

Fear of COVID-19, Health Anxiety and Work-Family Conflict in Nurses Working in the COVID-19 Ward

Abstract

Background: COVID-19 is an example of an epidemic and sudden crisis that has affected many aspects of life and work and identifying the factors that contribute to its impact can help prevent similar crises in the future. The purpose of this study was to investigate fear of COVID-19, health anxiety, and work-family conflict in nurses working in COVID-19 wards in hospitals affiliated with the Tehran University of Medical Sciences (TUMS). **Materials and Methods:** This descriptive-analytical study used a census method to survey 226 nurses working in eight hospitals affiliated with TUMS. Demographics information and three questionnaires including; the Fear of COVID-19 Scale, Short Health Anxiety Inventory, and Work-Family Conflict Scale were completed online. Data were analyzed using descriptive statistics and analytical statistics, and a significance level of $p < 0.05$ was considered. **Results:** Structural equation modeling test showed that work-family conflict had an effect on health anxiety, and health anxiety had an effect on fear of COVID-19 ($p < 0.05$). The severity of the effect of work-family conflict on health anxiety was 0.73, and the severity of the effect of health anxiety on fear of COVID-19 was 0.46. Work-family conflict had an indirect effect on fear of COVID-19 mediated only by health anxiety ($p < 0.05$) and the severity of the indirect effect was 0.33. **Conclusions:** Health anxiety plays a mediating role in the relationship between work-family conflict and fear of COVID-19. Workplaces should provide more support to their employees during a crisis such as the COVID-19 pandemic, and prevention programs should be implemented to decrease anxiety.

Keywords: COVID-19, fear of COVID-19, health anxiety, nurses, work-family conflict

Introduction

The COVID-19 disease is the third type of coronavirus to emerge in the 21st century, following the SARS and MERS epidemics.^[1] Epidemics have occurred in the past and are likely to occur in the future.^[2] Coronavirus has caused widespread concern and fears around the world, leading to adverse psychological effects on public health and disrupting many people's activities, including business and travel.^[3] Research on past pandemics has shown increased anxiety in people.^[4] The meta-analysis of data from 91 studies from 36 countries found that fear of COVID-19 is associated with various mental health-related factors. The results suggest that fear of COVID-19 contributes to mental health problems such as depression, anxiety, stress, sleep problems, mental health-related factors, and impaired mental well-being.^[5]

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Healthcare workers and caregivers are on the front lines during pandemics and are responsible for treating and caring for them. However, they are also at risk of infection and face challenges, such as fear of contagion, transmission to family, friends and colleagues, distress, and mental health problems. Studies have shown that these individuals experience anxiety, depression, fear and despair, panic attacks, psychotic symptoms, delirium, and even suicide.^[1,3] Factors such as lack of personal protective equipment, heavy workload, and medication shortages, media exposure, and lack of support from officials can worsen the situation.^[6] Concerns about the mental health of healthcare workers treating COVID-19 patients are on the rise,

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and timely diagnosis and care are essential.^[7,8] In a study by Li, over 50.7% of the 1,563 treatment staff surveyed reported symptoms of depression, 44.7% reported anxiety, and 36.1% reported sleep disorders.^[9]

