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The impact of Coronavirus-Related Stress Coping Styles and Nurse-Physician Relationship on nurses' Mental Health

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Abstract

Introduction: This study aimed to assess the impact of coronavirus-related stress coping styles and nurse-physician relationships on the mental health of nurses.

Methods: This cross-sectional study included 516 nurses in Tehran-affiliated hospitals from 24 February 2021 to 12 February 2023. Patient Health, the Generalized Anxiety Disorder-7, Coronavirus-Related Stress Coping Styles, and Professional Relationship between Physician and Nurse Questionnaire were used.

Results: Depression (mean = 9.03, SD = 5.87) and anxiety (mean = 8.73, SD = 4.52) and were mild. The distancing coefficient was the significant interpreter for anxiety ($P<0.001$, β =-0.379). Also, there were significant relationships between anxiety and escape avoidance, confronting coping, self-controlling, and planful problem-solving. Escape-avoidance coping was the strongest predictor of depression ($P<0.001$, $\beta = 0.311$). Also, significant relationships existed between depression and distancing, confronting coping, positive reappraisal, and planful problem-solving. The Nurse-Physician relationship coefficient was a negative significant predictor of depression ($P=0.023$ and β =-0.091). Age coefficient was a significant predictor for anxiety and depression ($P=0.005$ and $P<0.001$, respectively). Educational level was a negative significant predictor for anxiety and depression ($P<0.001$ and $P<0.001$, respectively).

Conclusion: The results indicated that age, educational level, coping styles, and nurse-physician relationship correlated to nurses' anxiety and depression during the COVID-19 pandemic.

Keywords: Nurses; COVID-19; Mental Health; Coping Styles; Nurse-Physician Relationship.

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Introduction

The COVID-19 pandemic is the largest-scalepublic health crisis worldwide. Some challenges for health administrations are crowding of hospital patients, social alarm, limited knowledge about the virus, contradictory guidelines, and lower family support because of fear of infection[1]. In addition to physical health, global psychological health is also affected by COVID-19. Evidence shows COVID-19 can cause psychological problems such as depression, anxiety, stress, and post-traumatic stress disorder (PTSD)[2, 3]. The psychological reactions can remain long after the crisis (Frey et al., 2021; Preti et al., 2020)[4, 5].

In the COVID-19 crisis, nurses perform crucial tasks on the frontlines to control diseases and are at high risk of catching disease[6]. High psychological and physical pressure on nurses in the Covid-19 crisis can trigger panic and anxiety disorders, feeling isolated, somatic symptoms [7, 8], fear, sleep disorders, depression, obsessive-compulsive symptoms, somatization[9, 10], distress, insomnia, and PTSD [9-11].

Demographic, individual, work-related, and environmental factors can affect anxiety and depression [12]. Also, resilience, coping styles, and sleep quality can affect the anxiety and depression of nurses during the pandemic [13].

Widespread rumors, fear of exposure, and reduced income are the COVID-19 difficulties for societies [14]. Coping refers to the behaviors and thoughts people can

use to manage the demands of stressful conditions [15]. Coping skills are a multi-step process to control stressful situations[16]. Various coping strategies are positive thinking, distraction/avoidance/denial, seeking social support, and problem-solving [17]. Coping strategies are divided into at least two categories: (1) Adaptive coping strategies, such as acceptance, and (2) Maladaptive coping strategies, such as self-blame [18].

People use problem-focused strategies more than emotion-focused strategies during the COVID-19 pandemic[19]. In cases where people are unsure of coping strategies or avoid thinking about the pandemic and struggling to cope higher anxiety and depression are reported [3].

Coping strategies can support psychological adjustment to main stressors in national crises, such as the COVID-19 pandemic [4]. Most coping strategies healthcare providers use are information about prevention and virus transmission, social isolation, positive self-attitude, and requesting aid from colleagues and family [20]. Collaboration must be strengthened among physicians and nurses [21]. Increasing the quality of collaboration is essential for expanding healthcare organizations [22]. Evidence showed that better nurse-physician teamwork leads to a lower mortality ratio in surgical patients. Also, 22%-65% of all serious adverse events are because of communication failures [23].

Poor communication, role misunderstanding, different perceptions of collaboration, and hierarchical relationships are barriers to collaboration [24]. Also, some challenges for collaboration are trust and respect, effective communication, and understanding between people [25]. The difficulties in the physician-nurse relationship can cause unsatisfactory outcomes for healthcare providers and people due to potential patient harm and treatment delays [26].

