

Research Paper

The Relationship Between Psychological Vulnerability and Psychological Capital and Health Anxiety Through the Mediating Role of Emotional Processing in Nurses Working in the COVID-19 Units



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ABSTRACT

Background: Nurses working in COVID -19 units during the pandemic are more likely to be psychologically vulnerable. The present study aimed to investigate the relationship between psychological vulnerability and psychological capital and health anxiety through the mediating role of emotional processing in nurses working in the COVID- 19 units during the pandemic.

Methods: This is a cross-sectional, correlational study using Structural Equation Modeling (SEM). The statistical population of the research was all nurses working in the COVID-19 units of Shiraz City, Iran in 2021. Five hospitals in Shiraz were randomly selected and then, 200 nurses were selected from their COVID-19 units through multistage random sampling. The data were collected by Symptom CheckList-90-Revised (SCL-90-R), the Psychological Capital Questionnaire (PCQ), the Health Anxiety Inventory (HAI), and the Emotional Processing Scale (EPS), and analyzed by AMOS-25 using SEM and Pearson correlation coefficient. The significance level of 0.05 was considered.

Results: The results of the SEM suggested that the proposed model fits the data. The results showed a direct relationship between health anxiety and psychological vulnerability ($\beta=0.49$; $P=0.011$). Moreover, there was a negative relationship between psychological capital and psychological vulnerability ($\beta=-0.53$; $P=0.002$), emotional processing and psychological vulnerability ($\beta=-0.67$; $P=0.031$), and health anxiety and emotional processing ($\beta=-0.48$; $P=0.001$). The direct path of psychological capital and emotional processing was not confirmed and eliminated from the final model. According to the results, there was a significant indirect path from health anxiety to psychological vulnerability through the mediating role of emotional processing ($P=0.001$).

Conclusion: Psychological capital and emotional processing could reduce the psychological disturbances caused by working in COVID-19 during the pandemic. Therefore, increasing nurses' psychological capital and improving their emotional processing skills are suggested.

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Highlights

- Health anxiety had a positive relationship with psychological vulnerability.
- Psychological capital and emotional processing had a negative relationship with psychological vulnerability.
- There was a negative relationship between health anxiety and emotional processing.
- Emotional processing had a mediating role in the relationship between health anxiety and psychological vulnerability.

Plain Language Summary

Nursing is a stressful job, and nurses have faced higher levels of physical and mental workload, especially during the COVID-19 pandemic, when work pressures intensified due to specific circumstances. This has confronted nurses with psychological vulnerability and health anxiety as the main consequences of this pandemic. The following results were obtained: There was a direct relationship between health anxiety and psychological vulnerability. There was a negative relationship between psychological capital and psychological vulnerability, between emotional processing and psychological vulnerability, and finally, between health anxiety and emotional processing in nurses. The emotional processing mediated the relationship between health anxiety and psychological vulnerability.

1. Introduction

The world is facing a new Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) pandemic, clinically known as Coronavirus Disease 2019 (COVID-19). The first case of this disease was initially recorded in Wuhan, China, in December 2019 (Sharma et al., 2020). COVID-19 has infected hundreds of thousands of people around the world (Rasouli et al., 2022). During the pandemic, the identification and treatment of large numbers of patients put the health systems of many countries under unprecedented pressure and they were working beyond their existing capacities to combat the epidemic. Meanwhile, health care workers, especially nurses, have been affected more by this pandemic than others (Danesh et al., 2021). The spread of coronavirus has exceeded the existing capacity of the health systems of many countries (Zamanzadeh et al., 2021). The hospitals are loaded with patients suffering from COVID-19. All resources of hospitals (patient beds, equipment, and personnel) are allocated to controlling this disease, and as a result, there are limited resources left for the patients. On the one hand, the lack of prevention and diagnosis devices and equipment, and on the other hand, the low usability of personal protective equipment have made duty performance an important challenge for nurses. Management of COVID-19 and coping with the resulting mortality and suffering have affected nurses not only physically but also psychologically and emotionally (Keleb et al., 2021).

Nurses are among the occupational groups that are dealing with stress and psychological problems more than other groups and they are known as the group exposed to COVID-19. This group normally suffers from depression, anxiety, and fatigue. Nurses are more prone to psychological tensions than other occupations (Mohamadzadeh Tabrizi et al., 2022). Because of their close contact with the COVID-19 patients, they are anxious about getting infected and transmitting it to their colleagues and families. Thus, they are under psychological pressure (Kef, 2021). Global health pandemics, such as COVID-19 can affect individuals' physical and psychological health and as a result, these individuals are more vulnerable to depression, anxiety, and fear (Javed et al., 2020; Shiina et al., 2021; Dai et al., 2021). In such situations, negative emotions usually prevail. The advent of COVID-19 and its aftermath have led to fear and anxiety among people around the world. It has also caused a wide range of psychological problems, such as panic disorder, anxiety, insomnia, and depression (Serafini et al., 2020). Severe emotional stress can increase a person's vulnerability to illness and slow recovery from the illness (Seiler et al., 2020).