Fear of COVID-19 is a new construct related to the pandemic and an important mental health variable strongly associated with functional impairment and psychological distress. Studies indicate that fear of COVID-19 plays a significant role in people's mental health, and research in this area is still in its early stages. For example, during the pandemic, many Americans turned to drugs to cope with stress and anxiety caused by the coronavirus, and requests for anti-anxiety drugs increased by 34.1% from mid-February to mid-March 2020.^[10] Fear of COVID-19 has been linked to symptoms such as depression, general anxiety, hopelessness, suicidal thoughts, dysfunction, and even suicide.^[5,11,12] Research on past pandemics has shown that anxiety about diseases is associated with symptoms of health anxiety and obsessive-compulsive disorder.^[13] In some individuals, this anxiety can manifest as constant checking for symptoms, fear of contracting the disease, avoiding medical centers due to the fear of being diagnosed with the disease, and obtaining health insurance.^[3] Work-family conflict is an important concept in pandemics such as COVID-19.^[14] It refers to a situation where there is a lack of compatibility between a person's work and family life. Work-family conflict arises when work responsibilities consume a person's time, energy, and commitment, thus reducing their ability to fulfill family roles.^[15,16] Nurses, due to the nature of their work, are particularly vulnerable to work-family conflict.^[17] Work-family conflict can have a significant impact on their mental and psychological conditions, as well as their quality of life, which in turn can affect their ability to provide effective care.^[18] The quality of nurses' professional lives and perception of working conditions in relation to their personal lives can have a significant impact on their attitude toward work and the quality of care they provide to patients.^[18,19] Achieving a balance between work and personal life is crucial in strengthening the psychological foundation of nurses, improving the safety and satisfaction of patients, and increasing family cohesion.^[20] As an important member of the healthcare system, nurses' mental health is a crucial factor that affects the quality of care they provide.^[19] Therefore, this study aims to investigate fear of COVID-19, health anxiety, and work-family conflict among nurses working in COVID-19 wards in hospitals affiliated with the Tehran University of Medical Sciences and identify related factors.

Materials and Methods

This descriptive-analytical study was conducted on nurse staff working in corona wards including emergency room, COVID-19 inpatient wards, and COVID-19 intensive care units, in eight government hospitals affiliated with the Tehran University of Medical Sciences. These hospitals

included Imam Khomeini Hospital Complex, Dr. Shariati Hospital, Bharlo Hospital, Medical Center, Heart Center, Amir Alam Hospital, Ziyaian Hospital, and Sina Hospital in August 2020. The census method was used for sampling, and informed consent was obtained online before their participation in the study. The participants were provided with an online questionnaire that included demographic characteristics and three separate questionnaires: Fear of COVID-19 Scale, Short Health Anxiety Inventory, and Work-Family Conflict Scale. The link to the questionnaire was sent to the participants to access and complete at their convenience. All scales were standardized in Iran.^[21,22,23]

The data collected in this study were analyzed using descriptive and analytical statistics, including *t*-test, analysis of variance, equality of means test, and Spearman's correlation coefficient. Additionally, a structural equation model was employed to analyze the data. The statistical analyses were conducted using SPSS (version 27) and Amos software.

Ethical considerations

This study received ethics approval from the Ethics Committee of the Tehran University of Medical Sciences (IR.TUMS.MEDICINE.REC.1400.036). Before conducting the study, the researchers explained the study's aims and procedures to the participants, and written informed consent was obtained from all participants.

Results

Results of the study showed that 226 nurses responded, representing a response rate of 20% from the target population. Of the participants, 188 (83.20%) were female, and 77 (31.40%) were single, whereas 155 (68.60%) were married. In terms of parenthood, 115 (50.90%) were childless, 107 (47.30%) had one child, and 4 (1.80%) had two children. The majority of participants were in the age range of 30–39 years [Table 1]. The average fear of COVID-19 score for the entire sample of nurses working in COVID-19 wards was 16.19. Comparing this average with the cutoff of 21 revealed that the fear of COVID-19 score of participants was significantly lower than the cutoff ($t_{225} = 12.14, p < 0.001$).