The nurses' mental health was measured by assessing anxiety and depression. Studying the factors affecting the nurses' anxiety and depression will help others understand the underlying mechanisms in their mental health. Studies investigating psychological distress and coping strategies are limited [27]. Psychological disorders have increased among Iranians during the COVID-19 pandemic [28].

Aims

The study aimed to investigate the predicting role of coronavirus-related stress coping styles and nurse-physician relationships in the mental health of nurses during the COVID-19 pandemic.

Methods

Design

This cross-sectional research was directed in Tehran hospitals from 24 February 2021 to 12 February 2023 through the COVID-19 pandemic.

Participants & Recruitment

A two-stage random cluster sampling technique was utilized for data gathering. Five COVID-19 hospitals were randomly selected. Then, 516 nurses volunteer nurses in Tehran province hospitals were included to participate. We took electronic consent forms from all participants. Participants were informed that they could stop answering questionnaires at any time. The survey was distributed to the nurses of Tehran by WhatsApp and Telegram groups and professional network groups.

Survey

The current study had a structured arrangement that contained multiple-choice objects.

The self-rating screening questionnaire assessed anxiety signs, the Generalized Anxiety Disorder-7 (GAD-7). It was a 7-question inquiry, varying from 0 (not at all) to three (nearly every day). The severity of extreme anxiety disorders is specified and established on its entire score: severe (15-21), moderate (10-14), mild (5-9), and minimal (0-4). Nurses reported the frequency of symptoms within the last two weeks[29]. To check the reliability of this tool, the Cronbach's alpha coefficient of the GAD-7 was 0.88.

Depression symptoms were assessed by a self-rated screening instrument, the Patient Health Questionnaire (PHQ-9) tool. It was a 9-question based on depression manifestations ranging from 0 (not at all) to three (nearly every day). We asked the cases to notify us of the signs encountered within the last 14 days. The severity of depression is classified into minimal (0–4), mild (5–9), moderate (10–14), moderately severe (15–19), and severe (20–27)[30]. The Cronbach's alpha coefficient of this tool for the current research was 0.87.

Coronavirus-Related Stress Coping Styles (CRSCS-24)

The CRSCS-24 [31] is a short form of the Ways of Coping Questionnaire[32]. It is a 24-item question with a 6-point Likert scale (strongly agree = 6, strongly disagree = 1) and reflects the reaction type during the COVID-19 pandemic by assessing the coronavirus-related stress coping styles. It contains eight factors: confronting coping, accepting responsibility, self-controlling and emotional distancing, planful problem-solving, escape avoidance, seeking social support, and positive reappraisal. The reliability of the scale is confirmed using Cronbach's alpha coefficient. The correlation between anxiety and confronting coping style (0.62), escape-avoidance coping style (0.37), emotional distancing

coping style (-0.38), and accepting responsibility coping style (-0.57) verified the criterion validity. The 8-factors structure of the questionnaire was also confirmed. The eight factors can explain 66% of the total variance of the coping style variables[31]. The Cronbach's alpha coefficient of the CRSCS-24 for the current research was 0.78.

Professional Relationship between Physician and Nurse Questionnaire (PRPN-22)

PRPN (Rostami et al., 2010) is a 22-item question with a 5-point Likert scale (agree = 5, to disagree = 1 entirely). It measures the professional relationship between physicians and nurses. The validity of the questionnaire has been confirmed. Also, reliability was confirmed using Cronbach's alpha coefficient ranging from .91 to .95 [33, 34]. The Cronbach's alpha coefficient of the PRPN-22 for the current research was 0.88.

Demographics

The information regarding age, gender, education, work experience, marriage status, and the number of children were recorded.

Ethical considerations

The Islamic Azad University ethical committee approved the research proposal by IR.IAU.TNB.REC.1399.041 code.

Data Analysis

We analyzed the data using SPSS-20 software. Mean, standard deviation (SD), frequency, and percent were presented to present the data. Students' t-tests and Mann-Whitney U-tests were utilized, depending on normal or non-normal distribution variables. The Kolmogorov-Smirnov test checked the normal distribution of data. Appropriate correlational statistics such as Pearson Spearman were used to examine relationships among variables. Also, a linear regression model was employed to assess the relationship between the several variables simultaneously. A P-value less than 0.05 was regarded as statistically significant. Cronbach's alpha was estimated for the items of each questionnaire to assess internal consistency.

