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Mediating effect of work stress in the relationship between fear of COVID-19 and nurses' organizational and professional turnover intentions

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ABSTRACT

Nursing is one of the most stressful and high-risk professions. It is important to identify the psychological problems experienced by nurses during the COVID-19 pandemic and examine the relationship between these problems to devise measures that can properly address them. This study examined mediating effect of work stress in the relationship between fear of COVID-19 and nurses' organizational and professional turnover intentions. Using a cross-sectional research design, this study was conducted on 486 nurses working in seven hospitals in Turkey. The mean age of the participants was 35.24 ± 6.81 and 59.9 % of them were women. The Fear of COVID-19 Scale, the General Work Stress Scale, and the Turnover Intention Scale were used to collect data. A mediation model showed that fear of COVID-19 was positively associated with work stress and organizational and professional turnover intentions. The model also revealed that work stress was positively associated with organizational and professional turnover intentions. Furthermore, the results demonstrated that fear of COVID-19 did not only have a direct effect on organizational and professional turnover intentions but also had an indirect effect on it via increased work stress. Findings improve our understanding of the role of work stress in the relationship between fear of COVID-19 and organizational and professional turnover intentions. The findings are fruitful for tailoring and implementing intervention programs to reduce the adverse psychological impacts of COVID-19 on nurses.

Introduction

The novel coronavirus disease (COVID-19), is an infectious disease caused by the SARS-CoV-2 virus (WHO, 2022a). The virus was first observed in Wuhan, China in December 2019 and confirmed on January 13, 2020, following several studies conducted with a group of patients showing respiratory symptoms (e.g., fever, cough, malaise, shortness of breath.). The World Health Organization (WHO, 2022a, b, c) officially declared the virus to be a pandemic on March 11, 2020. The COVID-19 pandemic first spread from person to person in Wuhan before spreading to other states in China and eventually to other countries throughout the world (WHO, 2022b). According to the WHO, as of November 07, 2022, the total number of COVID-19 cases was 628.694.934 and the total number of COVID-19-related deaths was 6.576.088 globally and the total number of COVID-19 cases and deaths were respectively 16.919.638 and 101.203 in Turkey (WHO, 2022c).

Most infected people show mild to moderate levels of respiratory disease and can recover from this disease without any special treatment. However, anyone can catch COVID-19, become severely sick at any age, or even die from this disease (WHO, 2022a). COVID-19 has rapidly spread through the entire world since first being identified as a pandemic, paralyzing its weak global economies, supply chains, and social life and bringing health systems to the point of collapse due to its rapid spread, high risk of infection, and potential of death (Arslan & Burke, 2021; Broadband Commission, 2020; Dirksen & Takahashi, 2020; Green, 2022; Hu et al., 2022; Khemasuwan et al., 2020; Waters & Johnstone, 2022). The effects of the pandemic have been accompanied by uncertainty as a result of its longevity (Dirksen & Takahashi, 2020). Furthermore, the COVID-19 pandemic has affected the psychological health of all healthcare professionals (Yıldırım & Cicek, 2022; Yıldırım & Güler, 2021; Yıldırım & Özaslan, 2022), especially nurses due to work overload, ineffective infection control systems, insufficient personal

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protective equipment, and exposure to physical and verbal violence from patients (Okechukwu et al., 2020).

The COVID-19 pandemic has precipitated numerous mental health problems both in the general public and nurses, such as high levels of anxiety, stress, general fear and fear of infection, despair, stigmatization, and isolation/loneliness, as well as physical symptoms, such as sleep disorders, headaches, malaise, and shortness of breath (Gordon et al., 2021; Green & Yıldırım, 2022; Rehman et al., 2022; Yıldırım, 2021). Nurses who provide care for patients with COVID-19 suffer higher levels of mental and emotional problems (Galehdar et al., 2020; Karimi et al., 2020). The dangerous nature of COVID-19 triggers mental health problems in nurses that negatively affect their physical health and mental well-being. The shift from being a healthcare provider to being a patient with COVID-19 can lead to depression, disappointment, and vulnerability in nurses (Okechukwu et al., 2020).

Mekonen et al. (2020) found that the prevalence of anxiety, depression, and stress among nurses during the pandemic were 69.6 %, 55.3 %, and 20.5 %, respectively. Another study whose sample consisted largely of nurses found that 78.4 % of health care providers experienced work stress, with the main sources of stress being fear of getting infected with COVID-19 or fear of infecting family members, interaction with isolated and vulnerable/dying patients, changes to workplace protocols, and decreased social interaction with colleagues (Nestor et al., 2021). The possible explanation of this difference might be pertaining to the difference in cultural, socioeconomic, and environmental factors such as attitudes, lack of personal protective equipment, and resources contributing to dealing with the psychological impact of the COVID-19 crisis health crisis (Mekonen et al., 2020). Milgrom et al. (2020) reported in their study that there were greater incidences of clinical anxiety among nurses who were working during the pandemic. Other studies (Ilczak et al., 2021; Kirby et al., 2022; Kuo et al., 2020; Zerbini et al., 2020; Wang et al., 2020) have further reported that nurses suffer more stress compared to those other healthcare providers, finding that could be attributed to their heavier workload and to the longer amount of time they spend in direct contact with patients with COVID-19 compared to that of doctors. Leng et al. (2021), in their study, indicated that the main source of stress for nurses included working in an isolated environment, insufficient personal protective equipment and concerns regarding its use, physical and mental exhaustion, heavy workload, the fear of getting infected with COVID-19, and lack of sufficient work experience.

