution of data, maximum likelihood estimation was used.

Ethical Consideration

The study protocol was approved by the Ethics Committee of the AJA University of Medical Sciences (IR.AJAUMS.REC.1399.271). Prior to the distribution of the questionnaires, the research objectives were explained to the participants, they were assured of the confidentiality of the information, and their informed written consent was obtained. To comply with ethical standards, the questionnaires were distributed anonymously. At the beginning of each shift, questionnaires (anonymously) were distributed among the nurses in each ward, and they were asked to complete them by the end of the shift. Anonymous completed questionnaires were returned in

sealed envelopes and were handed to the designated staff members at each department. It should be noted that all questionnaires were used with the permission of the original designers.

Results

Participant Characteristics

The initial analysis showed less than 2% of the missing values, so these data were replaced by the median imputation. The participating nurses were employed in different clinical wards (cardiology, intensive care, emergency department oncology, surgery, and geriatrics). In total, 81.7% of the participants were female, and the mean age and work experience of the participants were 131.4 ± 7.47 and 8.24 ± 6.76 years, respectively.

Further details on mean, standard deviation, reliability, kurtosis, skewness, and intercorrelations between the study variables are provided in **Table 1**. The findings revealed that the nurses experienced relatively low levels of burnout (mean score: 2.05 ± 0.76). In addition, the skewness and kurtosis values of the main research variables were within the range of 2 and -2, confirming the normal distribution of the variables.

Table 1 Range, mean, standard deviation, skewness, kurtosis, and correlations of variables

Variables	Range	Mean	SD	1	2	3	Skewness	Kurtosis
QWL	0- 5	2. 5	0.51	1			0.47	0.47
Resilience	0- 4	2.59	0.47	0.39 **	1		-0.59	0.7
Burnout	0- 6	2.05	0.76	-0.54 **	-0.50 **	1	-0.24	-0.7
Emotional Exhaustion	0- 6	2.16	1.11	-0.50 **	-0.46 **	0.87 **	0.28	-0.65
Depersonalization	0- 6	1.11	0.97	-0.14	-0.26 **	0.62 **	0.99	0.74
Reduced Personal Accomplishment	0- 6	2.53	0.87	-0.47 **	-0.37 **	0.73 **	0.04	-0.46

** $p < 0.01$

Bivariate Associations between the Study Variables

QWL had a positive and significant correlation with resilience ($r = 0.39$; $p < 0.01$), while resilience was inversely correlated with job burnout in nursing professionals ($r = -0.50$; $p < 0.01$). Furthermore, all dimensions of burnout were inversely correlated with the resilience and QWL of the nurses (**Table 1**).

Path Coefficients, Effects, and Goodness-of-fit Indices

In the present study, path analysis was used to express the observed correlations logically. One of the major

advantages of path analysis is the ability to measure the direct and indirect effects of one variable on other variables and compare the obtained values. The conceptual model presented in the current research was tested via AMOS software based on path analysis. The GFIs were calculated and are presented in **Table 2**; the obtained results indicated the lack of fit of the research model (GFI=0.86, AGFI=0.59, CFI=0.66, CMIN/DF=15.4, RMSEA=0.26, TLI=0.32, NFI=0.65).

Table 2 Model fit indices

Model Fit Index	Initial Model	Second Model	Standards
CMIN (χ^2/DF)	15.4	2.15	<3
GFI	0.86	0.99	>0.9
AGFI	0.59	0.94	>0.9
CFI	0.66	0.99	>0.9
TLI	0.32	0.94	>0.9
NFI	0.65	0.98	>0.9
RMSEA	0.26	0.07	<0.08

At the second stage, direct correlations were established between the variables of QWL and the dimensions of emotional exhaustion and reduced personal accomplishment based on the corrective suggestions provided by the AMOS software; notably, the research

model was re-tested (figure 2). The estimated indicators showed the satisfactory fit of the model (GFI=0.99, AGFI=0.94, CFI=0.99, CMIN/DF=2.15, RMSEA=0.07, TLI=0.94, NFI=0.98).