Results

Overall, 516 nurses were included. Table 1 shows the distribution of sex, educational level, and marital status, number of children, work experience, and age in the participants. This information depicts the demographic characteristics of the sampling in the present study. Most participants were female (n = 427, 82.8%). The mean age was 30.18±8.76 years (22 to 59 years). Most participants were bachelor's degrees (84%), 46% were married. Most of the nurses did not have any children (60.1%). The work experience ranged from 1 to 31 years (mean = 7.07, SD = 7.54) (Table 1).

Depression (mean = 9.03, SD = 5.87) and anxiety (mean = 8.73, SD = 4.52) were mild.

Table 1. Distribution of sex, educational level, marital Status, number of child, work experience, and age in the participants

Characteristics	Classification	N	%
Sex,	Female	427	82.8
	Male	83	16.1
Educational level,	Associate Degree	18	3.5
	Masters	434	84.1
	MA	58	11.2
	PHD	6	1.2
Marital Status,	Single	279	54.1
	Married	237	45.9
Number of Child,	NO	310	60.1
	One	81	15.7
	Two	97	18.8
	Three	23	4.5
	Four	4	.8
	Five	1	.2
Age,	**Mean**		**SD**
	30.18		8.76
Work experience,	**Mean**		**SD**
	7.07		7.54

Univariable analysis

The scores of females (anxiety: mean = 8.99, SD = 4.50; depression: mean = 9.34, SD = 5.91) were low and significantly higher than male nurses (anxiety: mean = 7.48, SD = 4.61; depression: mean = 7.46, SD = 5.52, P=0.005 and P0.008 respectively) (Table 2).

The mean anxiety was significantly higher in married nurses than in single nurses (P=0.005). The mean self-controlling distancing in male nurses was significantly higher than in female nurses (P=0.017 and 0.006, respectively). However, female nurses' mean escape avoidance was higher than male nurses (P=0.012) (Table 2).

The mean escape avoidance, positive reappraisal, and Nurse-Physician relationship in married nurses were significantly higher than in single nurses (P<0.001, P=0.001 and 0.001, respectively) (Table 2).

Table 2. Distribution of anxiety, depression, coping styles and Nurse-Physician relationship regarding sex and marital status

Items	Sex		P-value	Marital Status		P-value
	Female	male		Single	Married	
Anxiety	8.99±4.50	7.48±4.61	0.005	8.21±4.27	9.33±4.27	0.005
Depression(OHQ_9)	9.34±5.91	7.46±5.52	0.008	8.97±5.90	9.10±5.85	0.801
Confrontive coping	11.59±3.02	11.72±2.93	0.718	11.39±2.92	11.83±3.09	0.096
Distancing	12.27±3.29	13.18±2.41	0.017	12.43±3.06	12.42±3.30	0.989
Self-controlling	12.59±2.76	13.51±2.73	0.006	12.79±2.75	12.71±2.79	0.760
Seeking social support	13.49±2.78	13.44±2.96	0.892	13.29±2.80	13.66±2.81	0.130
Accepting responsibility	13.37±1.81	12.98±2.26	0.086	13.22±2.01	13.39±1.75	0.310
Escape avoidance	13.67±2.71	12.83±3.03	0.012	13.11±2.89	13.98±2.55	<0.001
Planful problem solving	15.33±2.47	15.14±3.03	0.533	15.15±2.66	15.46±2.44	0.161
Positive reappraisal	14.40±2.95	14.46±2.94	0.855	14.01±2.99	14.86±2.80	0.001
Relationship	72.93±11.78	72.12±13.49	0.573	71.30±11.49	74.37±12.50	0.004

There was a positive and significant relationship between age, anxiety, and depression (r=0.117, P=0.008, and r=105, 0.017, respectively). There was a positive and significant relationship between the anxiety score with work experience and the number of children (P<0.01) (Table 3). There was a negative correlation between distancing, self-controlling, planful problem solving, positive reappraisal, and the nurse-physician relationship correlation with anxiety and depression (Table 3). Accepting responsibility and escape avoidance had a positive correlation with anxiety; escape avoidance had a positive correlation with depression.

There was a negative and significant relationship between the educational level and anxiety and depression (r=-0.121 and r=0.0153, P<0.001) (Table 3).