Furthermore, Zhan et al. (2020) found that the prevalence of insomnia among frontline nurses was 52.8 % and that the fear of COVID-19, fatigue and perceived stress level led to insomnia. Studies conducted with healthcare professionals in Turkey reported high symptoms of mental health problems (Bilgiç et al., 2021; Yıldırım et al., 2021; Yıldırım et al., 2022). Workload, work stress, and insufficient hospital resources allocated for the prevention of COVID-19 affect nurse burnout levels (Zare et al., 2021). During the pandemic in Turkey, some studies conducted in public hospitals found that nurse burnout was associated with turnover intention (Bayer et al., 2021; Bayrakçı, 2022). Other studies in the literature have also found that nurse burnout was associated with work stress, fear of COVID-19, and turnover intention (Algunmeeyn et al., 2020; Chirico et al., 2022; Jihn et al., 2021; Sinsky et al., 2021). Hoseinabadi et al. (2020) identified work stress as being one of the key risk factors for COVID-19-related burnout. A study conducted in Ghana reported that 17.2 % of nurses planned to quit work within the next 12 months (Ofei & Paarima, 2022). Chu et al. (2021) found in their study that due to COVID-19, 80.7 % of nurses suffered added stress and 21.6 % thought about quitting work. In the same study, it was reported that nurses were nearly four times more likely to have plans of quitting work than other healthcare providers. When nurses quit their work, this increases the workload of the remaining nurses. Stressful work environments can negatively affect nurses' health and lead to medical errors and improper patient care (Chesak et al., 2019). In one study it was reported that the two primary intervention areas in the fight against COVID-19 were "patient and staff safety, and infection control" (Hussain et al., 2021).

When nurses suffer continuous stress, it can result in poor delivery of service, post-traumatic stress symptoms, suicidal thoughts, and even suicide (Okechukwu et al., 2020). In a study investigating the reasons for suicide among healthcare providers during the pandemic, it was found that the main reason was getting infected with COVID-19, followed by work-related stress and COVID-19-related fear (Jahan et al., 2021). Nurses who provide care to patients with COVID-19 should have recourse to psychiatric interventions to meet their psychological needs, as evaluating and protecting nurses' mental health are required to ensure optimal disease control (Okechukwu et al., 2020).

Identifying the relationships between the different mental health problems of nurses experience due to the COVID-19 pandemic should therefore be thoroughly studied. In the literature, only a few studies (Cole et al., 2021; Labrague & de los Santos, 2021) examined the relationships between fear of COVID-19, work stress, and turnover among certain nurses groups (e.g., frontline nurses) and to date, no studies explicitly examine these relationships among all nurses working in a hospital setting. In addition, to the best of our knowledge, there were no studies in the literature that explored the direct and indirect effects of the fear of COVID-19 on work stress and turnover intention. Considering the gaps mentioned above, this study examined the mediating effect of work stress in the relationship between fear of COVID-19 and nurses' organizational and professional turnover intentions. To end that, we hypothesized that (i) fear of COVID-19 will have a direct effect on work stress, organizational turnover intention, and professional turnover intention, (ii) work stress will have a direct effect on organizational turnover intention, and professional turnover intention and that (ii) work stress will mediate the association of fear of COVID-19 with organizational turnover intention, and professional turnover intention.

Method

Participants

The target population consisted of the nurses working at the public hospitals in the city center (1 training and research hospital and 1 general hospital) and in the districts (5 general hospitals). Some hospitals in Turkey served as pandemic hospitals throughout the COVID-19 pandemic. The research was conducted at one of the training and research hospitals which were operated as a pandemic hospital during the COVID-19 pandemic. Training and research hospitals are general and special branch health institutions where specialists and sub-branch specialists are trained for education, training and research. Other hospitals have the status of general hospitals where outpatient and inpatient examinations and treatments are carried out for all kinds of emergency cases. During the COVID-19 pandemic, nurses were rotated on a unit and hospital basis by the Local Health Authority and served COVID-19 patients. A total of 901 nurses were working at these hospitals (718 at the hospitals in the city centre and 183 at the hospitals in the districts). The study did not draw any sample as the aim was to reach the whole population; however, only a total of 504 nurses, 362 (50.4 %) of whom were working at the hospitals in the city center and 142 (77.6 %) of whom were working at the hospitals in the districts, participated in the study. The responses of 18 participants were not evaluated due to being incomplete (13 from the hospitals in the city center and 5 from the hospitals in the districts were incomplete). The responses of 486 participants were found to be valid, meaning that 53.9 % of the target population was reached.

Ethical considerations

The study was approved by the Batman Training and Research Hospital Ethical Commission. The ethics committee permission required to perform the study was obtained on 15 December 2020 with decision

number 260. In order to carry out the research, necessary administrative permissions were obtained from the COVID-19 Scientific Research Evaluation Commission of the Ministry of Health of the Republic of Turkey (decision number was 2020–12-11 T14–02-03) and the Batman Provincial Health Directorate (decision number was 04-01-2021/00131548886) to which 7 hospitals were affiliated.

