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Role of spiritual intelligence and demographic factors as predictors of occupational stress, quality of life and coronavirus anxiety among nurses during the COVID-19 pandemic

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Abstract

Aim: This study investigated the impact of spiritual intelligence and demographic factors in the prediction of occupational stress, quality of life and coronavirus anxiety among nurses.

Design: A cross-sectional study was planned.

Methods: The study was conducted among full-time nurses who were employed in two teaching hospitals of Babol city which were referral centres for caring patients infected with COVID-19 from February–May 2021. One hundred and twenty-nine nurses completed five questionnaires including the demographic questions, Quality of life (WHOQOL-BRIF), Occupational Role Questionnaire (ORQ), Spiritual Intelligence and Coronavirus Anxiety Scale.

Results: The findings revealed that 69% of the nurses experienced moderate occupational stress, moderate quality of life and low coronavirus anxiety. Spiritual intelligence was the only significant negative predictor of occupational stress ($\beta = -0.517$, $p = <0.001$). The only positive predictor of quality of life was perceived income adequacy. Predicting factors of coronavirus anxiety were the perceived income adequacy as protective ($\beta = -0.221$, $p = 0.022$) and the number of children as predisposing ($\beta = 0.401$, $p = 0.004$) factors. These findings should be considered when planning nursing interventions for improvement of occupational stress, quality of life and anxiety especially during crises like the COVID-19 pandemic.

KEYWORDS
coronavirus anxiety, COVID-19, nurse, occupational stress, quality of life, spiritual intelligence

1 | INTRODUCTION

Since the emergence of corona virus disease 2019 (COVID-19) in Wuhan, the nurses have been fully engaged at the front line through both prevention and control of the pandemic (Said & EL-Shafei, 2021). The sudden outbreak of COVID-19 had a psychological impact on healthcare providers especially nurse. A systematic review aimed to assess the mental health of healthcare workers during the COVID-19. The results reported the anxiety with a pooled prevalence of 23·2%, depression, the depression with a prevalence rate of 22·8% and insomnia with prevalence rate of 38·9% (Pappa et al., 2020). A prospective cohort study assessed the mental health of the nurses between March 31–4 May 2020. The results showed that the only predictor of anxiety/depression among nurses was the fear to infect others and the fear to be infected with COVID-19 (Sampaio et al., 2021). The evidence confirmed that the occupational stress associated with COCID-19 was an essential indicator of psychological problems among nurses (Zhang et al., 2020).

In Iran, the National Headquarters for COVID-19 Management was established in February 2020 to start a national campaign to fight COVID-19. Also, Iranian Ministry of Health and Medical Education and Iranian Nursing Organization were invited to join forces against the pandemic. Some of the national strategies to confront the pandemic included the following: setting up Iranian national COVID-19 electronic screening system (https://salamat.gov.ir), raising community awareness and promoting behavioural changes, providing the required strategies to optimize the supply of personal protective equipment, activating Hospitals' preparation plan, finding active cases at primary health centres, developing strict protocols for the protection of medical staff, and vaccinating the population against COVID-19. About 15,000 medical staff and 200,000 nurses (in BS, MS and PhD level) have been active in the fight against the COVID-19. Unfortunately, a number of medical staff has lost their lives in battle with COVID-19. As there was lack of nurses for caring the patients, about 1,073 individuals from faculty members, nursing schools' students, freelance and retired nurses came into clinics and referral centres as volunteers (MHME, 2020).

Iran, like many countries involved in COVID-19, has become affected by its economic and health consequences. Evidence shows changes in labour marketing with a decrease in employment and an increase in unemployment (Tahernia & Hasanvand, 2020). Official statistics indicate that more than 7,000,000 people were infected and almost 139,000 lost their lives to Covid-19 infection (MHME, 2020). Also, the morbidity of COVID-19 among medical staff, especially nurses, was higher than the general population. Results of a meta-analysis show that 23% of Iranian nurses developed a mental illness such as anxiety (Salari et al., 2020).

The pandemic increased the occupational stress for medical staff especially for nurses (Said & EL-Shafei, 2021). Many nurses have been exposed to a lack of access to personal protective equipment and lack of training in workplaces (Daly et al., 2020). Also, long work shifts, limited workforce and equipment, the occurrence of countless deaths of many patients as well as co-workers aggregates the occupational stress of the nurses during the COVID-19 pandemic (Neto

et al., 2020). The COVID-19 pandemic affected the quality of life of the healthcare workers especially nurses. A study among 339 nurses reported that fear of coronavirus negatively affected nurses' quality of work life (Maslakçi et al., 2021). A study reported that quality of life of healthcare workers in the Netherland was significantly lower during the peak of coronavirus when compared with that prior to the onset of the pandemic(Gonçalves et al., 2020). Some of the sources of stress affecting the quality of life of the nurses due to the pandemic are as follows: acquiring the coronavirus and infecting family members, caring for patients affected with COVID-19, the stressful clinical environment, and an increased workload (d'Aquin, 2020; Eweida et al., 2020; Labrague et al., 2018).