Table 3. correlation between anxiety and depression with coping styles, Nurse-Physician Relationship, age, number of child, work experience and educational level

Items	Anxiety	Depression
Confrontive coping	0.084	0.076
Distancing	-0.376**	-0.392**
Self-controlling	-0.166**	-0.254**
Seeking social support	-0.066	-0.080
Accepting responsibility	0.090*	0.062
Escape avoidance	0.302**	0.315**
Planful problem solving	-0.149**	-0.191**
Positive reappraisal	-0.175**	-0.241**
Relationship	-0.180**	-0.240**
age	0.117**	0.105*
Number of child	0.116**	0.070
Work experience	0.154**	0.129**
Educational level	-0.121**	-.0153**

** P<0.01 and * P<0.05

Multi-variable analysis

The relationship between anxiety depression as dependent variables, Coping Styles, Nurse-Physician relationship, age, sex, and number of children as independent variables was investigated simultaneously using multi-variable regression.

The results of Table 4 showed that in the regression model (the anxiety as a dependent variable based on coping styles, nurse-physician relationship, age, marital status, sex, educational level, and number of children), the coefficient of determination (*R2*) was 0.310 (P<0.001). It was shown that coping styles, nurse-physician relationship, age, marital status, sex, number of children, and educational level described 31.0% of the anxiety variance.

Also, the coefficient of determination (*R2*) for predicting depression was 0.368 (P<0.001). It was shown that coping styles, nurse-physician relationship, age, sex, marital status, number of children, and educational level described 36.8% of the variance of depression.

The distancing coefficient was the strongest predictor of anxiety (P<0.001, β=-0.379). This negative coefficient indicates the negative association between distancing and anxiety. Also, there were significant relationships between anxiety and escape avoidance, confronting coping, self-controlling, and planful problem-solving. Escape-avoidance coping was the strongest predictor of depression (P<0.001, β = 0.311). Also, there was a significant relationship between depression and distancing, confronting coping, positive reappraisal, and planful problem-solving. Also, the Nurse-Physician Relationship coefficient was a negative significant predictor of depression (P=0.023 and β =-0.091).

Age coefficient was a significant predictor for anxiety and depression (P=0.005 and P<0.001, respectively). Educational level was a significant predictor for anxiety and depression (P<0.001 and P<0.001, respectively). This negative coefficient displays the negative association between educational level and anxiety and depression.

Table 4. Regression models; anxiety and depression as dependent variables; coping styles, Nurse-Physician relationship, age and number of child as independent variables.

Dependent Variable	Anxiety				Depression			
	B	Std. Error	B standardized	P-Value	B	Std. Error	B standardized	P-Value
(Constant)	11.204	2.045	---	<0.001	17.762	2.540	---	<0.001
Confrontive coping	0.159	0.060	0.106	0.008	0.221	0.075	0.113	0.003
Distancing	-0.519	0.072	-0.363	<0.001	-0.516	0.090	-0.279	<0.001
Self-controlling	0.170	0.076	0.104	0.026	-0.057	0.094	-0.027	0.544
Seeking social support	-0.107	0.072	-0.066	0.136	-0.076	0.089	-0.036	0.396
Accepting responsibility	0.118	0.098	0.049	0.232	0.105	0.122	0.034	0.390
Escape-avoidance	0.453	0.070	0.278	<0.001	0.657	0.087	0.311	<0.001
Planful problem solving	-0.157	0.083	-0.089	0.060	-0.260	0.103	-0.113	0.012
Positive reappraisal	-0.145	0.076	-0.093	0.057	-0.312	0.094	-0.155	0.001
Relationship	-0.022	0.016	-0.059	0.154	-0.044	0.019	-0.091	0.023
Age	0.079	0.028	0.152	0.005	0.155	0.034	0.230	<0.001
Sex	-0.844	0.469	-0.069	0.072	-0.975	0.582	-0.061	0.094
Marital status	-0.062	0.486	-0.007	0.899	-2.151	0.604	-0.182	<0.001
Number of child	0.248	0.265	0.054	0.350	0.537	0.329	0.090	0.103
Educational level	-1.487	0.420	-0.139	<0.001	-2.270	0.521	-0.164	<0.001

