

RESEARCH

Open Access



# Evaluation of occupational stress and job performance in Iranian nurses: the mediating effect of moral and emotional intelligence

Vahid Alinejad<sup>1</sup> , Naser Parizad<sup>2\*</sup> , Laleh Almasi<sup>3</sup>, Rozita Cheraghi<sup>3</sup> and Mehri Piran<sup>4</sup>

## Abstract

**Background** Nurses' Job performance could be affected by occupational stress. Previous studies reported contradictory results in this regard. Factors such as moral and emotional intelligence could impact occupational stress. However, the extent of any mediating effect is unclear. Thus, this study aimed to determine the effect of occupational stress on nurses' Job performance and the mediating impact of moral and emotional intelligence.

**Methods** This cross-sectional study was conducted in Urmia teaching hospitals (Imam Khomeini, Motahari, Taleghani, Kosar, and Seyed al-Shohada Hospitals). Six hundred twenty-one nurses were selected using quota sampling from February 2022 to April 2022. Data were collected using demographic questionnaires, the Nursing Stress Scale, Paterson's Job Performance Questionnaire, Siberia Schering's Emotional Intelligence Standard Questionnaire, and Lennik and Keil's Moral Intelligence Questionnaire. Data were analyzed using SPSS ver. 23 and SmartPLS ver. 2.

**Results** Occupational stress had a positive, direct, and minor effect on nurses' job performance ( $\beta = 0.088$ ,  $t\text{-value} = 2.245$ ,  $p < 0.01$ ). Occupational stress had a positive and direct impact on moral intelligence ( $\beta = 0.161$ ,  $t\text{-value} = 2.945$ ,  $p < 0.01$ ) and a negative and direct effect on emotional intelligence ( $\beta = -0.351$ ,  $t\text{-value} = 7.484$ ,  $p < 0.01$ ). Occupational stress negatively and indirectly affected job performance through moral intelligence ( $\beta = -0.560$ ,  $t\text{-value} = 14.773$ ,  $p < 0.01$ ). Occupational stress also positively and indirectly impacted job performance through emotional intelligence ( $\beta = 0.098$ ,  $t\text{-value} = 2.177$ ,  $p < 0.01$ ).

**Conclusions** Occupational stress slightly affects nurses' job performance, and emotional and moral intelligence mediates the impact of occupational stress and improves nurses' job performance. Low occupational stress improves nurses' job performance, but too much occupational stress could harm nurses' job performance. Healthcare administrators should work to help reduce nurses' occupational stress and improve their job performance by adopting practical strategies to help nurses manage and control their stress. Holding stress reduction classes, eliminating the nursing shortage, reducing working hours, reducing workload, and providing financial and spiritual support to nurses would be recommended. It is also recommended to provide theoretical and practical emotional and moral intelligence-oriented courses for nursing students and hold training workshops for nurses to improve their emotional and moral intelligence.

**Keywords** Nurses, Occupational stress, Job performance, Emotional intelligence, Moral, Iran

\*Correspondence:

Naser Parizad

parizad.n@umsu.ac.ir

Full list of author information is available at the end of the article



© The Author(s) 2023. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated in a credit line to the data.

## Background

Nursing care is crucial in improving patient satisfaction and safety, so paying attention to nurses' Job performance has increased during the last decades [1]. Nurses' Job performance depends on different factors such as job satisfaction, organizational commitment, and occupational stress [2]. The effect of occupational stress on job performance has been confirmed in several studies [3–5]. Occupational stress is defined as a person's response to external-environmental stimuli. The negative impact of occupational stress on nurses' Job performance has been shown in several studies [3, 6]. Due to the nature of nursing, nurses face countless problems that cause significant stress [7]. These problems include a shortage of human resources, heavy workload, tight work shifts, contradictions in the rhythm of life due to rotating shifts, exposure to human suffering and death, complex decision-making, moral dilemmas, etc. [8]. Statistics show that occupational stress is high among nurses in most countries [9–11]. In the meantime, the rate of occupational stress has been reported to be about 23.4–60% among Iranian nurses [12, 13]. Stress in the nursing work environment can cause many harmful consequences, including the inability to perform tasks correctly, low morale, no motivation to work, poor occupational performance, reduced productivity, and mental and physical weakness [14]. Occupational stress among nurses can be affected by various factors, especially moral and emotional intelligence [15, 16]. Mazzella Ebstein et al. reported a positive correlation between occupational stress and emotional intelligence among nurses working in national cancer institutes in the northeastern United States [17].

The term "emotional intelligence" was first described by Salovey and Mayer (1990) as "the ability to monitor one's own and others' emotions, distinguish between them, and use the information to guide one's thoughts and actions" [18]. Emotional intelligence is a relatively stable individual ability, and a person can improve it through education and learning. It is also an important characteristic for proper nursing performance in different areas of nursing, including leadership, stress management, and caring functions [19]. Since nursing is considered a stressful profession, understanding how to manage stress is an important emotional intelligence skill [20]. Nursing care is provided in dynamic environments, and nurses with high emotional intelligence can manage chaotic environments, improve their thinking, make critical decisions, and use evidence in practice. In other words, emotions are established in human activities, behaviors, and characteristics as they can affect commitment to the responsibility of providing services for others and trust in oneself and others, all of which originate from moral intelligence [21]. Rajabi et al. showed

that emotional and moral intelligence have a significant positive relationship in nursing students [22]. In another study, Barida et al. realized a positive association between high moral reasoning and high emotional intelligence. They indicated that these two issues could predict individuals' moral behavior [23].

Lennick and Kiel (2011) defined moral intelligence as "the mental capacity to determine how human principles should be applied to individual values, goals, and actions" [24]. The main characteristics of moral intelligence consist of conscience, honesty, responsibility, compassion, forgiveness, continence, kindness, tolerance, justice, empathy, and respect, five of which emphasize "continence" [24, 25]. The presence of moral intelligence in nursing leads to "nursing professional development," "comprehensive care facilitation," and "organizational improvement" [26]. There has always been a possibility of conflict between individual values and ethical standards in clinical nursing [27]. A person with high moral intelligence not only does not think about him/herself but also determines appropriate and inappropriate actions in social relations, understands the feelings of others, empathizes with them, and takes responsibility for his/her actions [28]. Accordingly, moral intelligence is one of the components that can influence nurses' performance, improve patient safety, and increase the quality of care [16]. Most studies investigated the effect of occupational stress on Job performance and reported contradictory results. However, the extent of the mediating effect of moral and emotional intelligence on nurses' job performance is unclear. Thus, this study aimed to determine the effect of occupational stress on nurses' Job performance and the mediating impact of moral and emotional intelligence.