The spiritual intelligence (SI) is defined as inherent capacity for a deep understanding of existential questions, the meaning of life and experiencing the seamless connection between the person and the world (Wolman, 2001). The goal of spirituality is to raise individuals' awareness and promote the universal values that help individuals live and work better (Brandt, 1996). Spirituality is integrated to daily life and its challenges across one's community and workplace. When employees feel spirituality connected to their work, they experience peace of mind, inner strength, tranquillity, patience at work, calm and positive attitude. Thus, individuals' spirituality contributes to dealing with stressful situations, especially at work (Gold, 2011).

Previous studies confirmed that spiritual intelligence is an important factor in the well-being of individuals (Pant & Srivastava, 2019). Evidence supports that there is a strong negative relationship between perceived stress and spiritual intelligence (Chehrazi et al., 2021; Faramarzi et al., 2017; Moallemy, 2010). Research advocated that the spiritual well-being of the nurses is just as important as the other aspects of their life during the COVID-19 crisis (Alquwez et al., 2021). However, there is little study about the relationship between occupational stresses and SI among nurses. We could not find any published study reporting the association between occupational stress and SI among nurses during the COVID-19 pandemic. A study was conducted to explain the influence of spiritual intelligence on job stress of nurses in four hospitals in Manado city of Indonesia. Two hundred and twenty-seven nurses participated in the study. The results emphasized that spiritual intelligence has a significant and negative effect on occupational stress (Petrus et al., 2018).

Previous studies revealed some factors affecting occupational stress and quality of life among nurses (Daly et al., 2020; Neto et al., 2020; Petrus et al., 2018); however, there are many other unexplored aspects that need to be investigated in order to have a comprehensive understanding of the issue. To the best of our knowledge, no published study has reported the role of spirituality in predicting occupational stress among nurses during the COVID-19 pandemic. The study aimed to examine the following: (a) nurses' level of occupational stress, quality of life and coronavirus anxiety during the pandemic (b) the association of spiritual intelligence, occupational stress and coronavirus anxiety with demographic characteristics of the nurses (c) the role of spiritual intelligence and demographic factors as predictors of occupational stress, quality of life and coronavirus anxiety among nurses.

2 | MATERIALS AND METHODS

The research was a cross-sectional and correlational study. Convenience sampling was used to recruit the nurses available to the researchers. According to the information obtained from the correlations of a previous study (Barghandan & Khalatbari, 2017) ($r = 0.24$, $\beta = 0.2$, $\alpha = 0.005$), the sample size was estimated to be 129. However, our previous study during pandemic showed that some participants did not answer the questions well with online survey (Hamidia et al., 2020). Thus, we estimated the sample size with an attrition risk of 15% in valid questionnaires.

$$n \geq \left(\frac{Z_{1-\frac{\alpha}{2}} + Z_{1-\beta}}{\frac{1}{2} \ln \frac{1+r}{1-r}} \right)^2 + 3 = 150.$$

The research was conducted among full-time nurses who were employed in two teaching hospitals of Babol University of Medical Sciences which were referral centres for caring patients infected with COVID-19 from February–May 2021. Nurses invited to the study had to work in one of the five wards accommodating patients with COVID-19 including Intensive Unit care (ICU), surgery, internal medicine, emergency and infectious wards. Inclusion criteria for nurses were being in practice, working full-time and being willing to participate in study. The nurses who were on permanent extended leave exceeding 2 weeks before the beginning of the study were excluded the study. Also, we excluded nursing assistants from the study.

A member of the research team conducted an interview with the nurses. The inclusion and exclusion criteria were applied and history data were obtained. The purpose of the study was explained to the nurses which were later instructed to fill the questionnaires. Of all the 180 nurses (152 women, 28 men) who were eligible to enter the study, 140 nurses (134 women, 6 men) accepted the invitation. Due to the low level of men's participation, it was preferred to continue the study with a single gender (women). Finally, data of female 134 nurses, 106 nurses with bachelor's degree and 28 nurses with master of science degree were analysed. One hundred and thirty-four female nurses completed the five questionnaires of the study including demographic, Quality of life (WHOQOL-BRIF), Occupational Stress Inventory-Revised Edition (OSI-R), Spiritual Intelligence and Coronavirus Anxiety Scale. Finally, after omitting five invalid questionnaires, the data of 129 female nurses were analysed.

2.1 | Measurements

2.1.1 | Demographic questionnaire

The first part of the questionnaire contained questions regarding to socio-demographic data and the nurses' history of employment.