Additionally, the average health anxiety score for nurses working in COVID-19 wards was 15.39, and comparing this average with the cutoff score of 18 showed that the health anxiety score of participants was significantly lower than the cutoff ($t_{225} = 5.95, p < 0.001$). The average score of work-family conflict among nurses working in COVID-19 wards was 50.21. Comparing this average with the cutoff of 54 revealed that the work-family conflict of participants was significantly lower than the cutoff ($t_{225} = 4.18, p < 0.001$). In this study, there was no significant relationship found between fear of COVID-19 and gender, age, education, marital status, living arrangements, and history of physical and mental illness, employment status, type of ward, work

Table 1: Demographic characteristics of participants

Variables	n (%)
Gender	
Female	188 (83.20)
Male	38 (16.80)
Age group	
20–29	55 (24.30)
30–39	103 (45.60)
40–49	56 (24.80)
50–59	12 (5.30)
Education	
High school diploma	11 (4.80)
Bachelor of Nursing	192 (85.00)
Master of Nursing	23 (10.20)
Marital status	
Single	71 (31.40)
Married	155 (68.60)
Employment status	
Contract	130 (57.50)
Official	96 (42.50)
Number of children	
Childless	115 (50.90)
One child	107 (47.30)
Two children	4 (1.80)
Organizational position	
Supervisor	7 (3.10)
Head nurse	19 (8.40)
Nurse	189 (83.50)
Nurse aide	11 (4.80)
Shift work	
Morning	30 (13.30)
Evening	4 (1.80)
Night	31 (13.70)
Both morning and evening	37 (16.40)
Circulation	124 (45.90)
Work experience	
11 months (less than a year)	41 (18.10)
1–4 years and 11 months	82 (36.30)
5–9 years and 11 months	50 (22.10)
10–14 years and 11 months	39 (17.30)
15–19 years and 11 months	11 (4.90)
20–24 years and 11 months	3 (1.30)
Ward	
COVID-19 inpatient wards	86 (38.10)
COVID-19 ICU	81 (35.80)
Emergency room	59 (26.10)
History of physical illness	
Yes	27 (11.90)
No	199 (88.10)
History of mental illness	
Yes	16 (7.10)
No	210 (92.90)
Living arrangements	
Living with parents	43 (19.00)
Living with a spouse and children	147 (65.00)

Contd...

Table 1: Contd...

Variables	n (%)
Alone	27 (11.90)
Living with a roommate	9 (4.00)

experience, shift work, organizational position ($p < 0.5$). Among the demographic characteristics, no statistically significant difference was found between having a child and fear of COVID-19 ($t_{225} = 1.91, p = 0.05$), and health anxiety with gender ($t_{225} = 1.93, p = 0.05$). However, a significant relationship was observed between age group ($p = 0.02$) and work experience ($p = 0.01$) with health anxiety score.

The results of the one-way analysis of variance indicated a statistically significant difference between the health anxiety scores of nurses in the four age groups ($F_4 = 3.76, p = 0.012$). Tukey's *post hoc* test revealed that the age group of 50 to 59 years had the lowest health anxiety score and was placed in a homogeneous group, whereas the 20 to 29-year-old group had the highest health anxiety and was placed in another homogeneous group. The other age groups were placed between these two groups and formed the third homogeneous group. The study found a significant difference in work-family conflict among the four age groups of nurses ($F_4 = 4.47, p = 0.003$). Further analysis using Tukey's test and Spearman's correlation coefficient ($p = 0.002, r = -0.24$) showed that work-family conflict decreased as nurses' age increased. Additionally, the *t*-test of two independent samples revealed a statistically significant difference in the work-family conflict scores between nurses who had a history of mental illness and those who did not ($t_{0.86} = 1.98, p < 0.049$). The research model was tested using the structural equation modeling technique (SEM) with the Amos software. Figure 1 displays the model with standard coefficients, whereas Figure 2 shows the model with non-standard coefficients. This study had 15 observable variables and a sample size of 226 participants, which allowed for the "r" use of structural equation modeling. The covariance-oriented approach was employed with Amos software. The results indicated that the data met the necessary conditions for the modeling test. These conditions included the normality of both observable and latent variables, satisfactory validity and reliability of measurement items, and appropriate fit indices. These conditions included the normality of both observable and latent variables, satisfactory validity and reliability of measurement items, and appropriate fit indices [Table 2].