## Conceptual framework and development of hypotheses

### Occupational stress and job performance

Several studies have examined the effect of occupational stress on nurses' Job performance [3–5]. Some recent studies have shown a negative relationship between occupational stress and Job performance [4, 5, 29]. However, some previous studies reported the opposite results, and their findings indicated a positive and significant relationship between occupational stress and employees' performance, so occupational stress encourages employees to work hard and improve their performance [5, 30, 31]. According to the model presented by Deng et al. (2019), occupational stress has a positive and significant relationship with Job performance among healthcare workers [3]. Therefore, the research team came to the following hypotheses:

Hypothesis 1: Occupational stress has a positive effect on nurses' performance.

#### The mediating effect of emotional intelligence

Previous research showed that employees' emotional intelligence significantly affects their performance [32, 33]. Zhu et al. (2015) showed that employees with high emotional intelligence had high engagement at work and would have better Job performance [34]. Ruble et al. (2022) indicated that pharmacists with high emotional intelligence had low occupational stress, increased mental health, and high professional integrity [33]. In the model presented by Rafiee et al. (2013), occupational stress positively and significantly affected emotional intelligence [35]. In contrast, studies have confirmed the negative impact of occupational stress on emotional intelligence [36, 37]. A study reported the positive mediating effect of emotional intelligence in the relationship between occupational variables and the Job performance [38]. Hence, emotional intelligence can improve nurses' job performance by mediating the negative effect of occupational stress on their performance.

Hypothesis 2: Occupational stress has a negative effect on nurses' emotional intelligence.

Hypothesis 3: Emotional intelligence has a positive effect on nurses' job performance.

*The main hypothesis:* Emotional intelligence mediates the effect of occupational stress on nurses' job performance.

#### The mediating effect of moral intelligence

Recent studies had contradictory results regarding the effect of moral intelligence on nurses' performance. In Iran, Shakeri et al. (2021) reported no significant relationship between moral intelligence and the caring behaviors of pediatric nurses [39]. In contrast, Khosravani et al. (2020) revealed that moral intelligence improves nurses' job performance by increasing organizational commitment and promoting the quality of patient care [40]. In the model developed by Rafiee et al. (2013), the positive effect of occupational stress on moral intelligence and the direct effect of moral intelligence on job performance were confirmed [35]. Considering the positive effect of moral intelligence on nurses' occupational stress [16] and their job performance shown in recent studies [41, 42], the research team came to the following hypotheses:

Hypothesis 4: Occupational stress has a positive effect on nurses' moral intelligence.

Hypothesis 5: Moral intelligence has a positive effect on nurses' job performance.

*The main hypothesis:* Moral intelligence mediates the effect of occupational stress on nurses' job performance.

## Methods

### Research design and sampling

This descriptive cross-sectional study was conducted in medical centers affiliated with Urmia University of Medical Sciences (Imam Khomeini, Motahari, Taleghani, Kosar, and Seyed al-Shohada Hospitals) in 2022. The sample-to-item ratio was used to determine the sample size, and this ratio should not be less than 5:1 [43]. The questionnaires utilized for data collection were made up of 122 items. The minimum sample size was calculated to be 610. Regarding the possibility of 15% sample attrition, 700 nurses were considered the final sample size to cover the path analysis and mediation hypothesis. Participants were entered into the study using the quota sampling method.

First, the total population of nurses working in Urmia teaching hospitals was determined ( $N=3985$ ), and then the number of the requested sample size ( $n=700$ ) was divided by it.

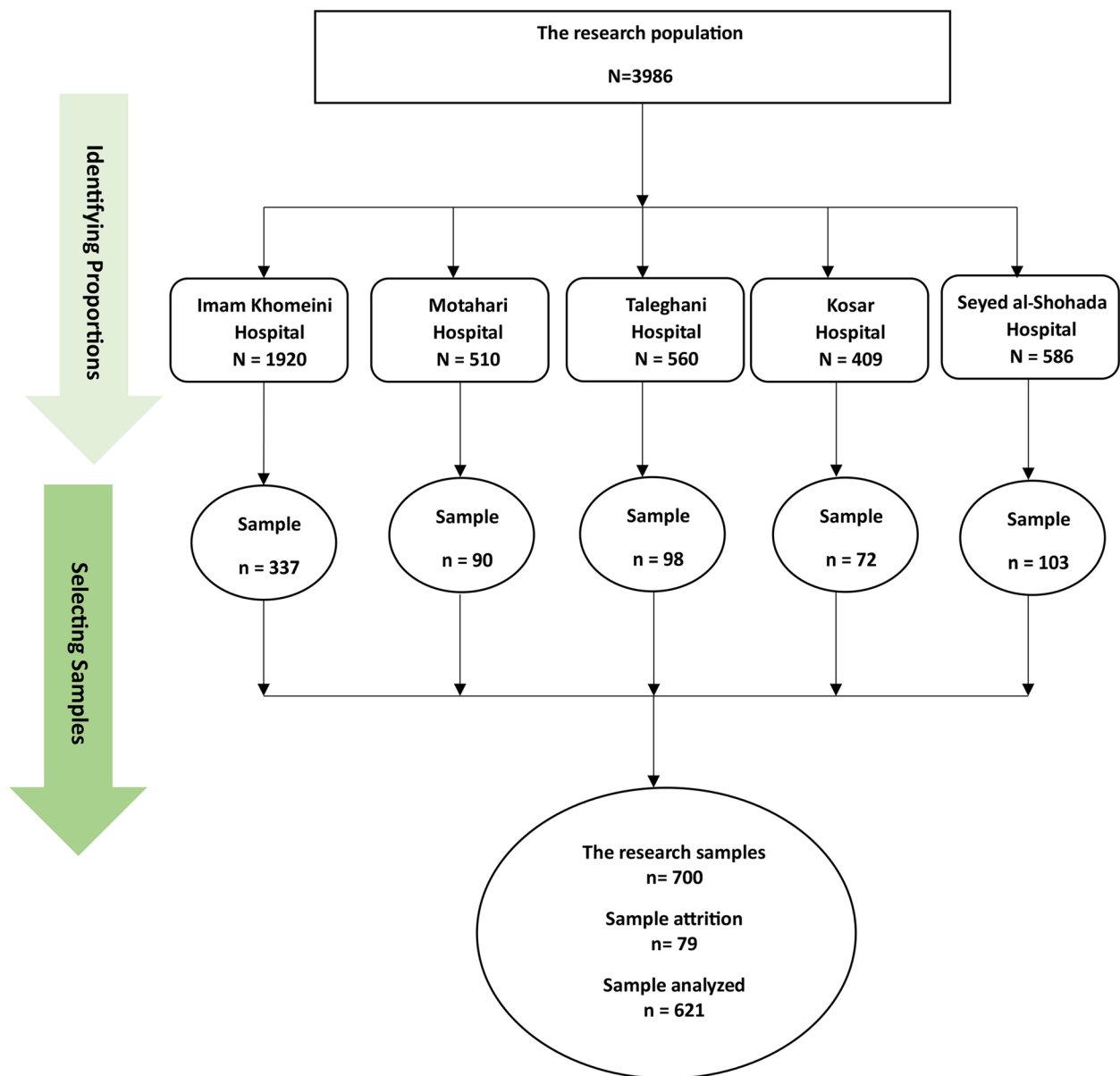
$$\frac{n}{N} = \frac{700}{3985} = 0.1756$$

Second, the obtained fraction (0.1756) was multiplied by the number of each stratum to determine how many nurses should be selected from each hospital (Fig. 1).