Discussion

The results showed that nurses' anxiety and depression in Tehran were mild during the COVID-19 crisis, and it was more in the female gender. A mild level of nurses' anxiety and depression indicates a regular psychological adjustment to the COVID-19 crisis in Iranian nurses. The causes of the nurses' anxiety and depression included Concerns regarding either infecting healthy people or being infected by patients[35], high exposure risk, moral dilemmas, and high workload [36]. Frontline healthcare workers experience more exposure to COVID-19 disease. They are at high risk of its psychological and physical effects and are more at risk of infection and death [37]. Living far away from families, concerns regarding the health status of families and friends, fear of disease transmission to families, and feeling stigmatized are prevalent among nurses. In addition, the lack of work experience in a pandemic can lead to higher anxiety and depression. Also, inadequate logistic support and a high workload can progress the COVID-19 risk perception [38]. Not surprisingly, common psychological disorders during the pandemic are depression, fear/anxiety, anger, grief, guilt, loss, stigmatization, and post-traumatic stress [39]. A review study reported that several work-related factors are related to mental health outcomes, such as working at high-risk wards, being quarantined, having straight contact with patients, being infected, and having infected relatives [5]. Other studies confirmed that female nurses experience higher anxiety and depression during Covid-19 [37, 38]. The higher anxiety in female nurses can be due to family pressures, high infection risk, and the effects of women's hormones [38].

The current study showed that Corona-related stress coping styles can affect nurses' mental health, including anxiety and depression. The relationship between various coping strategies and mental status (health and illness) has been shown in previous studies: Maladaptive coping is a risk factor for mental health outcomes [40]. Avoidance coping was one of the risk factors for healthcare providers [41]. Studies showed that positive coping styles negatively correlate with depression and anxiety [42]. Active problem-solving coping is associated with the nurses' health, and passive coping strategies, such as avoiding problems, are correlated with poor mental and physical health. [43].

Problem-focused coping strategies are more adaptive [44]. These strategies help people manage directly with sources of stress [45]. There is a correlation between emotion-focused coping and depression during the COVID-19 pandemic [46]. Engagement-related coping (*i.e.*, problem-solving) is associated with well-being [47]. Problem-solving strategies can improve adjustment in a controllable situation. However, emotion-focused strategies like denial and avoidance can be more adaptive in uncontrollable situations [32].

Positive thought can be demonstrated by having confidence in the government and healthcare system [48]. Problem-solving may improve the level of anxiety [49]. Also, problem-solving can reduce sadness [50].

The results of the present study showed that the distancing strategy was the strongest predictor of anxiety. Also, escape-avoidance coping was the strongest predictor of depression. Distancing and escape-avoidance coping are very negatively influential variables in nurses' mental health. Moreover, female nurses' needs are more vulnerable, and health administrators should pay more attention to them.

Also, the results showed that the nurse-physician relationship can affect nurses' anxiety and depression. Most of the previous studies on the nurse-physician relationship have addressed the benefits or risks of the nurse-physician relationship for patients [23], but, to the best of our knowledge, its effects on the nurses' mental health have not been studied extensively. So, the results of the present study suggest that promoting the nurse-physician relationship can improve the nurses' mental health during the COVID-19 pandemic.

Limitations

We included the participants from Tehran Province, and the conception of the results to Iran should be cautiously made. Then, many nurses refused to participate in the study, perhaps due to fatigue. As a result, nurses with more anxiety and depression may not have participated in the study, which may affect the results. Future investigations can study other essential and influential variables in nurses' mental status, such as family factors, mental health histories, and work pressure in different people.

Conclusions

The results showed that the anxiety and depression in the nurses of Tehran were mild during the COVID-19 crisis. Also, the coping styles and the nurse-physician relationship can predict the nurses' anxiety and depression. Distancing, self-controlling, planful problem solving, positive reappraisal, and the relationship had a negative correlation with anxiety and depression; Accepting responsibility and escape-avoidance had a positive correlation with anxiety; Escape-avoidance had a positive correlation with depression; also, there was a positive correlation between anxiety and depression. The distancing was the strongest predictor of anxiety. The other significant coping styles in predicting anxiety were escape avoidance, confronting coping, self-controlling, and planful problem-solving. Also, the escape-avoidance

coping style was the strongest predictor of depression. It suggests that the distancing and escape-avoidance coping styles are two relevant variables. Other significant coping styles in predicting depression were distancing, confronting coping, positive reappraisal, and planful problem-solving.

Highlights

What Is Already Known?
The nurses' mental health was measured by assessing anxiety and depression. Demographic, individual, work-related, and environmental factors can affect anxiety and depression.

What Does This Study Add?
Age, educational level, coping styles, and nurse-physician relationship correlated to nurses' anxiety and depression during the COVID-19 pandemic.

Authors' Contributions
Design, methods, data gathering, analysis, writing and editing the manuscript: Seyedeh Asma Hosseini and Seyedeh Zahra Hosseini Sharif.

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Conflicts of Interest Disclosures
We declare there is no conflict of interest.

Consent for Publication
We declare our agreement for publication.

Ethics approval
The principles of ethics in research have been carried out in this study. The participants consented to include the study.

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