Procedure

The researchers distributed the questionnaires to the participants through a paper-pencil version, and the nurses who volunteered to participate in the study were asked to fill out the questionnaires. The questionnaires were collected during weekly visits made to the hospital. All participants agreed to take part in the study, and informed consent was obtained from all of them. Confidentiality and anonymity of responses were assured.

Measures

The data collection tools used in the study were the Fear of COVID-19 Scale, the General Work Stress Scale, and the Turnover Intention Survey. In addition, a 9-item questionnaire was prepared by the researchers to identify the professional and demographic characteristics of the nurses. The scales and the questionnaire are described below.

Fear of COVID-19 Scale

This scale, a unidimensional scale with 7 items (e.g. *"I am afraid of losing my life because of coronavirus" and "I cannot sleep because I'm worrying about getting coronavirus"*), was originally developed by Ahorsu et al. (2020, p.1544). Haktanir et al. (2022) and Ladikli et al. (2020) are credited with conducting the validity and reliability studies of its Turkish version; the Cronbach's alpha coefficient was 0.86 for both of these studies. Results of the confirmatory factor analysis indicated that this scale has high reliability and good fit values. The Cronbach's alpha coefficient was 0.89 for this study. Responses to the questions were made on a 5-point Likert-type scale (1 = Strongly disagree, 5 = Strongly agree).

General Work Stress Scale

This scale, a unidimensional scale with 9 items (e.g. *"Does work make you so stressed that you wish you had a different job?" and "Does work make you so stressed that you find it hard to concentrate on your tasks?")* was developed by De Bruin (2006). Teleş (2021, p.716) conducted a validity and reliability study of its Turkish version. The Cronbach's alpha coefficient was 0.91 for its Turkish version, meaning that this scale has high reliability. Results of the confirmatory factor analysis indicated that the scale has perfect and good fit values. The Cronbach's alpha coefficient was 0.92 for this study. Responses to the questions were made on a 5-point Likert-type scale (1 = Never, 5 = Always).

Turnover Intention Survey

This survey includes two questions, one on the professional turnover intention of nurses and the other on their organizational turnover intention. The professional turnover intention was evaluated based on the statement, *"Given the current situation, I am thinking about leaving nursing as a profession",* while the organizational turnover intention was evaluated based on the statement, *"Given the current situation, I am thinking about leaving this healthcare facility"*. The questionnaire items were obtained from the study by Labrague and de los Santos (2021, p. 397). Responses to the questions were made on a 5-point Likert-type scale (1 = Strongly disagree, 5 = Strongly agree).

Data analysis

The study data were analyzed using the SPSS 20.0 and the LISREL-LisWin32 programs. Professional and sociodemographic variables were assessed using numbers, percentages, and means ± standard deviations. Skewness and kurtosis with corresponding cut-off values were used to test the distribution of the variables. Cronbach's alpha was used to test the internal consistency reliability. The *t*-test and one-way variance analysis (ANOVA) was applied to determine whether the nurses' fear of COVID-19, work stress, and turnover intentions varied by professional and sociodemographic variables. The equality of variance was examined using Levene's test. Post-hoc was employed to examine which group was statistically significantly different from one another. Pearson's correlation coefficient was used to determine the correlations between the fear of COVID-19, work stress, and turnover intentions, while path analysis was used to determine the effects of the fear of COVID-19 and work stress levels on the turnover intentions (organizational or professional) of the nurses. The level of significance for the analyses was accepted as $p < 0.05$.

Results

Nearly two out of every five participants (59.9 %) were female and almost half (47.9 %) had bachelor's degrees. Moreover, 20.2 % of the nurses were working in internal medicine units and 16 % were working in surgical units, and almost two out of every three nurses were working duty shifts, while just over half (50.6 %) worked overtime. In all public hospitals in Turkey, nurses are legally required to work >40 h, if needed. The participants' mean age was 35.24 ± 6.81 years, and a majority of them (71.8 %) were working at the hospitals in the city center (Table 1).

Table 2 shows the distribution of the nurses' scores on fear of COVID-19, work stress, and organizational and professional turnover intentions

Table 1
Sociodemographic and professional characteristics of the nurses ($N = 486$).

	N	%	Mean ± SD[a]
Gender			
Female	291	59.9	
Male	195	40.1	
Age (years)			35.24 ± 6.81
21–30	140	28.8	
31–40	245	50.4	
≥41	101	20.8	
Education level			
High school	49	10.1	
Associate degree	132	27.2	
Bachelor's degree	233	47.9	
Master's degree	72	14.8	
Weekly working hours			
40 h	240	49.4	
48 h	196	40.3	
56 h	50	10.3	
Type of shift			
Day shift	257	32.3	
Duty shift	329	67.7	
Place of duty			
District	349	71.8	
Province	137	28.2	
Years of working at the hospital (years)			6.72 ± 4.53
≤5	212	43.6	
≥6	274	56.4	
Years of professional experience (years)			11.0 ± 7.11
≤10	248	51.0	
≥11	238	49.0	
Unit			
Surgical units	78	16.0	
Internal medicine units	98	20.2	
Intensive care unit	71	14.6	
Polyclinics	54	11.1	
Operating room	53	10.9	
Emergency room	92	18.9	
Other[b]	40	8.2	

[a] Mean ± Standard Deviation.
[b] Dialysis (14), home health care services (5), laboratory (9), blood center (12).