2.1.2 | Occupational role questionnaire

It was developed by Osipow (1998). OSI-R consists of 140 questions with three inter-related overall dimensions or factors including occupational role stress, personal strain and coping resources. Each dimension was assessed through a questionnaire as part of the overall scale. In this research, we used the dimension of Occupational Role Questionnaire (ORQ) that is consisted of 60 questions with six subscales including role overload, role insufficiency, role ambiguity, role boundary, role responsibility and physical environment. Each subscale consisted of 10 items. Each item contains a five-point Likert scale with 1 = never exposed, 2 = never stressful, 3 = occasionally stressful, 4 = frequently stressful and 5 = extremely stressful. The total score ranged 60–300 and each subscale ranged 10–50 (Osipow, 1998). In this study, we used the Persian validated OSI-R. The level of occupational role stress was calculated by summing the total score of all six subscales (Sharifian et al., 2006).

2.1.3 | Quality of life (WHOQOL-BRIF)

SF-26 developed by WHO (1996), which measures physical and mental health status was used for assessing the quality of life (World Health Organization. Division of Mental, 1996). The scale includes 26 questions with four subscales including physical health, psychological health, social relationships and environment. The total score ranged from 1–100. Higher scores indicated a higher quality of life. We used the validated Persian WHOQOL-BRIF in this study (Nejat et al., 2006).

TABLE 1 Demographic characteristics of the nurses

Variable	Frequency	Percentage (%)
Age (years)		
<30	35	27.1
30–35	48	37.2
>35	46	35.7
Marriage		
Single	16	12.4
Married	113	87.6
Perceived income adequacy		
Insufficient	82	63.5
Sufficient	47	36.5
Number of children		
0	39	30.2
1	36	27.9
>2	54	41.9
Duration of employed (years)		
<5	35	27.1
5–10	43	33.3
>10	51	39.5
Infected with COVID-19		
No	74	57.4
Yes	55	42.6

TABLE 2 Relationship between spiritual intelligence and its subscales with demographic characteristics of the nurses

	Age				Marriage			Economic status of husband			Number of children				Years of occupation				Infected with COVID-19		
	<30	30–35	>35		Single	Married		Insufficient	Sufficient		0	1	≥2		<5	5–10	>10		No	Yes	
Insight	90.62 ± 15.26	94.16 ± 10.91	94.19 ± 14.75		86.61 ± 15.29	94.21 ± 13.07		93.90 ± 13.30	95.10 ± 12.56		92.65 ± 14.51	91.70 ± 12.75	94.64 ± 13.45		90.19 ± 14.87	96.20 ± 9.03	92.69 ± 15.52		95.03 ± 11.27	91.78 ± 15.04	
				0.402			0.026*			0.663				0.570				0.127			0.153
Behaviour	116.57 ± 18.16	117.49 ± 11.45	117.98 ± 14.76		110.94 ± 14.57	118.40 ± 14.39		117.66 ± 13.09	120.45 ± 17.58		118.37 ± 16.16	115.68 ± 14.46	117.82 ± 13.49		114.84 ± 15.47	119.89 ± 13.17	117.04 ± 15.04		121.34 ± 14.52	114.36 ± 13.97	
				0.908			0.043*			0.357				0.689				0.286			0.005*
Total score	207.03 ± 31.91	211.65 ± 20.94	212.15 ± 27.87		197.11 ± 28.16	212.62 ± 25.88		211.57 ± 24.88	215.55 ± 28.83		210.88 ± 28.99	207.38 ± 26.06	212.44 ± 25.33		204.86 ± 28.97	216.09 ± 20.68	209.71 ± 28.99		216.36 ± 24.21	206.05 ± 27.67	
				0.640			0.021*			0.466				0.671				0.155			0.023*

*$p < 0.05$.

2.1.4 | Spiritual intelligence

The scale was developed by Yadollahpour and Fazeli Kebria (2020). It consists of 68 items. The scale has two subscales including insight (capacity of transcendence, meaning of life and understanding and communicating with God) and behaviour (actions and behaviours related to the spiritual world, Virtuous behaviours such as gratitude, forgiveness, compassion, remembering and praying to God). The participants rated their agreement with the items on a five-point Likert scale with 0 = never to 4 = completely agree. The total scores were ranged 0 to 272. The reliability of the scale was measured with alpha Cronbach ($\alpha = 0.7$) (Yadollahpour & Fazeli Kebria, 2020).

2.1.5 | Coronavirus anxiety scale

It identifies probable cases of dysfunctional anxiety associated with the COVID-19 crisis. The scale consists of five items. The participants answered the frequency of the symptom ranging from 0 (not at all) to 4 (nearly every day) over the preceding 2 weeks. The total scores ranged from 0–20. Higher scores indicated higher coronavirus anxiety (Lee, 2020).

2.2 | Statistical methods

To describe the characteristics of the nurses, a number of statistical measures including mean, standard deviation, frequency, percentage and range were used. T-tests and ANOVA were also used to examine differences between participants with various demographic characteristics for spiritual intelligence, occupational stress, quality of life and coronavirus anxiety. To explore the relationship between spiritual intelligence, occupational stress, quality of life and coronavirus anxiety, Pearson's correlations were used. Three simple linear regression models were performed to assess relationship between spiritual intelligence and demographic characteristics on occupational stress, the quality of life and coronavirus anxiety. In three models, spiritual intelligence and demographic characteristics of the nurses were the independent variables. Occupational stress, quality of life, coronavirus anxiety was the dependent variable, respectively, in models 1, 2 and 3. Analyses of the data were performed using the SPSS Statistical package, version 18 computer software.