The results of the structural equation modeling test are presented in Table 3. The test confirmed two out of three relationships in the model ($p < 0.05$). Additionally, the determination coefficient of the model was 0.40, indicating that the independent variables in the model could explain 40% of the variance in the dependent variable of fear of COVID-19. The results of the structural equation modeling test indicate that the effect of family-work

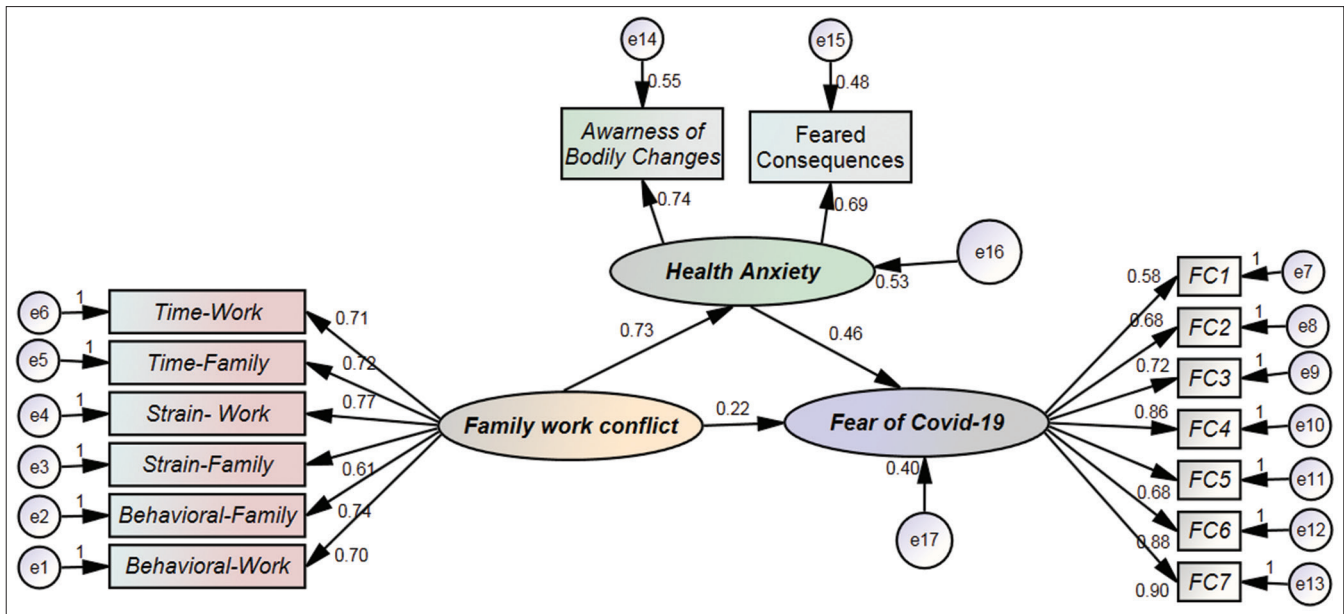


Figure 1: Experimental model of the study in the case of standard path coefficients