Table 2
Distribution of the nurses' scores on the fear of COVID-19, work stress, and organizational and professional turnover intentions by their professional and sociodemographic characteristics.

Professional and sociodemographic variables	Fear of COVID-19	Work stress	Organizational turnover intention	Professional turnover intention
	Mean ± SD[c]	Mean ± SD[c]	Mean ± SD[c]	Mean ± SD[c]
Gender[a]				
Female	3.20 ± 0.83	3.05 ± 0.86	3.31 ± 1.29	2.42 ± 1.22
Male	3.03 ± 0.86	2.90 ± 0.91	3.09 ± 1.28	2.18 ± 1.06
	$t = -2.104$; $p = 0.360$	$t = 1.844$; $p = 0.066$	$t = 1.849$; $p = 0.680$	$t = 2.340$; $p = 0.020$
Age[b]				
<31 years	3.18 ± 0.91	2.98 ± 0.95	3.16 ± 1.35	2.42 ± 1.24
31–40 years	3.17 ± 0.83	3.02 ± 0.89	3.18 ± 1.30	2.30 ± 1.15
>40 years	2.98 ± 0.78	2.92 ± 0.75	3.41 ± 1.18	2.27 ± 1.07
	$F = 2.192$; $p = 0.113$	$F = 0.455$; $p = 0.635$	$F = 1.352$; $p = 0.260$	$F = 0.601$; $p = 0.549$
Education[b]				
High school	2.85 ± 0.89	3.04 ± 0.85	2.91 ± 1.42	2.24 ± 1.05
Associate degree	2.90 ± 0.91	3.05 ± 0.78	3.31 ± 1.23	2.32 ± 1.16
Bachelor's degree	3.03 ± 0.88	3.17 ± 0.88	3.25 ± 1.32	2.27 ± 1.19
Master's degree	3.11 ± 0.85	3.24 ± 0.89	3.19 ± 1.20	2.59 ± 1.13
	$F = 1.163$; $p = 0.323$	$F = 1.158$; $p = 0.199$	$F = 1.194$; $p = 0.312$	$F = 1.551$; $p = 0.201$
Weekly working hours[b]				
40 h[1]	3.04 ± 0.83	2.89 ± 0.91	3.05 ± 1.30	2.33 ± 1.23
48 h[2]	3.18 ± 0.85	3.04 ± 0.83	3.28 ± 1.22	2.29 ± 1.08
56 h[3]	3.36 ± 0.89	3.26 ± 0.85	3.84 ± 1.34	2.46 ± 1.18
	$F = 4.000$; $p = 0.019$	$F = 4.241$; $p = 0.015$	$F = 8.172$; $p < 0.001$	$F = 0.424$; $p = 0.655$
Post Hoc	3–1	3–1	3–1	
Type of shift[a]				
Day shift	2.96 ± 0.76	2.68 ± 0.81	2.97 ± 1.30	2.23 ± 1.17
Duty shift	3.22 ± 0.87	3.14 ± 0.87	3.34 ± 1.27	2.37 ± 1.16
	$t = -3.210$; $p = 0.001$	$t = -5.503$; $p < 0.001$	$t = -3.010$; $p = 0.003$	$t = -1.247$; $p = 0.213$
Place of duty[a]				
District	2.7 ± 0.82	2.68 ± 0.88	3.03 ± 1.40	2.20 ± 1.22
Province	3.2 ± 0.81	3.11 ± 0.85	3.30 ± 1.24	2.38 ± 1.14
	$t = -6.789$; $p < 0.001$	$t = -4.941$; $p < 0.001$	$t = -2.053$; $p = 0.041$	$t = -1.503$; $p = 0.134$
Years of working at the hospital[a]				
≤5 years	2.81 ± 0.89	2.70 ± 0.91	3.08 ± 1.24	2.37 ± 1.22
≥6 years	2.68 ± 0.73	2.57 ± 0.73	2.92 ± 1.18	1.98 ± 0.97
	$t = 1.703$; $p = 0.082$	$t = 1.653$; $p = 0.099$	$t = 1.424$; $p = 0.155$	$t = 3.857$; $p < 0.001$
Years of professional experience[a]				
≤10 years	2.84 ± 0.86	2.68 ± 0.89	3.03 ± 1.25	2.32 ± 1.20
≥11 years	2.62 ± 0.73	2.58 ± 0.74	2.95 ± 1.16	1.97 ± 0.96
	$t = 3.049$; $p = 0.002$	$t = 1.324$; $p = 0.186$	$t = 0.750$; $p = 0.453$	$t = 3.477$; $p = 0.001$
Unit[b]				
Surgical units[1]	3.03 ± 0.86	2.89 ± 0.91	3.42 ± 1.30	2.52 ± 1.29
Internal medicine units[2]	3.07 ± 0.89	2.92 ± 0.86	3.36 ± 1.27	2.24 ± 1.22
Intensive care unit[3]	3.54 ± 0.67	3.29 ± 0.74	3.38 ± 1.29	2.53 ± 1.20
Polyclinic[4]	3.05 ± 0.81	2.76 ± 0.91	2.59 ± 1.25	2.03 ± 1.08
Operating room[5]	3.19 ± 0.69	3.04 ± 0.77	3.47 ± 1.11	2.33 ± 0.85
Emergency room[6]	3.16 ± 0.90	3.14 ± 0.94	3.27 ± 1.29	2.47 ± 1.16
Other[7]	2.72 ± 0.87	2.75 ± 0.97	2.67 ± 1.28	1.85 ± 1.00
	$F = 4.999$; $p < 0.001$	$F = 3.323$; $p = 0.004$	$F = 4.555$; $p < 0.001$	$F = 2.818$; $p = 0.011$
Post Hoc	3-1; 3-2; 3-4; 3-7	3-4; 3-7	1-4; 1-7; 2-4; 3-4; 5-4; 6-4; 5-7	1-7; 3-7