2.3 | Ethical considerations

This study was approved by the ethics committee of Babol University of Medical Sciences (IR.MUBABOL.HRI.REC.1399.508). The study had been performed in accordance with the ethical standards described in an appropriate version of the 1975 Declaration of Helsinki, as revised in 2000. All participants

TABLE 3　Relationship between occupational stress and its subscales with demographic characteristics of the nurses

	Age			Marriage		Economic status of husband		Number of children			Years of occupation			Infected with COVID-19	
	<30	30–35	>35	Single	Married	Insufficient	Sufficient	0	1	≥2	<5	5–10	>10	No	Yes
Overload	27.38 ± 5.3	27.87 ± 5.7	27.53 ± 5.6	28.08 ± 5.4	27.44 ± 5.7	27.77 ± 5.5	26.55 ± 6.0	28.00 ± 5.6	26.76 ± 5.9	27.67 ± 5.5	28.19 ± 5.5	26.17 ± 5.3	28.25 ± 5.9	26.61 ± 5.3	28.24 ± 5.8
	0.874			0.671		0.309		0.562			0.135			0.097	
Insufficiency	29.54 ± 5.4	27.75 ± 4.3	27.06 ± 5.0	29.89 ± 6.5	27.71 ± 4.8	27.78 ± 4.8	27.52 ± 5.2	28.86 ± 5.2	26.92 ± 4.5	28.05 ± 4.9	29.57 ± 5.5	27.26 ± 4.3	27.10 ± 4.9	28.03 ± 5.0	27.97 ± 5.0
	0.070			0.188		0.790		0.165			0.065			0.945	
Ambiguity	28.86 ± 6.0	29.24 ± 5.5	28.28 ± 4.4	29.17 ± 6.1	28.74 ± 5.2	28.33 ± 5.2	29.90 ± 5.1	28.79 ± 5.8	28.30 ± 4.7	29.15 ± 5.3	28.41 ± 6.1	29.96 ± 5.4	28.06 ± 4.4	29.14 ± 4.8	28.54 ± 5.6
	0.675			0.756		0.151		0.740			0.187			0.522	
Boundary	26.16 ± 3.9	26.86 ± 4.0	27.04 ± 4.0	27.17 ± 4.3	26.67 ± 3.9	26.77 ± 4.1	26.39 ± 3.5	26.21 ± 4.0	27.86 ± 4.0	26.38 ± 3.8	25.65 ± 4.1	27.37 ± 3.8	26.94 ± 4.0	26.46 ± 3.7	26.95 ± 4.2
	0.588			0.626		0.650		0.132			0.137			0.485	
Responsibility	28.11 ± 5.1	28.59 ± 4.2	27.49 ± 4.4	28.17 ± 6.1	28.06 ± 4.3	28.07 ± 4.4	28.03 ± 3.9	28.16 ± 5.1	27.86 ± 4.3	28.15 ± 4.3	28.32 ± 5.0	28.35 ± 4.1	27.65 ± 4.6	27.92 ± 3.9	28.20 ± 5.0
	0.497			0.944		0.967		0.951			0.703			0.715	
Physical environment	26.32 ± 5.4	25.63 ± 5.9	26.62 ± 7.0	26.94 ± 5.4	26.04 ± 6.2	26.06 ± 6.3	26.00 ± 6.3	26.05 ± 5.7	26.76 ± 6.8	25.82 ± 6.5	26.35 ± 5.5	25.35 ± 6.1	26.75 ± 6.6	26.63 ± 6.7	25.80 ± 5.6
	0.720			0.566		0.965		0.775			0.523			0.443	
Total Score	166.43 ± 23.03	165.51 ± 17.57	165.09 ± 22.55	169.83 ± 28.28	164.97 ± 19.47	164.87 ± 19.65	165.23 ± 19.30	166.60 ± 21.34	163.57 ± 20.94	166.22 ± 20.56	166.73 ± 24.96	164.39 ± 16.01	166.12 ± 22.01	164.97 ± 19.29	166.12 ± 22.01
	0.975			0.489		0.931		0.776			0.873			0.751	

TABLE 4 Relationship between quality of life and coronavirus anxiety with demographic characteristics of the nurses