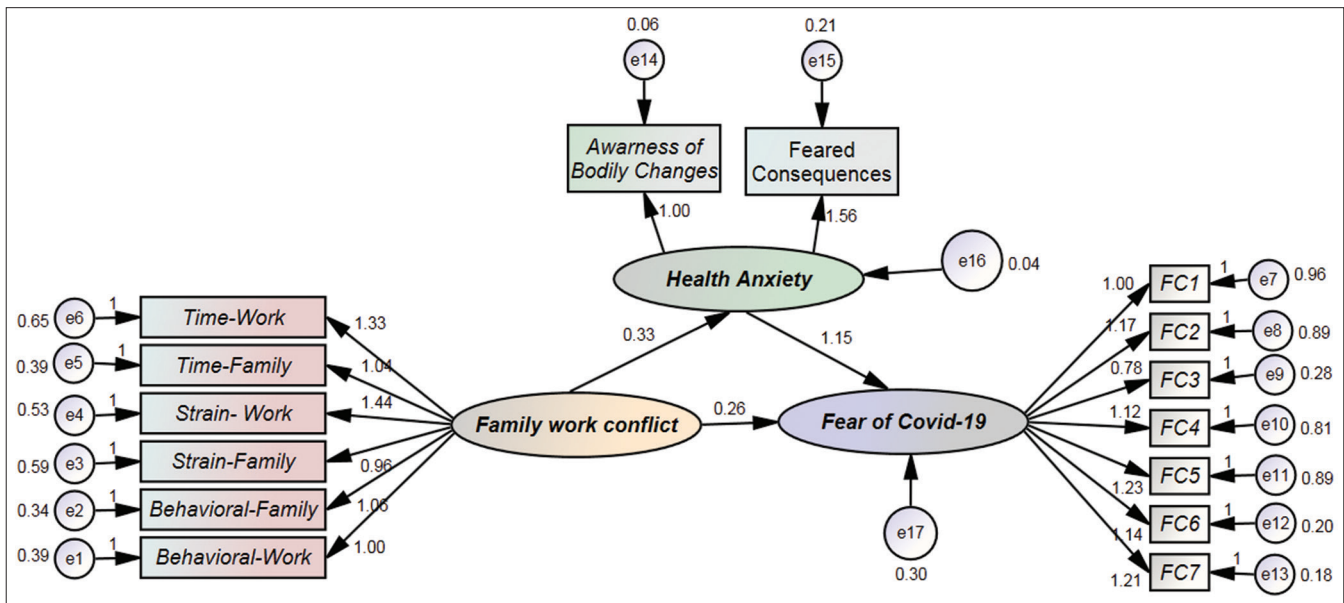


Figure 2: Experimental model of the study in the case of non-standard path coefficients

Table 2: Fit indices of the research model

Fit Indices	Acceptable result	Result of the study	Interpretation
Goodness of Fit (GFI)	>0.90	0.92	The fit is acceptable
The Root Mean Square Error of Approximation (RMSEA)	<0.08	0.063	The fit is acceptable
The Comparative Fit Index (CFI)	>0.90	0.92	The fit is acceptable
The Normed Fit Index (NFI)	>0.90	0.89	The fit is moderate
The Incremental Fit Index (IFI)	>0.90	0.91	The fit is acceptable
The (Adjusted) Goodness of Fit (AGFI)	>0.70	0.72	The fit is acceptable
Parsimony-Adjusted Measures Index (PNFI)	>0.70	0.76	The fit is acceptable
df Chi-square	Between 1 and 5	2.56	The fit is acceptable

conflict on health anxiety ($p = 0.001$) and the effect of health anxiety on fear of COVID-19 ($p = 0.002$) were

confirmed. Moreover, both effects were found to be positive, indicating that an increase in family–work conflict

Table 3: The results of the structural equation modeling test (table of coefficients)

Relationships	Standard coefficient	Non-Standard coefficient	Standard error	t	p
Family work conflict -> health anxiety	0.73	0.33	0.04	7.55	>0.001
Family work conflict -> fear of corona	0.22	0.25	0.14	1.73	0.083
Health anxiety -> fear of corona	0.46	1.51	0.37	3.12	>0.002

leads to an increase in health anxiety, and an increase in health anxiety leads to an increase in fear of COVID-19. The impact of family–work conflict on health anxiety was found to be strong and significant with an intensity of 0.73. Similarly, the impact of health anxiety on fear of COVID-19 was found to be moderate with an intensity of 0.46. However, the direct effect of work–family conflict on fear of COVID-19 was not confirmed ($p = 0.083$). Instead, the results suggest that work–family conflict has an indirect effect on fear of COVID-19 through the mediation of health anxiety ($p < 0.05$).