The inclusion criteria included working as a nurse in one of the Urmia teaching hospitals, having work experience of more than one year, and willingness to participate in the study. Incomplete questionnaires were excluded from the study.

### Procedure

After obtaining approval from the Research Ethics Committee and the Vice-Chancellor for Research & Technology, the lead researcher referred to the officials of the target hospitals. The researcher obtained the contact information of nurses from the nursing administration office. The participants were provided with the necessary explanations about the study objectives and how to complete the questionnaires. All participants assured that their participation was optional; they could withdraw anytime. They also assured of the confidentiality and anonymity of their data. If they wanted to participate in the study, written informed consent was sent to them using WhatsApp. The nurses signed the informed consent form and returned it to



**Fig. 1** Study sampling flow diagram

the researcher before entering the study. The questionnaires were sent to the nurses online. They should open the link and complete the questionnaire. They were requested to complete and return the questionnaire within 72 h. If nurses did not return the questionnaire within 48 h, they were asked to complete and return it for the second and third time. They were removed from the list if they did not complete and send the questionnaire after the third request. Out of 700 questionnaires, 621 questionnaires were completely filled in and

returned. The data collection process lasted for three months.

**Measures**

Data were collected using demographics and four standard questionnaires described below:

- I. The demographic questionnaire included age, gender, educational level, marital status, current occupational position and employment status, and the number of children.

## II. Nursing Stress Scale (NSS)

The NSS is a 34-item questionnaire that Gray-Toft & Anderson developed in 1981. This questionnaire consists of 7 subscales, including patient mortality (7 items), conflict with doctors (5 items), insufficient preparation (3 items), problems with other nurses (6 items), lack of support (3 items), workload (6 items), and uncertainty about treatments (5 items). All items are scored on a 5-point Likert scale from "Never stressed = 1" to "Highly stressed = 4." To obtain the score for each subscale, the scores of all the items related to that subscale are added together. The overall score on the scale ranges from 34 to 136, and a higher score indicates higher occupational stress in a nurse [44–46]. Ghanei Gheshlagh et al. (2017) confirmed the reliability of this scale using Cronbach's alpha coefficient of 0.96 [12]. Global Cronbach's alpha of this scale was 0.92, which varied between 0.49 and 0.83 for each subscale [45]. Ten faculty members confirmed the scale's validity in this study, and its Cronbach's alpha was 0.89.

## III. Paterson's Job Performance Questionnaire (P-JPQ)

The P-JPQ is a 15-item tool developed by Patterson and Husband (1970). The scoring is based on a 4-point Likert scale from "Rarely = 0" to "Always = 3". The overall score of the questionnaire ranges between 0 and 45, where a high score indicates better job performance. Patterson and Husband (1970) confirmed its reliability using Cronbach's alpha of 0.91 [47]. Hosseini et al. (2017) approved the face and content validity of the questionnaire as well as its reliability with Cronbach's alpha coefficient of 0.84 [48]. In our study, the reliability of the questionnaire was confirmed in a pilot study with Cronbach's alpha of 0.80.

## IV. Siberia Schering's Emotional Intelligence Standard Questionnaire (SS-EISQ)

The SS-EISQ is a 33-item tool with five subscales, including self-arousal (7 questions), self-awareness (8 questions), self-control (7 questions), sympathy/social awareness (6 questions), and social/communicational skills (5 questions). The items are scored on a 5-point Likert scale from "Never = 1" to "Always = 5". The range of overall scores is between 33 and 165 [49]. In Iran, this questionnaire was psychometrically evaluated by Mansouri in 2001, and its validity and reliability were confirmed. Cronbach's alpha of the questionnaire was 0.84 [50]. In our study, the validity of the questionnaire was confirmed by ten faculty members, and its reliability was confirmed using the test–retest method with Cronbach's alpha of 0.84.

## V. Lennik and Keil's Moral Intelligence Questionnaire (LK-MIQ)

The LK-MIQ is a 40-item tool developed by Lenik and Kiel in 2005. This questionnaire consists of four subscales with ten items each. The subscales include integrity, responsibility, compassion, and forgiveness. The scoring is based on a 5-point Likert scale from "Never = 1" to "Always = 5." The initial score ranges between 40–200, and the final score is calculated by dividing the initial score by two. The final score ranges between 20 and 100 [51]. In Iran, Majidi et al. (2018) approved the reliability of this questionnaire with Cronbach's alpha coefficient of 0.88 [52]. In the present study, ten experts confirmed the face and content validity of the questionnaire. Furthermore, the reliability was confirmed in a pilot study using the test–retest method with Cronbach's alpha of 0.91.

## Data analysis

In this study, data analysis was conducted using IBM SPSS Statistics for Windows, version 23 (IBM Corp., Armonk, N.Y., USA) and SmartPLS version 2. Quantitative variables were reported using "mean  $\pm$  standard deviation," and qualitative variables were reported using numbers (percentages) in the format of standard tables and graphs. The Fronell-Larcker criterion and the consistency method (Cronbach's alpha coefficient) were used to check the discriminant validity and the model's reliability, respectively. Path ( $\beta$ ) and t coefficients were used to examine the conceptual model. A *p*-value of less than 0.05 was considered significant.

## Results

A total of 621 questionnaires were completed in this study, and the acceptance rate was about 88.7%. The mean age of the participants was  $33.47 \pm 8.477$  years, and their mean work experience was  $9.27 \pm 7.94$  years. Regarding marital status, 370 (59.6%) were married, and 251 (40.4%) were single. Regarding gender, 229 (36.9%) participants were male, and 392 (63.1%) were female. In terms of education, 514 (82.8%) had a bachelor's degree, 92 (14.8%) had a master's degree, and 15 (2.4%) had a Ph.D. In terms of employment status, 158 (25.4%) were passing the compulsory-service-program nurses; 37 (6%) were corporate nurses, 90 (14.5%) were contract nurses, 78 (12.6%) were temporary-to-permanent nurse employees; and 258 (41.5%) were permanent nurse employees. Regarding the number of children, 125 (20.1%) had one child, and 167 (26.9%) had two or more children. In terms of occupational position, 524 (84.4%) were ward nurses, 33 (5.3%) were staff nurses, 28 (4.5%) were head nurses, 28 (4.5%) were supervisors, and 8 (1.3%) were matrons.

**Table 1** Fornell and Larker method (discriminant validity)

Variables	Emotional intelligence	Occupational stress	Moral intelligence	Job performance
Emotional intelligence	1			
Occupational stress	-0.401	1		
Moral intelligence	-0.317	0.148	1	
Job performance	0.121	0.085	-0.548	1

The results showed that Cronbach's alpha was above 0.7 for all variables, indicating the model has good internal reliability. Based on the Fronell-Larcker criterion, the discriminant validity of the model is acceptable (Table 1).