[a] Independent samples t-test.
[b] One-way ANOVA.
[c] Mean ± Standard Deviation.

by their professional and sociodemographic characteristics. The female participants' mean organizational turnover intention score (2.42 ± 1.22) was higher compared to that of the male participants, with the difference between these scores being statistically significant ($t = 2.340$; $p < 0.05$). The levels of fear of COVID-19 of work stress, and the mean organizational turnover intention scores of the nurses who were working 56 h a week were higher than those of the nurses who were working 40 h a week and those working 48 h a week ($p < 0.05$). The Tukey test was used to determine the group responsible for the difference in weekly working hours (the variances were homogeneous). The difference between the groups was due to the difference between the nurses who were working 56 h a week and those who were working 40 h a week. The fear of COVID-19 level (3.22 ± 0.87), work stress level (3.14 ± 0.87), and organizational turnover intention score (3.34 ± 1.27) of the nurses who were working duty shifts were higher than the fear of COVID-19 level (2.96 ± 0.76), work stress level (2.68 ± 0.81), and organizational turnover intention score (2.97 ± 1.30) of the nurses who were working day shifts, and the difference between them was found to be statistically significant ($p < 0.05$). The fear of COVID-19 level (3.2 ± 0.81), work stress level (3.11 ± 0.85), and organizational turnover intention score (3.30 ± 1.24) of the nurses were higher than the fear of COVID-19 level (2.7 ± 0.82), work stress level (2.68 ± 0.88), and organizational

turnover intention score (3.03 ± 1.40) of the nurses who were working in the districts, with the difference between them was statistically significant ($p < 0.05$). The mean professional turnover intention score of the nurses who had been working at the hospital for 5 years or fewer (2.37 ± 1.22) was higher than that of the nurses who had been working at the hospital for 6 years or more (1.98 ± 0.97), with the difference between them being statistically significant ($t = 3.857$; $p < 0.01$). Both the fear of COVID-19 level (2.84 ± 0.86) and mean professional turnover intention score (2.32 ± 1.20) of the nurses who had had professional experience of 10 years or fewer were higher than the fear of COVID-19 level (2.62 ± 0.0.73) and mean professional turnover intention score (1.97 ± 0.96) of the nurses who had had professional experience of 11 years or more, and these differences were found to be statistically significant ($p < 0.05$). The nurses who were working in the intensive care unit had higher fear of COVID-19 level, work stress level, and mean organizational and professional turnover intention scores compared to those of the nurses who were working in other units ($p < 0.05$). No statistically significant differences were found between the nurses' fear of COVID-19, work stress, and mean organizational and professional turnover intention scores by their age and education levels ($p > 0.05$).

The nurses' mean fear of COVID-19 and work stress levels were found to be 3.137 ± 0.852 and 2.992 ± 0.885, respectively, and their mean organizational turnover intention score (3.228 ± 1.295) was higher than their mean professional turnover intention score (2.331 ± 1.168). The correlation between the fear of COVID-19 and work stress levels of the nurses was statistically significant, positive, and high ($r = 0.714$; $p < 0.001$), and moderate correlations were found between the nurses' fear of COVID-19 and stress levels and their organizational and professional turnover intentions ($p < 0.001$) (Table 3).

Fig. 1 shows the results of the path analysis performed to determine the effects of the fear of COVID-19 on work stress and the effects of these two variables on organizational and professional turnover intentions. Prior to the analysis, the data were evaluated to determine whether they had a multivariate normal distribution, and they were found to be normally distributed (multiple kurtosis critical values <10; $p > 0.05$). The numbers attached to the arrows in Fig. 1 are path coefficients, while the coefficients shown in parentheses are the path coefficients obtained by including the professional and demographic variables in Table 1 as control variables. When the control variables were not included in the model, the direct effect of the fear of COVID-19 on organizational turnover intention was found to be statistically insignificant ($t = 1.88$; $p > 0.05$). All other path coefficients obtained both before and after the control variables were included in the model and were found to be statistically significant ($p < 0.05$). Path coefficients are standardized regression coefficients that show the direct effects of the independent variable on the dependent variable (beta-β). A path coefficient indicates how many standard deviations of change occur in the dependent variable when one standard deviation of change occurs in the independent variable (Alpar, 2013). Based on the assessment of the path coefficients obtained by including the control variables in the model, a one-unit increase in the nurses' fear of COVID-19 level caused a 0.68-unit increase in their stress levels and a 0.13-unit increase in their organizational and professional turnover intentions. In addition, a one-unit increase in the nurses' work stress level caused a 0.35-unit increase in their organizational turnover intention and a 0.45-unit increase in their professional turnover intention. The correlation between organizational and professional turnover intention was 0.17, which was determined to be statistically significant in the model ($p < 0.05$).