Discussion

The results of the study on fear of COVID-19 and its influencing factors showed that the average fear of COVID-19 score in the research samples was below the cutoff of 21. However, 20% of the samples had a fear of COVID-19 scores higher than 21. The study found no significant relationship between fear of COVID-19 and gender, age, education, marital status, living arrangements, and history of mental illness. However, there was a significant relationship between having children and the level of fear of COVID-19, which may be due to the fear of death or transmitting the disease to their children. This finding was consistent with the results of the study by Lai *et al.*, which found that the nurses working in the COVID-19 wards were concerned about the health of their families and the possibility of transmitting the disease to them.^[6]

The results of the present study revealed that the average health anxiety score among participants was below the cutoff of 18. However, 26% of the samples had a health anxiety score higher than 18. The study also found a significant relationship between gender, age group, and work experience with health anxiety score. A higher health anxiety score was observed among female nurses compared to their male counterparts. These findings are consistent with those of a study conducted by Sarbooji *et al.*,^[24] which also reported higher anxiety and stress scores among female nurses. Moreover, a study conducted in Wuhan, China, on physicians and nurses showed that women in direct contact with COVID-19 patients had a higher level of stress and anxiety. Long-term studies show that women experience higher levels of depression, anxiety, and loneliness than men due to gender differences. Women's emotions are more fragile and they are more vulnerable to feelings of loneliness, anxiety, and depression.^[25,26]

Our study revealed that nurses between the age of 20–29 years had the highest health anxiety scores, whereas those in the 50–59 age group had the lowest

scores. Additionally, nurses with less than 1 year of work experience had higher health anxiety scores, which was consistent with the findings of Yuang's study. This could be because as nurses gain more experience and age, they develop better skills to adapt to their working conditions.^[27] Our study also found that nurses with less than 1 year of work experience experienced a higher level of work–family conflict, which aligns with the results of AlAzzam *et al.*'s^[15] study in Jordan. They found that young nurses experienced higher levels of work–family conflict, which may be due to their lack of experience in balancing work and personal life.

Our study found that the mean work–family conflict score was below the cutoff of 54, although 36.7% of the participants had scores above this cutoff. We observed a significant relationship between age, history of mental illness, work experience, and work–family conflict. Specifically, as age increased, the level of work–family conflict decreased, which is consistent with the findings of Al-Azam's study that showed higher levels of work–family conflict in younger nurses. This may be because older nurses have better skills to adapt to their environment. We also found that a history of mental illness and the use of neuropsychiatric drugs increased work–family conflict, which is consistent with Biyabani *et al.*'s^[20] findings. Their study showed that a history of mental illness increases tension and conflicts in the family environment, leading to higher levels of work–family conflict in nurses. Our study also revealed that contract nurses experienced more work–family conflict. Previous studies have shown that contract nurses experience more stress and anxiety,^[20,24,27] possibly due to their increased responsibility for night shifts, weekends, and holidays. The scheduling of nurses' presence and activities at inappropriate times can create a situation prone to work–family conflict.

One limitation of our study was that online questionnaires were used, which limited access to the target community. To conduct a more comprehensive review in future studies, we recommend using clinical interviews.

Conclusion

This study offers new insights into the relationship between work–family conflict, health anxiety and fear of COVID-19. Our findings suggest that health anxiety plays a mediating role on the relationship between work–family conflict and fear of COVID-19. Therefore, it is important for workplaces to provide support and assistance to their employees during crises such as the COVID-19 pandemic, particularly during lockdowns. Prevention programs should

also be implemented to decrease stress and anxiety levels among employees. Based on our results, it is clear that work–family conflict can have a significant impact on employees’ mental health and their ability to cope with the fear of COVID-19. Therefore, it is crucial for employers to recognize the importance of work–life balance and implement measures that help employees balance their work and personal lives.

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Conflicts of interest

Nothing to declare.

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