### General conceptual model

The conceptual model was examined after testing the research hypotheses. The results were extracted in path coefficients ( $\beta$ ) and *t* coefficients. The results extracted from the model analysis are shown in Figs. 2 and 3, and Table 2. Path coefficients indicated the direct effect of one construct on another construct. If the path coefficients are greater than 0.6 between the variables, the predictive effect of the latent variable is stronger than the dependent variable. The predictive impact is moderate when  $\beta$  is between 0.3 and 0.6, and when it is less than 0.3, the predictive effect is considered weak. Based on the results in Fig. 2, occupational stress had a positive and minor impact on job performance ( $\beta=0.088$ ) and moral intelligence ( $\beta=0.161$ ); moral intelligence had a negative and medium effect on job performance ( $\beta=-0.560$ ); occupational stress had a negative and medium impact on emotional intelligence ( $\beta=-0.351$ ); and emotional intelligence had a positive and minor effect on job performance ( $\beta=0.098$ ) (Fig. 2).

Figure 2 showed that the *t*-statistics for examining the relationship between research variables were above 1.96. Accordingly, with at least 95% confidence, the relationships between variables significantly affected each other (Fig. 2).

The standard path coefficients and *t*-statistics were presented at the 95% confidence interval based on the graphical findings for the general conceptual model (Table 1). Regarding the existence of two mediating variables in this study, the indirect relationships between the variables were examined using the macro bootstrap method. The results of the multiple mediation test of indirect relationships for the entire sample are shown in Table 2.

The bootstrap test results showed that the upper and lower bounds of the indirect relationship between occupational stress and job performance with the mediating effect of moral intelligence did not contain zero, meaning that this indirect path was significant in the entire

sample (the mediating effect was confirmed). Moreover, the upper and lower bounds of the indirect relationship between occupational stress and job performance with the mediating impact of emotional intelligence did not contain zero, meaning that this indirect path was significant in the entire sample (the mediating effect was confirmed) (Table 3).

Sixteen observed variables and four latent variables, namely occupational stress, job performance, emotional intelligence, and moral intelligence, were included in the hypothetical model. The measurement model had a good fit ( $X^2=16535.28$ ,  $df=7253$ ,  $P=0.0001$ ,  $RMSEA=0.052$ ;  $NNFI=0.95$ ;  $PNFI=0.9$ ;  $IFI=0.95$ ;  $GFI=0.91$ ,  $NFI=0.92$ ,  $CFI=0.95$ ;  $RFI=0.92$ ). All factor loadings for latent variable indicators were also significant ( $P<0.001$ ), which means that all latent variable indicators represent them well.

### Reverse model

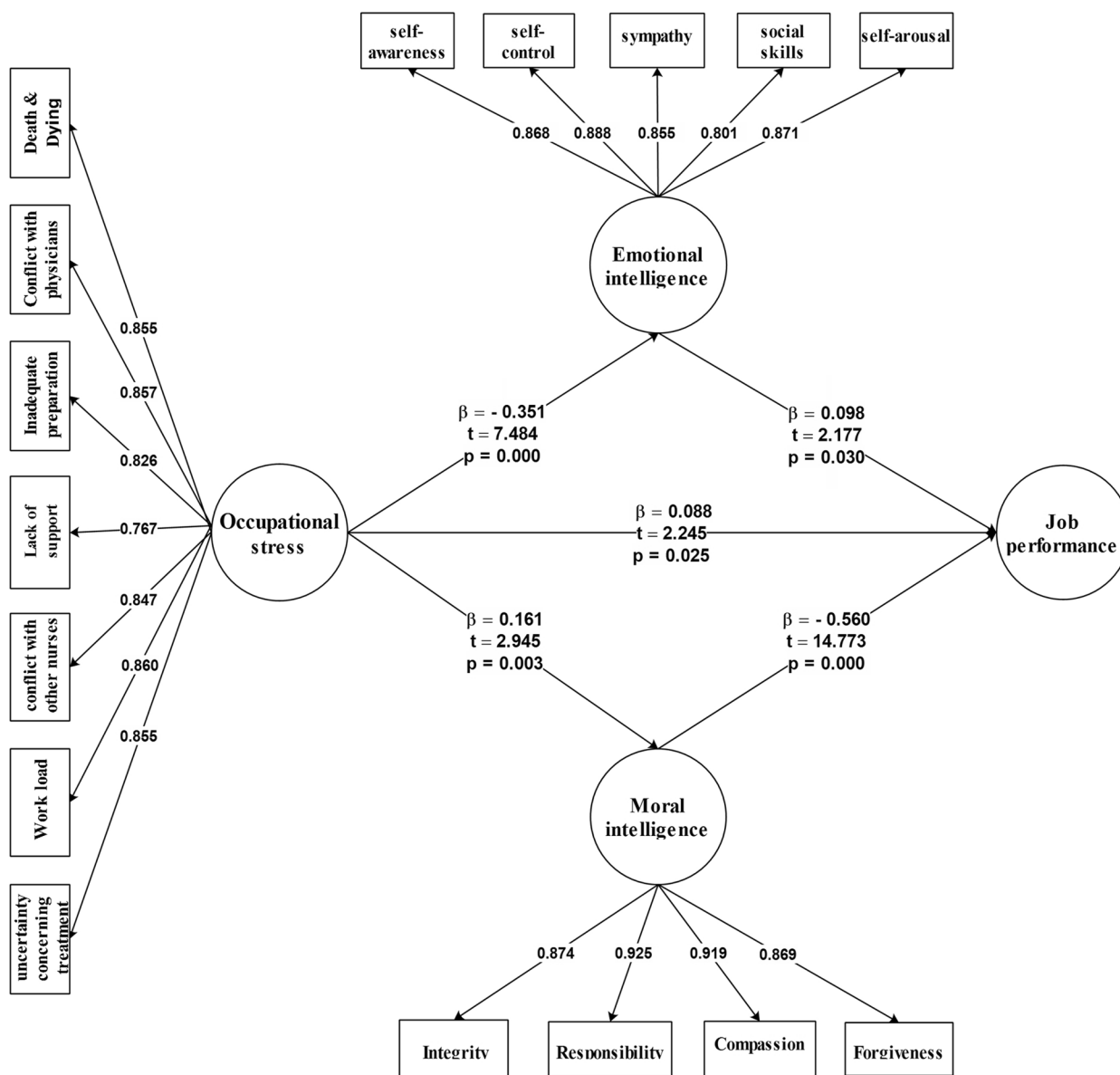
According to the output of the reverse model diagram, the effect of job performance on occupational stress was positive and small ( $\beta=0.091$ ); the impact of job performance on moral intelligence was negative and medium ( $\beta=-0.531$ ); the effect of moral intelligence on occupational stress was positive and small ( $\beta=0.118$ ); the impact of job performance on emotional intelligence was positive and medium ( $\beta=0.309$ ); and the effect of emotional intelligence on occupational stress was negative and medium ( $\beta=-0.336$ ). The results showed that some of the path coefficients between the latent variables were not statistically significant, and the fit indices of the reverse model were not satisfactory ( $P(RMSEA)>0.05$ ). Therefore, the reverse model was not acceptable (Fig. 3).