	Age			Marriage		Economic status of husband		Number of children			Years of occupation			Infected with COVID-19	
	<30	30–35	>35	Single	Married	Insufficient	Sufficient	0	1	≥2	<5	5–10	>10	No	Yes
Physical health	25.59 ± 3.72	25.35 ± 4.38	22.96 ± 4.86	25.28 ± 2.24	24.48 ± 4.77	23.64 ± 4.60	26.81 ± 4.52	25.44 ± 3.64	24.24 ± 5.15	24.15 ± 4.67	24.57 ± 3.74	25.28 ± 5.10	23.98 ± 4.47	24.68 ± 4.87	24.51 ± 4.25
p-value	0.008			0.252		0.001*		0.323			0.366			0.834	
Psychologic	21.78 ± 3.28	21.20 ± 2.82	20.38 ± 2.83	22.11 ± 2.63	20.91 ± 3.19	20.37 ± 2.78	22.42 ± 2.94	21.93 ± 2.93	20.86 ± 2.86	20.55 ± 3.01	21.24 ± 3.33	21.72 ± 2.41	20.38 ± 3.10	21.00 ± 3.45	21.13 ± 2.59
p-value	0.096			0.114		0.001*		0.065*			0.081			0.858	
Social	11.38 ± 2.00	11.18 ± 2.46	10.36 ± 2.26	11.00 ± 1.23	10.94 ± 2.42	10.69 ± 2.39	11.65 ± 2.43	11.58 ± 1.99	11.00 ± 2.19	10.42 ± 2.50	11.22 ± 1.81	11.35 ± 2.31	10.40 ± 2.53	10.97 ± 2.41	10.93 ± 2.22
p-value	0.088			0.872		0.059		0.044*			0.090			0.937	
Environment	26.57 ± 3.61	25.90 ± 5.03	23.77 ± 4.97	26.17 ± 3.83	25.21 ± 4.91	24.43 ± 4.85	27.39 ± 4.47	26.21 ± 4.47	24.57 ± 5.16	25.18 ± 4.73	25.95 ± 3.97	25.83 ± 4.76	24.48 ± 5.25	24.27 ± 5.35	26.17 ± 4.12
p-value	0.015			0.433		0.004*		0.296			0.254			0.021	
Total	92.00 ± 10.41	91.04 ± 12.47	84.23 ± 11.33	91.06 ± 8.24	88.61 ± 12.44	86.07 ± 11.16	95.65 ± 13.26	91.91 ± 9.93	87.76 ± 12.01	87.40 ± 13.13	89.49 ± 10.59	91.59 ± 12.44	86.19 ± 12.11	88.25 ± 14.03	89.46 ± 10.16
p-value	0.003*			0.421		0.001*		0.142			0.079			0.579	
Corona Stress	0.43 ± 0.68	1.22 ± 1.94	1.11 ± 1.85	0.44 ± 0.78	1.04 ± 1.76	1.20 ± 1.96	0.61 ± 0.95	0.44 ± 0.70	0.92 ± 1.90	1.40 ± 1.94	0.41 ± 0.68	1.11 ± 1.87	1.23 ± 1.91	0.95 ± 1.80	0.97 ± 1.59
p-value	0.074			0.161		0.034*		0.018*			0.056			0.933	

*$p < 0.05$.

signed a written informed consent before the beginning of the study. Anonymity and confidentiality were guaranteed for the participants.

TABLE 5 Correlations between spiritual intelligence with occupational stress, quality of life and anxiety of coronavirus in nurses

	Spiritual intelligence		
	Insight	Behaviour	Total
Occupational stress			
Role overload	r = −0.411 p < 0.001*	r = −0.499 p < 0.001*	r = −0.485 p < 0.001
Role insufficiency	r = −0.410 p < 0.001*	r = −0.357 p < 0.001*	r = −0.408 p < 0.001*
Role ambiguity	r = −0.205 p = 0.017*	r = −0.124 p = 0.15	r = −0.177 p = 0.040*
Role boundary	r = −0.464 p < 0.001*	r = −0.361 p < 0.001*	r = −0.436 p < 0.001*
Role responsibility	r = −0.289 p = 0.001*	r = −0.284 p = 0.001*	r = −0.308 p < 0.001*
Physical environment	r = −0.275 p = 0.001*	r = −0.311 p < 0.001*	r = −0.307 p < 0.001*
Total occupational stress	r = −0.509 p < 0.001*	r = −0.473 p < 0.001*	r = −0.522 p < 0.001*
Quality of life			
Physical health	r = −0.030 p = 0.729	r = 0.101 p = 0.242	r = 0.040 p = 0.641
Psychological health	r = 0.078 p = 0.370	r = 0.173 p = 0.045*	r = 0.132 p = 0.123
Social health	r = 0.159 p = 0.065	r = 0.307 p < 0.001*	r = 0.249 p = 0.004*
Environment	r = −0.034 p = 0.695	r = 0.026 p = 0.776	r = −0.005 p = 0.953
Total quality of life	r = 0.040 p = 0.641	r = 0.182 p = 0.035*	r = 0.119 p = 0.168
Anxiety of coronavirus	r = 0.083 p = 0.336	r = 0.037 p = 0.671	r = 0.064 p = 0.460

*p < 0.05.