The coefficients attached to the arrows in Fig. 1 show the direct effects, while the indirect effect refers to the effects of an independent variable on a dependent variable through one or more mediating variables (Çokluk et al., 2013). In this regard, it can be noted that the fear of COVID-19 had direct and indirect effects on organizational and professional turnover intentions and that work stress was the mediating variable. As indirect effects are obtained by multiplying the path coefficients on the path (for example, the indirect effect of COVID-19 fear on organizational turnover intention was 0.71*0.36 = 0.26), and total effects are obtained by adding direct and indirect effects (Alpar, 2013), the results of these operations show that a one-unit increase in the fear of COVID-19 level caused a 0.37-unit increase in the organizational turnover intention and a 0.43-unit increase in the professional turnover intention (total effect). In the calculation performed by including the control variables, these coefficients were found to be 0.37 and 0.44, respectively (Table 4). The differences between the values of path coefficient, indirect effect, and total effect that was obtained before and after the adjustments were made by the control variables were determined to be insignificant. In other words, the nurses' demographic and professional characteristics did not have a significant impact on the effects of the fear of COVID-19 on their work stress and turnover intention.

Discussion

This study aimed to identify the effects of the fear of COVID-19 on general work stress and turnover intention. To achieve this aim, the nurses' fear of COVID-19, work stress, and organizational and professional turnover intentions were compared on the basis of their demographic and professional characteristics, and the relationships between their fear of COVID-19, work stress, and organizational and professional turnover intentions were analyzed. This was followed by an investigation of the direct effects of the nurses' fear of COVID-19 on both work stress and organizational and professional turnover intentions, as well as the indirect effects of their fear of COVID-19 on organizational and professional turnover intentions via general work stress.

The fear of COVID-19, general work stress, and organizational turnover intention were higher among the nurses who had more weekly working hours, were working duty shifts (night shift), were working in the city center, and were working in intensive care units. The nurses who were female had fewer years of working at the hospital or fewer years of professional experience, and those who were working in the intensive care units had higher rates of organizational turnover intention. In addition, the nurses who had had fewer years of professional experience had higher fear of COVID-19 levels. Vanhaecht et al. (2021) found that the association between COVID-19 and negative mental health symptoms was generally strongest for the age group 30–49 years, females, nurses and residential care centers. Shen et al. (2021) identified a significant relationship between working in shifts for four days a week and

Table 3
Mean score, standard deviation, Cronbach's alpha, and correlation coefficient corresponding to the fear of COVID-19, work stress, and organizational and professional turnover intentions.

	Mean	SD	Cronbach's alpha	1	2	3	4
1. Fear of COVID-19	3.14	0.85	0.89	1			
2. Work stress	2.99	0.89	0.92	0.71**	1		
3. Organizational turnover intention	3.23	1.30	–	0.36**	0.34**	1	
4. Professional turnover intention	2.33	1.17	–	0.43**	0.52**	0.42**	1

All correlations coefficients are Pearson's r.
** $p < 0.001$.

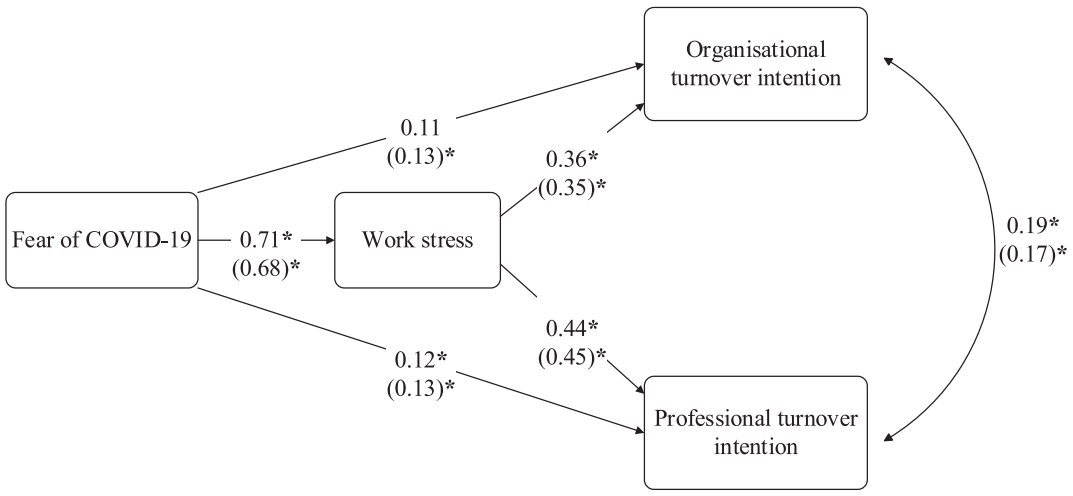

Fig. 1. Structural model on the variables of fear of COVID-19, work stress, and organizational and professional turnover intentions
*Path coefficients were significant at $p < 0.05$
Note: The path coefficients shown in parentheses were adjusted for the control variables presented in Table 1, which include the professional and demographic variables of the nurses.