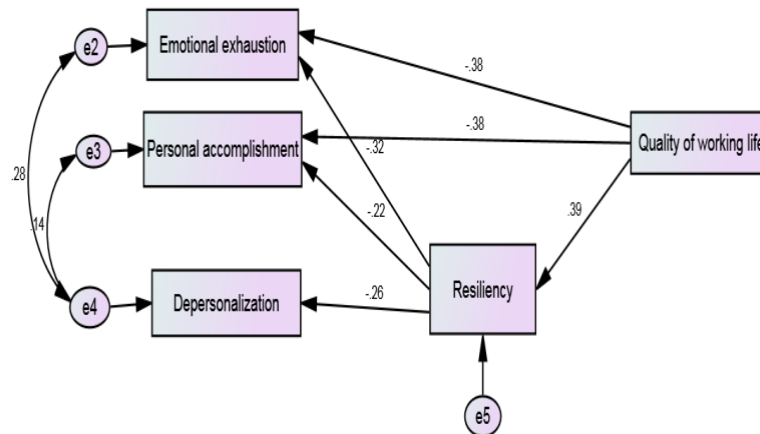


Figure 2 Mediating effect of resilience between QWL and dimensions of job burnout

The standardized path coefficients were in the predicted directions (**Table 3**). A significant and positive correlation was observed between the QWL and the resilience of the nurses ($\beta = 0.39$; $t = 6$; $p < 0.001$). On the other hand, significant, inverse associations were observed between the resilience of the nurses and the dimensions of depersonalization ($\beta = -0.26$; $t = -3.88$; $p < 0.001$), reduced personal accomplishment ($\beta = -0.22$; $t = -3.3$; $p < 0.001$),

and emotional exhaustion ($\beta = -0.32$; $t = 6.35$; $p < 0.001$). In addition to the indirect correlation between the QWL and burnout of the nurses based on their resilience, direct, significant, inverse associations were denoted between the QWL, reduced personal accomplishment ($\beta = -0.38$; $t = -5.76$; $p < 0.001$) and emotional exhaustion ($\beta = -0.38$; $t = -6.28$; $p < 0.001$).

Table 3 Standardized path coefficients

Path	Model		
	Estimate	t-value	p-value
QWL → Resiliency	0.39	6	0.001
Resiliency → Emotional Exhaustion	0.32	-5.1	0.001
Resiliency → Reduced Personal Accomplishment	-0.22	-3.3	0.001
Resiliency → Depersonalization	-0.26	-3.8	0.001
QWL → Emotional Exhaustion	-0.38	-6.3	0.001
QWL → Reduced Personal Accomplishment	-0.38	-5.7	0.001

Discussion

This study intended to evaluate the use of HSWERM to evaluate the correlations between the QWL, resilience, and dimensions of job burnout. The presented model had an acceptable fit, while the specific path adjustments improved the model fit and HSWERM developed by our results.

The final model indicated that in addition to the indirect effect of the QWL on burnout through improving resilience, it was directly correlated with the dimensions of emotional exhaustion and reduced personal accomplishment among nursing professionals during the current COVID-19 pandemic. Therefore, it could be inferred that improving the QWL could increase the ability of nurses to adapt to the

current COVID-19 pandemic and reduce nursing professionals' burnout.

The results showed that quality of work-life can predict the level of resilience in nursing professionals, and as a result, the level of burnout will be diminished. This finding confirmed the theoretical assumptions of HSWERM. Furthermore, this finding is compatible with the research results of [Leners et al. \(2014\)](#), in which a significant and direct correlation was reported between the QWL and resilience among military healthcare providers ([Nikeghbal et al., 2021](#)).

The relationship between quality of work-life, resilience, and nursing job burnout can be explained by stress theory. Burnout occurs when employees are exposed to long-term

stressors (Malach-Pines, 2000; Monsalve-Reyes et al., 2018). According to stress theory, stress is a physiological and psychological consequence of long-term exposure to environmental stimuli such as poor quality of work-life (Hietapakka et al., 2013). A high-quality nursing work environment can empower nursing professionals and increase their coping abilities, and as a result, more resilient nurses experience less burnout (Hietapakka et al., 2013; Ambani et al., 2020; Laksmi et al., 2020). Paying attention to the quality of work-life can improve the wellbeing and attitude of employees towards different dimensions of the organization, work, and employers, thereby improving their resilience (Vagharseyyedin et al., 2011; Kelbiso et al., 2017).

Furthermore, the results showed that QWL has a direct and inverse relationship with emotional exhaustion and reduced personal accomplishment among nursing professionals. Ambani et al. (2020) showed that the quality of nurses' work environment in Saudi Arabia affects work outcomes such as intention to leave, burnout and, job satisfaction of nurses. Permarupan et al. (2020) documented QWL attributes as factors that could manage burnout among Indonesian nurses. According to the Nursing Work-life Model, using five factors explaining the professional nursing work environment provided by Lake (2002) can lead to improving patient and nursing professionals outcomes, such as improving patient safety and reducing burnout (Laschinger & Leiter, 2006). These five factors include staff participation in organizational affairs, effective nursing leadership, effective nurse/physician relationships, adequate staffing for quality care, and support for a nursing model of patient care.