Vulnerability is known as a congenital or acquired predisposition to maladaptation and mental disorders. The vulnerability consists of biological, cognitive, emotional, and social components called vulnerability markers (Morioka et al., 2019).

One of the factors that play a vital role in various aspects of individuals' lives including life changes and challenging events is emotional processing (Ferrell et al., 2020). Emotional processing can be regarded as biological reactions to conditions, during which we evaluate a valuable opportunity. These biological reactions are associated with environmental events, to which we provide an answer (Dell'Acqua et al., 2022). It has been demonstrated that anxiety, stress, and depression had a negative and significant relationship with the mental health of adults during the COVID-19 pandemic. Besides, COVID-19 has disparate impacts on the mental health of adults (McPherson et al. 2021). The messages about the ever-increasing statistics of people infected with COVID-19 cause health anxiety by threatening their security and peace (Heinen et al., 2021). Health anxiety is a form of concern that individuals experience regarding the subjects related to their health or even others', and it consists of physical, psychological, and social aspects (Javadi et al., 2022; Kurcer, Erdogan, & Cakir Kardes, 2022).

One of the factors with a considerable impact on individuals' performance is their psychological capital (Meseguer de Pedro et al., 2021). Psychological capital is a positive personal psychological state that enables an individual to be confident about their ability and development and it comprises at least four characteristics: Self-efficacy (necessary effort to achieve success in challenging tasks), hope (resistance and patience towards obtaining the goals and, if necessary, changing the path to achieve success), optimism (positive effect regarding success), and resilience, which means to be flexible to obtain success and accomplish goals when facing hardship and problems. Psychological capital has a positive nature and enables looking at the capacities and capabilities of humans from a positive viewpoint (Li, 2020; Turliuc & Candel, 2021). Therefore, based on the above considerations, this study aimed to investigate the relationship between psychological vulnerability and psychological capital and health anxiety through the mediating role of emotional processing in nurses working in the COVID units during the pandemic in Shiraz Province-Iran.

2. Materials and Methods

It was a cross-sectional correlational study, which was conducted using path analysis. The study population included all nurses working in the COVID units of Shiraz hospitals, Iran in 2021. The study sample included 200 nurses selected based on the number of research variables (Bentler & Chou, 1987).

The subjects were recruited through multistage random sampling. Accordingly, five hospitals in Shiraz were randomly selected, and then, 200 nurses were recruited from their COVID units. The inclusion criteria were as follows: At least three months of experience working in COVID units, not suffering from any serious physical diseases, and not undergoing psychotherapy for at least one month prior to the investigation. Those who did not answer all the questions of the questionnaires were excluded from the study. The sampling was carried out after conducting the coordination with the samples and obtaining the required permits. The questionnaires were given to the nurses and they were reminded that they could complete them the same day or the next day.

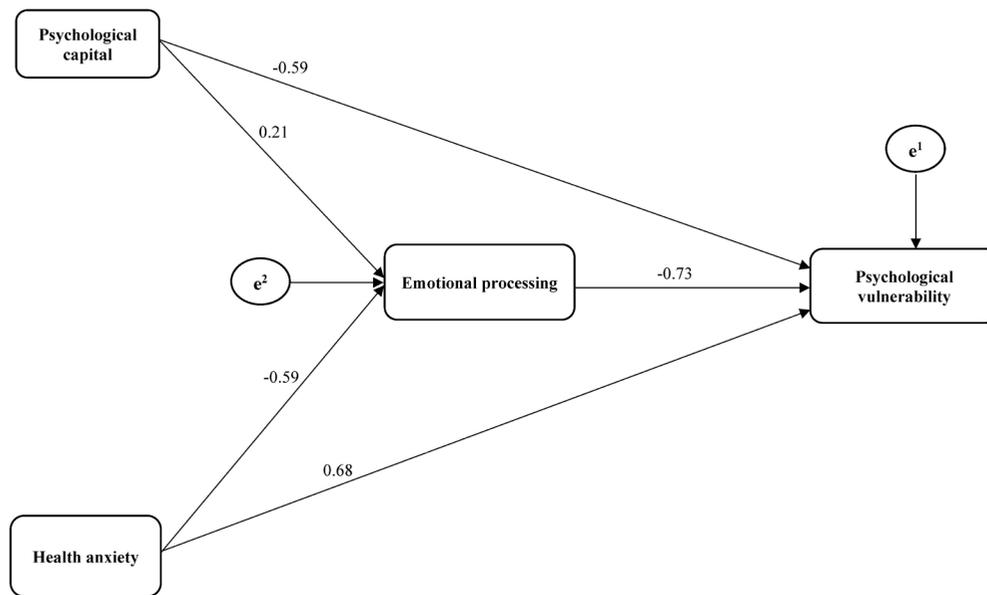
Research instruments

Symptom checklist-90-revised (SCL-90-R)