Table 4
Direct, indirect, and total effects of the fear of COVID-19 and work stress.

Dependent variable	Independent variable	Direct effect	Indirect effect	Total effect
Organizational turnover intention	Fear of COVID-19	0.11	0.71 * 0.36 = 0.26	0.37
	Work stress	0.36	–	
Professional turnover intention	Fear of COVID-19	0.12	0.71 * 0.44 = 0.31	0.43
	Work stress	0.44	–	
Organizational turnover intention	Fear of COVID-19	0.13[a]	0.68 * 0.35 = 0.24[a]	0.37[a]
	Work stress	0.35[a]	–	
Professional turnover intention	Fear of COVID-19	0.13[a]	0.68 * 0.45 = 0.31[a]	0.44[a]
	Work stress	0.45[a]	–	

[a] These path coefficients were adjusted for the control variables presented in Table 1, which included the professional and demographic variables of the nurses.

the fear of COVID-19. Peiró et al. (2020) similarly found there to be a relationship between longer years of professional experience and lower stress levels. Mekonen et al. (2020) reported that working duty shifts, the fear of infecting family members, negative feedback from families, and confirmed/suspected cases in the family were associated with higher stress levels. Labrague and de los Santos (2021) found that fear of COVID-19 levels was higher among nurses who were working at bigger hospitals. Lastly, Giusti et al. (2020) observed that longer working hours of healthcare professionals and the fear of getting infected with COVID-19 had a strong relationship with burnout. In the same study, the female gender and being in contact with patients with COVID-19 were identified as the determinants of emotional burnout and depersonalization. These results in the literature support the results of this study.

Nurses who work in the emergency and intensive care units are at the frontline and in close contact with patients. Frontline nurses have higher levels of work stress (Huerta-González et al., 2021; Ilczak et al., 2021). Koontalay et al. (2021) conducted a systematic review and found that the COVID-19 pandemic has affected all aspects of the life of frontline healthcare providers. Another study has reported that nurses working in COVID-19 services have higher levels of stress, fatigue, and depression and lower levels of satisfaction compared to those of their colleagues working in other services (Zerbini et al., 2020).

Longer working hours and working at bigger hospitals increase the possibility of coming into contact with COVID-19 patients. Nurses who work duty shifts tend to have maladjusted sleep patterns. Studies conducted during the pandemic have also found that the fear of COVID-19 and stress are associated with insomnia in nurses (Bilgiç et al., 2021; Mulyadi et al., 2021; Shen et al., 2021; Zhan et al., 2020). Lack of sufficient professional experience prevents nurses from having enough knowledge on how to deal with crisis situations and therefore increases their fear and anxiety. Furthermore, as the COVID-19 pandemic affects the physical and psychological health of nurses who have long working hours, encounter COVID-19 cases more frequently, lack sufficient professional experience, and work at the frontline, these nurses tend to suffer more emotional problems, such as fear, anxiety, depression, and stress, which consequently lead to higher levels of fear of COVID-19, work stress, and turnover intention among them.

This study found that the nurses' mean organizational turnover intention score was higher than their mean professional turnover intention score. Contrary to the results of this study, Labrague and de los Santos (2021) reported in their study that the nurses' mean professional turnover intention score was higher than their mean organizational turnover intention score. This difference could be attributed either to the fact that this study was conducted with all types of nurses, whereas Labrague and de los Santos (2021) conducted their study only with frontline nurses or to the differences between the health systems and cultures in the countries (Philippines and Turkey) where these studies were conducted. Another possible reason the nurses in this study had higher levels of organizational turnover intention could be that they and their families were living in different cities, or that they wanted to live and work in relatively more developed cities in the west of Turkey. Nurses working in public hospitals in Turkey are civil servants. Because they are civil servants, their job security and wages are generally higher than in the private sector. Because of such advantages, some nurses can afford to work in cities far from their normal place of residence or their families in order to work as civil servants. They settle in the cities they go to and continue their lives there. After working for a certain period of time (e.g. 3–5 years), nurses in public hospitals can be assigned to other provinces by the Ministry of Health, if they wish, without losing their civil servant status. Therefore, in our study, nurses' organizational turnover intentions may be higher.

All correlations between the scales used in this study were found to be statistically significant, with the correlations between work stress and the fear of COVID-19 or professional turnover intention being the strongest. The results of the path analysis showed that the nurses' fear of

COVID-19 had direct effects on their general work stress and organizational and professional turnover intentions, as well as indirect effects on organizational and professional turnover intentions via work stress. These results are compatible with the results reported in the literature. A number of studies conducted during the pandemic have found there to be associations between the fear of COVID-19 and work stress (D'emeh et al., 2021; Galletta et al., 2021; Labrague and de los Santos, 2021; Shen et al., 2021), the fear of COVID-19 and turnover intention (Lin et al., 2021; Labrague & de los Santos, 2021; Sinsky et al., 2021, Varasteh et al., 2022; Jo et al., 2021), and work stress and turnover intention (Cole et al., 2021; Sinsky et al., 2021).