The relationship between demographic characteristics and the main study variables is presented in Table 4.

### Discussion

This study was conducted to determine the effect of occupational stress on nurses' Job performance and the mediating impact of moral and emotional intelligence.

In this study, nurses' occupational stress had a positive and minor effect on their job performance. In line with our results, Deng et al. (2019) showed that limited

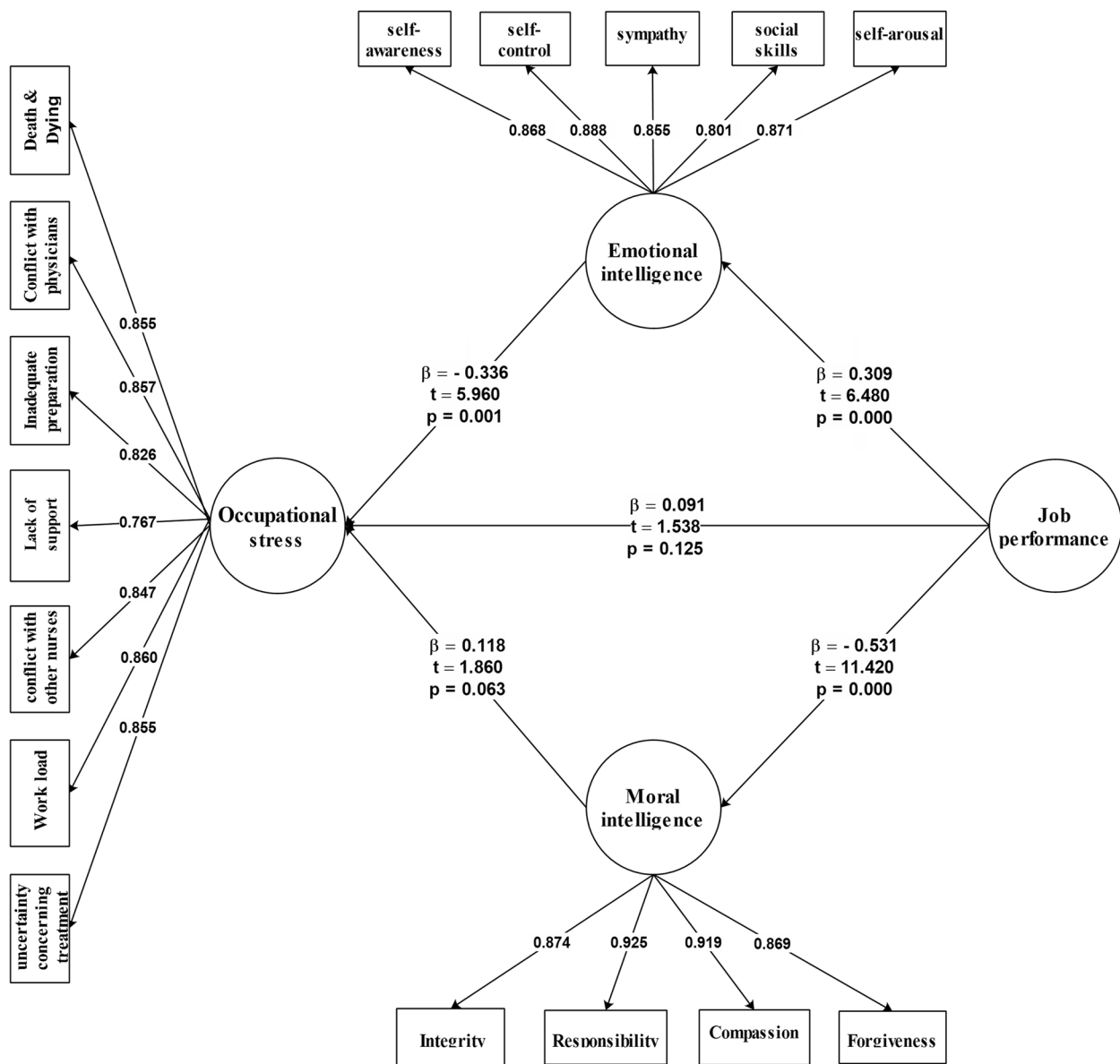


**Fig. 2** The direct model (N=621)

occupational stress can improve job performance among health workers [3]; the possible explanation is that low occupational stress can increase concentration among nurses, improving their performance. Another possible reason for the improvement in nurses' performance in this study is that most nurses have nearly nine years of work experience, which can be effective in controlling their stress and improving their performance. Some studies reported a significant negative relationship between work experience and occupational stress [17, 53]. It seems that more experienced nurses had better adaptation to the hardship of working environments and had a

greater capability to deal with workplace tension, so they had less occupational stress.

In contrast with our results, some previous studies reported the adverse effects of occupational stress on job performance [4, 5, 29] and concluded that higher stress could decrease concentration and job performance [3, 54]. Nurses face many challenges, including workforce shortage, high workload, lack of professional independence, and lack of management support, so they experience high occupational stress [12, 55]. High stress leads to sleep disorders, depression, loss of concentration, and a significant decrease in job performance [10–12].



**Fig. 3** The indirect model (N=621)

**Table 2** Results of structural equation analysis for the general conceptual model

Path	$\beta$	$t$	Sig	Result
P1: Occupational stress → Job performance	0.088	2.245	=0.025	Confirmed
P2: Occupational stress → Moral intelligence	0.161	2.945	=0.003	Confirmed
P3: Moral intelligence → Job performance	-0.560	14.773	=0.000	Rejected
P4: Occupational stress → Emotional intelligence	-0.351	7.484	=0.000	Confirmed
P5: Emotional intelligence → Job performance	0.098	2.177	=0.030	Confirmed



**Table 3** Indirect effects and bootstrapping results with all paths (multiple mediation analysis)

Path	Indirect effect	Bootstrap standard errors	95% Bootstrapped Confidence Interval	
			Lower	Upper
Occupational stress to Job performance through <b>Moral intelligence</b>	-0.0536	0.0118	-0.0775	-0.0311
Occupational stress to Job performance through <b>Emotional intelligence</b>	-0.0111	0.0058	-0.0230	-0.0003

The results indicated that emotional intelligence indirectly mediates the effect of occupational stress on nurse’s job performance. Moreover, emotional intelligence improves nurses’ job performance by reducing their occupational stress. Cano and Sams (2009) showed that employees with high emotional intelligence perform better emotional behaviors in the work environment and experience less occupational stress [56], causing them to work more effectively and have better performance [32, 57]. Based on Joseph and Newman’s cascading model, emotional intelligence begins with receiving emotion, and regulating and understanding emotions leads to high job performance. People with healthy emotion regulation can choose more appropriate approaches to job demands, which helps them drain fewer resources and maintain their job performance at a high level [58, 59]. Employees with high levels of emotional intelligence are more optimistic and have the power to change and manage stressful situations in their work environment without being affected by surrounding factors. These people also actively act when facing occupational stress [60].