3 | RESULTS

Table 1 describes the demographic characteristics of the nurses. The mean age of the participants was 32.9 ± 5.48 (range; 22 to 50 years). The mean duration of employment of the nurses was 8.67 ± 5.21 years. About 87.6% of nurses were married. Almost 50% of the nurses had more than one child. About 63.5% of the nurses were not satisfied with their income.

Table 2 describes the correlation between spiritual intelligence and its subscales with characteristics of the nurses. The mean score of spiritual intelligence of the nurses was 210 ± 56. The married nurses had a significantly higher score of total SI and two subscales of the SI compared with single nurses (p < 0.05). Also, the total of SI was significantly lower in nurses with positive history of infection with COVID-19 than in those without such a history (p < 0.05). Nurses who had a history of COVID-19 had higher score in subscale of behaviour SI than those without such a history (p < 0.05). However, the factors of perceived income adequacy, the number of children, duration of employee and history of infection with COVID-19 were not associated significantly with two subscales and the total score of SI (p > 0.05).

The mean total scores of occupational stress of the nurses were 165 ± 61 (range; 60 to 300). The levels of role occupational stress of the nurses were: 24.8% low, 68.9% moderate and 6.3% high stress. According to Table 3, the mean total score of occupational stress and six subscales did not relate to age, marriage status, perceived income adequacy, the number of children, duration of employee and history of infection with COVID-19 (p > 0.05).

The mean scores of quality of life for four subscales with a range of 1–100 were (62.84 ± 16.21) for physical health, (63.01 ± 12.48) for psychological health, (66.72 ± 19.54) for social relationships and (55.96 ± 14.97) for environment. Nurses older than 35 years had a significantly lower total score for quality of life and four subscales of the WHOQOL-BRIF compared with those younger than 30 years old (p < 0.05). The nurses who perceived income adequacy had significantly higher total scores for quality of life and three subscales of the WHOQOL-BRIF (physical health, psychological health and environment) compared with those who did not perceive their income as

TABLE 6 Results of three simple linear regression models on the effects of spiritual intelligence and demographic characteristics on occupational stress, quality of life and anxiety of coronavirus

	Occupational stress			Quality of life			Anxiety of coronavirus		
	β	SE	p-value	β	SE	p-value	β	SE	p-value
Spiritual stress	−0.517	0.064	<0.001*	0.113	0.044	0.219	0.128	0.006*	0.179
Age	0.041	0.753	0.837	−0.296	0.515	0.167	−0.304	0.076	0.170
Marriage	−0.025	4.617	0.743	0.097	3.081	0.270	−0.113	0.434	0.201
Perceived income adequacy	0.057	3.778	0.507	0.370	2.583	<0.001*	−0.221	0.379	0.022
Number of children	−0.035	2.665	0.777	−0.153	1.822	0.254	0.401	0.267	0.004
Duration of employed	0.001	0.779	0.996	0.290	0.532	0.170	0.005	0.078	0.982
Infected with COVID-19	0.013	3.295	0.876	0.146	2.252	0.108	−0.017	0.331	0.854

*p < 0.05.

adequate (*p* <0.05). The social score of quality of life of the nurses who had not had any children was significantly higher compared with those with more than one child (*p* = 0.034). The environmental health score of quality life of the nurses with a history of infection with COVID-19 was significantly higher compared with those without such a history (*p* = 0.021). However, the factors of age, level of education and duration of employment were not associated significantly with the four subscales and the total score of WHOQOL-BRIF (*p* >0.05) (Table 4).

The mean scores of coronavirus anxiety among nurses were 1.68±0.9 (range; 0 to 5). The total score of coronavirus anxiety was higher in nurses who perceived income adequacy compared with those who did not (*p* = 0.034). The total score of coronavirus anxiety in the nurses who had more than one child was significantly higher compared with those with no /one child (*p* = 0.018). However, the factors of age, history of infection with COVID-19, level of education, duration of employment and perceived income adequacy were not associated significantly with the total score of coronavirus anxiety (*p* >0.05) (Table 4).

Table 5 outlines the correlations between spiritual intelligence with occupational stress, quality of life and coronavirus anxiety in nurses. There was a significant negative correlation between the total scores of spiritual intelligence and occupational stress; the same was also in the relationships between the two subscales of SI and the six subscales of OS (*p* <0.05). There was a significant positive correlation between the behaviour subscale of SI and the total score of quality of life, psychological health of WHOQOL-BRIF and social health of WHOQOL-BRIF (*p* <0.05). Also, the total score of SI was correlated positively with the social health in WHOQOL-BRIF (*p* <0.05). However, the score of SI was not correlated significantly with the coronavirus anxiety in nurses (*p* >0.05).

Table 6 summarizes the results of three models of linear regressions. In all models, spiritual intelligence and demographic characteristics of the nurses were the independent variables. In model 1 occupational stress, in model 2 quality of life and in model 3 coronavirus anxiety was the dependent variable. The results of the model 1 revealed that total score of SI was a significant negative predictor of occupational stress (β =−0.517, *p* = <0.001). Also, two subscale of SI including insight-emotional SI (β =−0.328, *p* = <0.001) and behavioural SI (β =−0.218, *p* = <0.001) were significant negative predictors of occupational stress. However, age, marriage status, perceived income adequacy, number of children, duration of the employment and history of infection with COVID-19 were not associated with occupational stress of the nurses during the COVID-19 pandemic.