The present study results indicated inverse correlations between resilience and all the dimensions of job burnout; therefore, the improvement of resilience could protect nurses from emotional exhaustion and depersonalization while also enhancing their performance. In research by Rushton et al. (2015), a significant and inverse association was observed between resilience and burnout of intensive care unit nurses. During the coronavirus pandemic, Yildirim and Solmaz (2020) reported that resilience could reduce burnout directly and indirectly by modifying the levels of perceived stress. Despite the spread of the coronavirus and the fact that nurses are at the forefront of the battle against this pandemic, our findings demonstrated that the rate of burnout was below average in its three dimensions among the nurses, which is inconsistent with the previous studies in this regard (Mealer et al., 2012; Giusti et al., 2020).

The highest score among different dimensions of burnout was related to decreased personal performance, and the lowest was related to depersonalization. This finding contradicts the findings of Zhang et al. (2021) in Wuhan nurses and Jose et al. (2020) in Indian nurses during the COVID -19 outbreak. It seems that the high workload and inability of Iranian nurses to take care of and perform their duties accurately has the most significant impact on their burnout. Fair management and planning of workload can lead to a reduction of burnout in Iranian

nurses. According to WHO (2018), the ratio of nurses and midwifery personnel per 1,0000 people is 20.77 in Iran, while this ratio is 102.9 in the United Kingdom and 156.9 in the United States.

Moreover, resilience was observed to be favorable and above average, which could also be the reason for the low rate of burnout dimensions among Iranian nurses. In a study by Jo et al. (2021) on nurses in the United States, the Republic of Korea, Japan, and Turkey, resilience during COVID 19 outbreaks was moderate. One of the reasons for the high rate of resilience and low job burnout in Iranian nurses can be considered the support and appreciation of various members of Iranian society from nurses and other health care workers during COVID 19 outbreaks. In addition, it has been shown that nurses are always committed to the principles of their professional ethics in the most difficult situations. The study of Zahednezhad et al. (2021) showed that although nurses have a high workload, this does not reduce their moral sensitivity.

Implications for Nursing Practice

Based on the results of the present study, nursing managers can increase resilience and decrease burnout among nursing professionals by adopting policies to improve the quality of work-life in nursing professionals, such as fostering support networks of friends and colleagues along with a strong teamwork spirit, providing professional development opportunities, work-life balance, managing workload by providing adequate nursing workforce, providing a safe work environment and increased financial compensation. Among the other effective measures in this regard, especially in the case of those with low resilience levels during the current pandemic, stress management and mental health skills training programs like mindfulness-based stress coping skills could enhance resilience and protect nurses against burnout. In addition, periodic screening of nurses regarding burnout symptoms and psychological effects of COVID -19 outbreaks is also necessary to identify nurses at risk and perform immediate interventions.

Limitations and Recommendations

Considering that the samples of this study were selected from nurses working in public hospitals affiliated with one of the instructional universities in Tehran, Iran, the generalization of the findings should be carried out with caution. In addition, it is recommended that further investigations in this regard be focused on the comparative measurement of our research variables and testing our research model in nursing professionals of private hospitals. Furthermore, restrictions related to combating the prevalence of COVID -19 in the target hospitals also made access to nurses and the sampling process difficult. Also, due to the high rate of resilience and low rate of burnout in Iranian nurses even in the current stressful and critical situation, it is suggested that the process of resilience in Iranian nurses during crises be further investigated in future qualitative studies.

Conclusion

During the spread of the coronavirus disease, the workload and stress of healthcare providers have increased significantly, leading to a higher risk of burnout and psychological disorders. However, the current study results showed that nursing managers, by using the HSWERM and emphasizing the indicators that improve the quality of work-life, can enhance the resilience of nurses in pandemic conditions and subsequently reduce the rate of burnout among nursing staff.

Declaration of Conflicting Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Authors' Contributions

AZ: conceptualization, methodology. **HZ:** data curation, writing original draft preparation, software. **SZBJ:** supervision, writing, reviewing and editing, validation. All authors reviewed the results and approved the final version of the manuscript.

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Data Availability Statement

The datasets generated during and analyzed during the current study are available from the corresponding author on reasonable request.

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