Lin et al. (2021) conducted a path analysis study and found that the fear of COVID-19 had a positive effect on turnover intention. Sinsky et al. (2021) reported that nurses had the highest turnover intention (planned to leave the job in two years) among healthcare providers. The perceived COVID-19 risk increases the fear of COVID-19 and work stress among nurses and thus increases their professional or organizational turnover intention.

The directions to support nurses

Majeed et al. (2021) reported that when healthcare providers felt that their hospital took the necessary measures against COVID-19, this weakened the relationship between the perceived COVID-19 risk and the fear of COVID-19, which reduced their turnover intentions. Similarly, Sinsky et al. (2021) found that hhealthcareproviders had lower turnover intention when they felt that they were appreciated by their organization. In order to reduce nurses' turnover intention, necessary measures should be taken against the fear of COVID-19 and work stress. Digital learning packages can be used to support healthcare providers' psychological health during and after the COVID-19 pandemic (Blake et al., 2020). One study conducted in Turkey found that a single online group Emotional Freedom Techniques session reduced the levels of stress, anxiety, and burnout among nurses treating COVID-19 (Dincer & Inangil, 2021). Communication with family and friends, having access to reliable information and placing limitations on watching virus-related news on TV should also be seen as effective coping strategies (Gray et al., 2021). The use of mobile technology through short text messages can be considered an effective option for encouraging nurses and supporting their well-being. Kelly et al. (2021) found that the satisfaction rate of nurses who were on the "RNconnect 2 Wellbeing" application ranged from 73 % to 86 % and that 48 % of them integrated the resources offered through the messages on this application into their daily lives.

Another option is to use a video-based debriefing program to support the nurses' emotional well-being (Monette et al., 2020). The use of support services provided by psychiatrists through video conferences and mobile phones is among the methods available for emotionally supporting frontline nurses in particular (Viswanathan et al., 2020). *E*-learning and video platforms are practical methods that can be utilized to train nurses in communication skills, case management skills, and problem-solving tactics. Providing simulation training to nurses on behaviours and procedures can help them to protect themselves and their environment (Okechukwu et al., 2020).

Additional strategies that can be applied include communicating with friends, pausing patient care for a while, going for a walk, taking a break, and enjoying some rest time between shifts (Haefner, 2021). To mitigate the feelings of stress and insecurity that attend the chaotic and dangerous healthcare work environment, nurses should be provided with sufficient personal protective equipment, confusion overcontrolling and preventing infection should be eliminated, and supportive healthcare leadership should be provided (Rücker et al., 2021). Moreover, organizational support should be provided, international, national, and regional strategies should be developed, and nurses should always be included in the process of policy determination to reduce the negative effects of the COVID-19 pandemic on nurses.

Conclusions

This study found that nurses who had a higher fear of COVID-19 had higher levels of work stress and turnover intention (organizational and professional). Therefore, it is important to eliminate nurses' fear of COVID-19, as this would contribute to reducing their work stress levels and turnover intentions. A number of methods are available to help nurses overcome their fear of COVID-19, including individual and group therapies, video conferences, and e-learning. These methods can also serve to reduce their work stress levels and turnover intentions. It is important to note that this study was conducted only with nurses who were working at public hospitals within one city in Turkey; therefore, the results may not be generalized to other hospital types (university hospitals, private hospitals, etc.). Similar studies should be conducted with nurses who work at other hospital types. Furthermore, this study only investigated the effects of the nurses' fear of COVID-19 on their work stress and turnover intentions. Additional studies are needed to investigate the reasons for the fear of COVID-19 and other factors that affect work stress and turnover intention apart from fear during the pandemic and to identify improvements that can be made to reduce negative job outcomes, such as fear, stress, and turnover intention.

Implications for nursing practice

Nurses' fear of COVID-19 affects their work stress and turnover intention. It should be incumbent upon hospital managers, policymakers, and especially nurse managers to investigate nurses' fear levels and the reasons contributing to them during the pandemic, identify negative outcomes that affect nurses' work stress and turnover intention, and take necessary measures to address these issues, as failure to eliminate negative work-related outcomes could pose a risk to patient safety. To help nurses overcome their fear of COVID-19, a number of methods, such as individual and group therapies, video conferencing, e-learning, and supportive leadership, should be applied, and efforts should be made to reduce their work stress and turnover intention. After determining the effective intervention methods, standard practices can be applied at the national level.

Ethics statement

The study was approved by the Batman Training and Research Hospital Ethical Commission. The ethics committee permission required to perform the study was obtained on 15 December 2020 with decision number 260.

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CRediT authorship contribution statement

Concept – E.E., M.T.; Design – E.E., M.T., A.Y.; Supervision – E.E., M. T., A.Y. MY; Funding – E.E., M.T., A.Y.; Materials – E.E., M.T., A.Y.; Data collection and/or processing E.E., A.Y.; Analysis and/or interpretation – M.T., A.Y.; Literature search – E.E., M.T., A.Y., MY; Writing – E.E., M.T., A.Y., MY; Critical review – E.E., M.T., A.Y., MY.

Declaration of competing interest

No potential conflict of interest was reported by the authors.

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