In model 2, the only positive predictors of quality of the nurses during the COVID-19 pandemic was perceived income adequacy (β = 0.37, *p* = <0.001). However, spiritual intelligence, age, marriage status, number of children, duration of employment and history of infection with COVID-19 were not associated with quality of life of the nurses during the COVID-19 pandemic. In model 3, the perceived income adequacy of the nurses was a negative predictor of coronavirus anxiety (β =−0.221, *p* = 0.022). Also, the number of

children was a positive predictor of coronavirus anxiety (β = 0.401, *p* = 0.004) among nurses during the COVID-19 pandemic. However, spiritual intelligence, age, marriage status, duration of employment and history of infection with COVID-19 were not associated with coronavirus anxiety in nurses during the COVID-19 pandemic.

4 | DISCUSSION

This study has attempted to evaluate the role of spiritual intelligence and demographic factors as predictors of occupational stress, quality of life and coronavirus anxiety among nurses during the COVID-19 pandemic. The level of occupational stress and quality of life among nurses as well as their predicting factors is extremely important during a crisis like the COVID-19 pandemic.

In our results, most of the nurses indicated an average level of QoL. Similar to our findings, a study reported a moderate level of professional quality of life among clinical nurses in Saudi Arabia (Keener et al., 2021). However, another study reported a high level of professional quality of life in healthcare providers during the COVID-19 pandemic (Cuartero-Castañer et al., 2021). Yet, another study reported that 21%–54% of nursing students were experiencing a poor QoL (Inocian et al., 2021).

Our finding demonstrated that the demographic factors did not predict the quality of life of the nurses. The perceived income adequacy was the only positive predictors of quality of the nurses during the COVID-19 pandemic. In contrast with our results, previous studies revealed that nurses' demographic such as age and education were associated with professional quality of life. During first wave of COVID-19, 117 of healthcare workers completed professional quality of life in an online study. That finding showed a positive relationship between age and quality of life. Also, the regression analyses reveal that the number of patients per week and the perceived income adequacy were predictors of professional quality of life (Cuartero-Castañer et al., 2021). In an explanation of the difference between our results and other studies, some reasons may be proposed such as differences between waves of COVID-19, cultural differences influencing the predisposing factors, and different assessment tools.

It is interesting to find that the perceived income adequacy was a protective factor against coronavirus anxiety among the nurses. Also, the number of children increased the coronavirus anxiety in nurses. In line with our results, some research reported that people with lower socioeconomic status have a higher tendency to have mental health issues during the COVID-19 pandemic (Heath, 2020; Pappas, 2020). However, a study reported that socioeconomic status did not significantly influence prevalence of anxiety disorders during the COVID-19 pandemic (Agberotimi et al., 2020). The reason for our result could be associated to the fact that individuals with lower income are more at risk of adverse consequences of a crisis like COVID-19. Some stressors caused by COVID-19 have been added to the economic burden of the crisis among people with low income such as, the fear of inability to feed, paying house rent and

purchasing basic safety materials such as sanitizers and mandatory nose masks, leading to the prevalence of higher coronavirus anxiety (Kanter & Manbeck, 2020).

In our results, most of the nurses (69%) experienced moderate occupational stress during the COVID-19 pandemic. In contrast to our finding, three-quarters of nurses (75.2%) in Egypt had high level of stress (Said & EL-Shafei, 2021). In another study, 71.1% of nurses reported high work-related stress (Magnavita et al., 2020). Possibly, the time of assessment of occupational stress of the nurses- outbreak of the first wave of COVID-19 or later waves, the use of different instruments and different cut-off scores may explain the different results.

This study showed that spiritual intelligence is a significant and negative predictor of occupational stress among the nurses. Also, the demographic factors including age, marriage status, satisfaction with income, the number of children, duration of employment and history of infection with COVID-19 were not associated with occupational stress among the nurses during the COVID-19 pandemic. As there is no published study to report the influence of intelligence on job stress during the COVID-19 pandemic, we can only present the evidence found before the crisis. In line with our finding, a study investigated the relationship between occupational stress, self-efficacy and spiritual intelligence among 500 female teachers in Punjab. The results of regression analysis revealed that both self-efficacy and spiritual intelligence independently predicted the occupational stress of female teachers (Anita & Shaveta, 2020). A study among 160 nurses revealed that spiritual intelligence had a significant negative relationship with job stress (Ghaleei et al., 2016).