In contrast with our study’s findings, Rafiee et al. (2013) revealed that occupational stress positively affected emotional intelligence. They also showed that emotional intelligence had no significant effect on job performance and did not mediate the impact of occupational stress [35]. The possible reason for this discrepancy between the results is that the sample size in their study was much smaller than ours and could affect the findings.

The results also showed that moral intelligence indirectly mediates the effect of occupational stress on nurses’ job performance. Namely, moral intelligence improves nurses’ job performance by reducing their occupational stress. Similar to our study result, Rafiee et al. (2013) showed that moral intelligence acts as a mediator between occupational stress and job performance, enhancing employee performance [35]. As an inherent support factor, moral intelligence can improve nurses’ psychological safety by strengthening positive psychological factors. Decent moral intelligence can also reduce occupational stress among employees and improve their performance [16]. Moreover, it was shown that moral intelligence enhances employee job satisfaction and performance by improving their mental health [61]. An individual with high moral intelligence better understands stressful situations, so he/she can have appropriate moral behavior in such situations [62].

Our results indicated that moral intelligence had no significant relationship with demographic characteristics. Emotional intelligence was significantly related to education level, employment status, and nurse position, which was in line with the Ebrahimi et al. study findings [63]. Similar to Yousefi et al.’s results, occupation stress had a significant relationship only with gender and employment status [64]. Job performance was significantly related to gender, number of children, and employment status. In Ogunleye’s study, job performance had a significant relationship with employment status. In contrast,

**Table 4** Linear regression model between moral intelligence, emotional intelligence, occupational stress and job performance with demographic variables

Variables	Moral intelligence		Emotional intelligence		Occupational Stress		Job performance	
	B	P-Value	B	P-Value	B	P-Value	B	P-Value
Constant	97.445	0.001	108.381	0.001	81.298	0.001	32.655	0.001
Age	-0.309	0.228	-0.136	0.37	-0.093	0.664	0.169	0.062
Gender	0.73	0.677	0.503	0.627	-7.24	0.001	-1.475	0.017
Marital status	0.678	0.718	0.325	0.77	-0.704	0.654	0.071	0.914
Educational level	-0.029	0.988	2.658	0.014	-0.539	0.724	-0.801	0.216
Number of children	2.568	0.055	-0.239	0.762	0.952	0.393	-1.258	0.008
Current occupational position	-0.26	0.333	0.318	0.045	0.119	0.595	0.106	0.265
Employment status	0.004	0.987	-0.408	0.011	0.551	0.015	-0.25	0.009

no significant effect of gender on job performance was found in their research, although the interactive effect of gender and employment status was related to the personality characteristics and the participant's skills [65].

### Study strengths & limitations

This study is the first to examine the mediating effect of emotional and moral intelligence on nurses' job performance. However, since emotional and moral intelligence are strongly influenced by people's culture and spiritual background, researchers should act cautiously in generalizing the results. Another limitation was the existence of confounders, such as the type of shift work and personal characteristics, which could affect the main variables, namely occupational stress and job performance. Therefore, it is recommended to identify confounding factors and control their effects in future studies.

### Conclusion

Occupational stress has a positive and minor effect on nurses' job performance. Also, emotional and moral intelligence mediates occupational stress's effect and improve nurses' job performance. Low occupational stress improves nurses' job performance, but too much occupational stress could harm nurses' job performance. Healthcare administrators should work to help reduce nurses' occupational stress and improve their job performance by adopting practical strategies to help nurses manage and control their stress. The research team recommends that nursing managers take a big step in reducing nurses' occupational stress by holding stress reduction classes, eliminating the shortage of nurses, reducing working hours, reducing workload, and providing financial and spiritual support to nurses. In addition, it is recommended to provide theoretical and practical emotional and moral intelligence-oriented courses for nursing students and hold training workshops for nurses to improve their emotional and moral intelligence.

### Abbreviations

NSS	Nursing Stress Scale
P-JPQ	Paterson's Job Performance Questionnaire
SS-EISQ	Siberia Schering's Emotional Intelligence Standard Questionnaire
LK-MIQ	Lennik and Keil's Moral Intelligence Questionnaire
SPSS	Statistical Package for the Social Science
RMSEA	The Root Mean Square Error of Approximation
NNFI	Non-Normed Fit Index
PNFI	Parsimony Normed Fit Index
IFI	Incremental Fit Index
GFI	Goodness of Fit Index
NFI	Normed Fit Index
CFI	Comparative Fit Index
RFI	Relative Fit Index

### Acknowledgements

This study is derived from a nursing project (record No. 11294). The authors thank the Research Deputy of the School of Nursing and Midwifery at Urmia

University of Medical Sciences for its support. They also want to appreciate the participants' sincere cooperation and express their profound gratitude to Mariam Angelica Parizad For her manuscript review and editing assistance.

### Authors' contributions

N.P., L.A. and M.P. designed the study; L.A., V.A., N.P. and M.P. collected the data; R.C., V.A., and N.P. prepared manuscript; N.P., V.A. and R.C. prepared Figure 1-2; N.P. and V.A. prepared Tables 1-4; V.A., N.P. and R.C. analyzed and interpreted the data; N.P., L.A., M.P., V.A. revised and finalized the manuscript. All authors reviewed and confirmed the final manuscript before submission.

### Funding

This research received a grant (No. 031) from Urmia University of Medical Sciences to support the research in terms of study design, collection, analysis, interpretation of data, and the article's preparation.

### Availability of data and materials

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

### Declarations

#### Ethics approval and consent to participate

This study was conducted in line with the regulations of the Declaration of Helsinki. Approval was granted by the Research Ethics Committee of Urmia University of Medical Sciences (Date: 02/08/2022/No: IR.UMSU.HIMAM.REC.1401.031). All the participants signed written informed consent.

#### Consent for publication

Not applicable.

#### Competing interests

The authors declare no competing interests.

#### Author details

<sup>1</sup>Department of Biostatistics, School of Medicine, Urmia University of Medical Sciences, Urmia, Iran. <sup>2</sup>Patient Safety Research Center, Clinical Research Institute, School of Nursing & Midwifery, Urmia University of Medical Sciences, Urmia, Iran. <sup>3</sup>Department of Medical-Surgical Nursing, School of Nursing & Midwifery, Urmia University of Medical Sciences, Urmia, Iran. <sup>4</sup>Imam Khomeini Hospital, Urmia University of Medical Sciences, Urmia, Urmia, Iran.