Our findings demonstrated that other than history of infection with COVID-19, the other personal factors (perceived income adequacy, the number of children and duration of employee) did not impact spiritual intelligence. In our study, nurses who were infected with COVID-19 had lower SI than those free from the infection. Evidence supported the interaction between personal trauma and spirituality during traumatic events. In line with our results, the review of the literature suggests that most people do not change their spirituality after trauma, but a few people experience significant changes that increase or decrease their religious beliefs (Leo et al., 2021; Perera & Frazier, 2013). However, another study confirmed that spirituality is a valuable compass for long-term journeys to solve mourning and loss at work and built a strong professional identity (Missouridou, 2017). Indeed, further cohort studies are required to determine the impact of personal trauma on nurses' spiritual intelligence during traumatic events.

It is important to explain why spiritual intelligence was a significant predictor of occupational stress among nurses during the COVID-19 pandemic. Although the reasons are not clear, a number of hypotheses can be proposed. First, the promotion of spirituality in the workplace has some positive effects on employees including building a positive perception of the organization and increasing the commitment to it, following job descriptions more dutifully, and increasing job satisfaction (Bandsuch & Cavanagh, 2005). Second, research emphasized that there is a strong and negative relationship

between spiritual intelligence of the staff and their desire to leave the job (Rashvand & Bahrevar, 2013). Third, evidence supported that the spirituality is a significant predictor for quality of life among the nurses during the COVID-19 pandemic (Cuartero-Castañer et al., 2021). In sum, individuals with high spirituality have inner strength and resilience that makes them more able to adapt to threatening circumstances, use more effective coping strategies, overcome stressful events, adapt to adversity and have better psychological well-being that may help to adapt to occupational stress, especially during a crisis like the COVID-19 pandemic (Hamidia et al., 2020; Zohar et al., 2001).

There are some limitations that should be mentioned. First, this was a cross-sectional study that was conducted at two state teaching hospitals in Babol city, so the conclusion is not generally applicable to nurses who work in private hospitals. Future studies should consider a multicentre longitudinal design with randomized samples. Second, the convenience sampling method was used, which may have limited the generalizability of the results to all nurses. Finally, the male nurses who accepted to enter the study were too few (6/30), thus the result cannot be generalized to male nurses. Further research should be planned with a larger sample size and participation of both genders among clinical nurses. Third, these results may be affected by Iranian cultural factors and organizations. Islam's religious beliefs may also affect nurses' spiritual intelligence, occupational stress and quality of life. It is recommended that in future studies, the role of different cultures and different religious beliefs on occupational stress and quality of life of medical staff during crises be examined through multinational sampling.

The current study is the first of its kind to provide the evidence to identify the demographic factors as predictors of occupational stress, coronavirus anxiety and quality of life among nurses during the COVID-19 pandemic. Also, it was the first study to investigate the influence of spiritual intelligence on occupational stress during the COVID-19 pandemic.

The results of this study can be used for hospital managers to plan strategies to decrease the occupational stress of the healthcare providers during such crises. The findings highlight that perceiving one's income as inadequate results in experiencing a poor quality of life in future. Efforts to enhance quality of life among nurses in response to the pandemic should focus on reducing occupational stress, increasing salary and facilitating family income.

5 | CONCLUSION

Most of the nurses experienced moderate occupational stress, moderate quality of life and low coronavirus anxiety. The results emphasized that spiritual intelligence is a significant and negative predictor of occupational stress among the nurses. Also, the demographic factors including age, marriage status, perceived income adequacy, the number of children, duration of employment and history of infected with COVID-19 were not associated with occupational stress among the nurses during the COVID-19 pandemic. Further, the perceived income

adequacy was the positive predictor of quality of life as well as the protective factor against coronavirus anxiety among the nurses.

These findings suggest that there is an urgent need for clinical and policy strategies to help increase nurses' spiritual intelligence in order to decrease the occupational stress as well as fear of COVID-19 among nurses combating on the front line during the pandemic. Further, nurses with high spiritual intelligence and sufficient income may be more likely to tolerate the occupational stress and anxiety of the crisis. Also, the study proposes that nursing managers may consider making efforts to increase nurses' salary and to provide extra financial support during such crises, particularly the COVID-19 pandemic. Although the current study was a step to present the predicting factors of occupational stress and quality of life among nurses, further longitudinal studies are required to determine the reasons behind the relationships.

AUTHORS' CONTRIBUTIONS

MH.Y. and M.F. designed and conducted the project, H.G. analysed the data, M.F. wrote the primary draft of the paper, MA.S. edited the English language of the paper, M.Y. prepared the format of the paper and references and M.N. collected the data. All authors reviewed the paper and approved the final manuscript.

All authors have agreed on the final version and meet at least one of the following criteria [recommended bythe ICMJE (http://www.icmje.org/recommendations/)]:

• substantial contributions to conception and design, acquisition of data or analysis and interpretation of data;

• drafting the article or revising it critically for important intellectual content.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

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

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study was approved by the Ethics Committee of Babol University of Medical Sciences (IR.MUBABOL.HRI.REC.1399.508). Anonymity and confidentiality for participants were guaranteed. All students wrote the informed consent at the beginning of the study.

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