Received: 15 April 2023 Accepted: 12 October 2023

Published online: 21 October 2023

### References

1. Tong L. Relationship between meaningful work and job performance in nurses. *Int J Nurs Pract.* 2018;24(2):e12620.
2. Cho HK, Kim B. Effect of nurses' grit on nursing job performance and the double mediating effect of job satisfaction and organizational commitment. *Healthcare.* 2022;10(2):396.
3. Deng J, Guo Y, Ma T, Yang T, Tian X. How job stress influences job performance among Chinese healthcare workers: a cross-sectional study. *Environ Health Prev Med.* 2019;24(1):1–11.
4. Hoboubi N, Choobineh A, Ghanavati FK, Keshavarzi S, Hosseini AA. The impact of job stress and job satisfaction on workforce productivity in an Iranian petrochemical industry. *Saf Health Work.* 2017;8(1):67–71.
5. Chen B, Wang L, Li B, Liu W. Work stress, mental health, and employee performance. *Front Psychol.* 2022;13:1006580.
6. Svergun O, Fairlie P. The interrelated roles of corporate social responsibility and stress in predicting job outcomes. *J Work Behav Health.* 2020;35(3):193–210.
7. Starc J. Stress factors among nurses at the primary and secondary level of public sector health care: the case of Slovenia. *Open Access Maced J Med Sci.* 2018;6(2):416–22.
8. Samaei SE, Khosravi Y, Heravizadeh O, Ahangar HG, Pourshariati F, Amrolahi M. The effect of emotional intelligence and job stress on burnout:

- a structural equation model among hospital nurses. *Int J Occup Hyg.* 2017;9(2):52–9.
9. Bardhan R, Heaton K, Davis M, Chen P, Dickinson DA, Lungu CT. A cross sectional study evaluating psychosocial job stress and health risk in emergency department nurses. *Int J Environ Res Public Health.* 2019;16(18):3243.
  10. Deng X, Liu X, Fang R. Evaluation of the correlation between job stress and sleep quality in community nurses. *Medicine.* 2020;99(4):e18822.
  11. Halter M, Boiko O, Pelone F, Beighton C, Harris R, Gale J, et al. The determinants and consequences of adult nursing staff turnover: a systematic review of systematic reviews. *BMC Health Serv Res.* 2017;17(1):1–20.
  12. Ghanei Gheshlagh RP, Naser, Dalvand S, Zarei M, Farajzadeh M, Karami M, Sayehmiri K. The prevalence of job stress among nurses in Iran: a meta-analysis study. *Nurs Midwifery Stud.* 2017;6(4):143–8.
  13. Isfahani P, Shamsaie M, Peirovy S, Bahador R, Afshari M. Job stress among Iranian nurses: a meta-analysis. *Nurs Midwifery Stud.* 2021;10(1):57–64.
  14. Babapour A-R, Gahassab-Mozaffari N, Fathnezhad-Kazemi A. Nurses' job stress and its impact on quality of life and caring behaviors: a cross-sectional study. *BMC Nurs.* 2022;21(1):1–10.
  15. Choi H-M, Mohammad AA, Kim WG. Understanding hotel frontline employees' emotional intelligence, emotional labor, job stress, coping strategies and burnout. *Int J Hosp Manag.* 2019;82:199–208.
  16. Mahmoudirad G, Khoshbakht H, Sharifzadeh G, Izadpanah A. Relationship between moral intelligence and psychological safety among emergency and intensive care units nurses. *Health Spiritual Med Ethics.* 2020;7(1):2–8.
  17. Mazzella Ebstein AM, Sanzero Eller L, Tan KS, Cherniss C, Ruggiero JS, Cimiotti JP. The relationships between coping, occupational stress, and emotional intelligence in newly hired oncology nurses. *Psychooncology.* 2019;28(2):278–83.
  18. Salovey P, Mayer JD. Emotional intelligence: Imagination, cognition and personality. *Imagin Cogn Pers.* 1990;9(3):1989–90.
  19. Štiglic G, Cilar L, Novak Ž, Vrbnjak D, Stenhouse R, Snowden A, et al. Emotional intelligence among nursing students: findings from a cross-sectional study. *Nurse Educ Today.* 2018;66:33–8.
  20. White DE, Grason S. The importance of emotional intelligence in nursing care. *J Compr Nurs Res Care.* 2019;4(152):1–3.
  21. Lu YL, Shorey S. Nurses' perceptions of emotional intelligence in the clinical setting: a qualitative systematic review. *J Nurs Manag.* 2021;29(8):2453–60.
  22. Rajabi B, Hashtchin TA, Hatami M. A comparative study of job performance, occupational stress and general health in nurses of psychiatric and emergency department. *Ann Med Health Sci Res.* 2018;25(6):16547–56.
  23. Barida M, Prasetiawan H, Muarifah A. The Development of Self-Management Technique for Improving Students' Moral Intelligence. *Int J Educ Res Rev.* 2019;4(4):660–9.
  24. Lennick D, Kiel F. *Moral intelligence 2.0: Enhancing business performance and leadership success in turbulent times.* Upper Saddle River: Pearson Prentice Hall; 2011.
  25. Saleh K. Moral intelligence and its role in formulating children characters. *Multi-Knowledge Electronic Comprehensive Journal For Education And Science Publications (MECSJ).* 2018;4(7):301–13.
  26. Shirazi ZH, Sabetsarvestani R. Moral intelligence in nursing: an evolutionary concept analysis. *Nurs Pract Today.* 2021;8(4):293–302.
  27. Haddad LM, Geiger RA. Nursing ethical considerations. [Updated 2022 Aug 22] In: *StatPearls. Treasure Island (FL): StatPearls Publishing; 2022.* Available from: <https://www.ncbi.nlm.nih.gov/books/NBK526054/>. 2018.
  28. Raisi M, Bakouei S, Momenuan S. Moral intelligence and aggression in students. *J Biostat Epidemiol.* 2018;4(1):1–9.
  29. Nawaz A, Ansari DN. Impact of job stress on job performance with perceived organizational support as a moderator. *Governance and Management Review.* 2017;2(1):1–18.
  30. Ismail A, Saudin N, Ismail Y, Samah AJA, Bakar RA, Aminudin NN. Effect of workplace stress on job performance. *Econ Rev.* 2015;13(1):45–57.
  31. Soomro MA, Memon MS, Bukhari NS. Impact of stress on employees performance in public sector Universities of Sindh. *Sukkur IBA J Manag Bus.* 2019;6(2):114–29.
  32. Sanchez-Gomez M, Bresó E. In pursuit of work performance: Testing the contribution of emotional intelligence and burnout. *Int J Environ Res Public Health.* 2020;17(15):5373.
  33. Ruble MJ, Cole JD, Weiss SS, Clayton R, Weiss L. The relationship between pharmacist emotional intelligence, occupational stress, job performance, and psychological affective well-being. *J Am Pharm Assoc.* 2022;62(1):120–4.
  34. Zhu Y, Liu C, Guo B, Zhao L, Lou F. The impact of emotional intelligence on work engagement of registered nurses: The mediating role of organizational justice. *J Clin Nurs.* 2015;24(15–16):2115–24.
  35. Rafiee M, Kazemi H, Alimiri M. Investigating the effect of job stress and emotional intelligence on job performance. *Manag Sci Lett.* 2013;3(9):2417–24.
  36. Shukla A, Srivastava R. Examining the effect of emotional intelligence on socio-demographic variable and job stress among retail employees. *Cogent Bus Manag.* 2016;3(1):1201905.
  37. Lu C-S, Kuo S-Y. The effect of job stress on self-reported safety behaviour in container terminal operations: The moderating role of emotional intelligence. *Transport Res F: Traffic Psychol Behav.* 2016;37:10–26.
  38. Hendrawijaya AT, Gumanti TA, Sasongko S, Puspitaningtyas Z. The mediating role of emotional intelligence in the employees performance. *Probl Perspect Manag.* 2018;16(1):145–54.
  39. Shakeri F, Atashzadeh-Shoorideh F, Varzeshnejad M, SveticCisic R, Oomen B. Correlation between ethical intelligence, quality of work life and caring behaviour of paediatric nurses. *Nurs Open.* 2021;8(3):168–74.
  40. Khosravani M, Khosravani M, Borhani F, Mohsenpour M. The relationship between moral intelligence and organizational commitment of nurses. *Clin Ethics.* 2020;15(3):126–31.
  41. Khajavi Z, Vaezzadeh N, Mousavinassab SN, Azimi LH. Relationship between ethical intelligence and professional behavior in nurses. *J Maz Univ Med Sci.* 2020;30(185):86–95.
  42. Pourteimour S, Nobahar M, Raiesdana N. Moral intelligence, clinical placement experience and professional behaviors among Iranian undergraduate nursing students in a baccalaureate nursing program: a descriptive correlational study. *Nurse Educ Pract.* 2021;55:103146.
  43. Memon MA, Ting H, Cheah JH, Thurasamy R, Chuah F, Cham TH. Sample size for survey research: review and recommendations. *J Appl Struct Equ Model.* 2020;4(2):1–20.
  44. Lee M-H, Holzemer WL, Faucett J. Psychometric evaluation of the Nursing Stress Scale (NSS) among Chinese nurses in Taiwan. *J Nurs Meas.* 2007;15(2):133–44.
  45. Landa JMA, López-Zafra E, Martos MPB, del Carmen A-L. The relationship between emotional intelligence, occupational stress and health in nurses: a questionnaire survey. *Int J Nurs Stud.* 2008;45(6):888–901.
  46. Gray-Toft P, Anderson JG. The nursing stress scale: development of an instrument. *J Behav Assess.* 1981;3:11–23.
  47. Paterson T, Husband T. Decision-making responsibility: Yardstick for job evaluation. *Compens Rev.* 1970;2(2):21–31.
  48. Hosseini M, Sedghi Goyaghaj N, Alamadarloo A, Farzadmehr M, Mousavi A. The relationship between job burnout and job performance of clinical nurses in shiraz shahid rajaei hospital (thruma) in 2016. *J Clin Nurs Midwifery.* 2017;6(2):59–68.
  49. Goleman D. *Emotional intelligence.* New York City: The University of Michigan: Bantam Books; 1995.
  50. Mansouri B. Standardization of Siberia shrink emotional intelligence test for graduate students of state universities in Tehran [Thesis in Persian]. Tehran: Allameh Tabatabai University, Faculty of Psychology and Educational Sciences; 2001.
  51. Lennick D, Kiel F. *Moral intelligence.* Philadelphia: Wharton University of Pennsylvania; 2005. p. 16.
  52. Majidi SA, Kouchakzadeh S, Safarmohammadi H, Kazemnezhad LE. Assessment of Hospital Nurses' Moral Intelligence: A Cross-Sectional Study in Guilan Province, North of Iran. *Shiraz E-Med J.* 2018;19(10):e62299.
  53. Letvak S, Buck R. Factors influencing work productivity and intent to stay in nursing. *Nurs Econ.* 2008;26(3):159–65.
  54. Cohen S. Aftereffects of stress on human performance and social behavior: a review of research and theory. *Psychol Bull.* 1980;88(1):82–108.
  55. Parizad N, Lopez V, Jasemi M, Gharaghajji Asl R, Taylor A, Taghinejad R. Job stress and its relationship with nurses' autonomy and nurse-physician collaboration in intensive care unit. *J Nurs Manag.* 2021;29(7):2084–91.
  56. Cano CR, Sams D. The importance of an internal marketing orientation in social services. *Int J Nonprofit Volunt Sect Mark.* 2009;14(3):285–95.

57. Karimi L, Leggat SG, Bartram T, Rada J. The effects of emotional intelligence training on the job performance of Australian aged care workers. *Health Care Manage Rev.* 2020;45(1):41–51.
58. Joseph DL, Newman DA. Emotional intelligence: an integrative meta-analysis and cascading model. *J Appl Psychol.* 2010;95(1):54–78.
59. Nguyen NN, Nham PT, Takahashi Y. Relationship between ability-based emotional intelligence, cognitive intelligence, and job performance. *Sustainability.* 2019;11(8):2299.
60. Newton C, Teo ST, Pick D, Ho M, Thomas D. Emotional intelligence as a buffer of occupational stress. *Pers Rev.* 2016;45(5):1010–28.
61. Kiani MP, Sarasia HS, Moghadam AT. The study of the relationship between moral intelligence and job satisfaction with mental health among the accountants and financial managers of companies in Mashhad industrial town. *J Fundam Ment Health.* 2016;18(Special Issue):499–504.
62. Rahimi Koloor H, Kazemi R. Mediating Role of Self-Esteem in the Relationship between Ethical Intelligence & Job Performance. *Ethics Sci Tech.* 2021;16(2):170–5.
63. Ebrahimi N, Sadeghmoghadam L, Hosseinzadeh F, Bahri N. The relationship between emotional intelligence with job and individual characteristics of nursing staff. *J Health Saf Work.* 2020;10(3):35–8.
64. Yusefi AR, Nikmanesh P, Bordbar S, Khammarnia M, Kavosi Z. Workload status and its relationship with job stress in nurses during the COVID-19 pandemic. *Iran J Health Sci.* 2021;9(4):1–11.
65. Ogunleye AJ, Osekita DA. Effect of job status, gender, and employees' achievement motivation behavior on work performance: a case study of selected local government employees in Ekiti State, Nigeria. *Eur Sci J.* 2016;12(26):235–48.

### Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Ready to submit your research? Choose BMC and benefit from:

- fast, convenient online submission
- thorough peer review by experienced researchers in your field
- rapid publication on acceptance
- support for research data, including large and complex data types
- gold Open Access which fosters wider collaboration and increased citations
- maximum visibility for your research: over 100M website views per year

At BMC, research is always in progress.

Learn more [biomedcentral.com/submissions](https://biomedcentral.com/submissions)