In the present study, a short form of the revised version of the SCL-90-R was used to measure psychological vulnerability. The SCL-90-R was designed by Derogatis (1992). It is a self-report instrument containing 25 items and is designed to measure nine current psychiatric symptoms. Its subscales include psychical complaints, obsessive-compulsive, depression, anxiety, fear of open spaces, paranoid thoughts, mental distress, hostility, and interpersonal sensitivity. In this questionnaire, subjects are asked to answer on a 5-point Likert scale how much they have suffered from each of the symptoms in the last seven days. The minimum and maximum scores obtainable on this checklist are 25 and 125, respectively. A higher score indicates a higher level of psychological vulnerability. In this study, the total score of the scale was used. Cronbach's alpha of SCL-90-R was 0.96 (Sereda & Dembitskiy, 2016). The Cronbach's alpha for SCL-90-R was obtained to be 0.87 (Mohammadian et al., 2021). In this study, Cronbach's alpha coefficient was 0.83.

Psychological capital questionnaire (PCQ)

Luthans et al. (2007) developed the PCQ. This questionnaire constituents 24 questions, as well as four components, i.e., self-efficacy, hope, optimism, and resilience. Each subscale consists of six items and the participants provide responses to each item on a six-point Likert scale (1= strongly disagree to 6= strongly agree). The total score ranges from 24 to 144 and the higher score indicates more psychological capital. The Cronbach's alpha for the questionnaire was 0.88, and its test-retest reliability was 0.82 (Cui et al., 2021). The reliability of the Persian version of the PCQ was estimated to be 0.89



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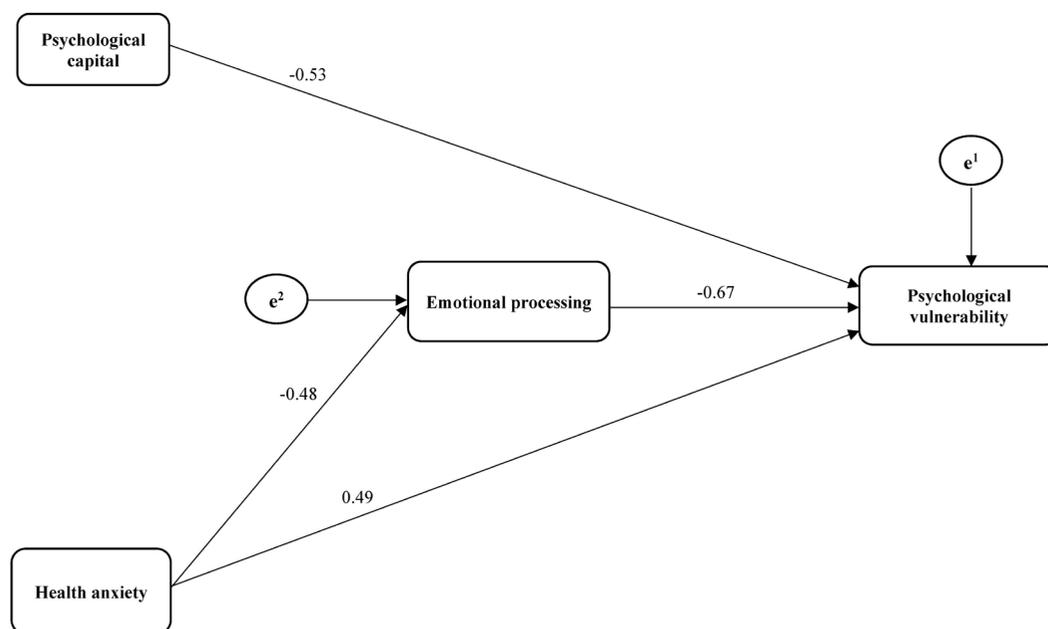
Figure 1. The initial model of the mediating role of emotional processing in the relationship of psychological capital and health anxiety with the psychological vulnerability

based on Cronbach’s alpha coefficient (Mohsenabadi et al., 2021), and Cronbach’s alpha was determined to be 0.83 in the present study.

Health anxiety inventory (HAI)

Salkovskis et al. (2002) designed the HAI. This inventory has 18 questions and three components, i.e., general health anxiety, suffering from illness, and outcomes of

health anxiety. Each item is scored on a 5-point Likert scale (0 = lack of anxiety symptoms to 4 = severe form of anxiety). The score range of this questionnaire is 0 to 54. The result is interpreted as follows: <17: no anxiety, 18–24: mild severity, 25–30: moderate severity, and >30: severe anxiety disorders. The score range of this questionnaire is 0 to 54. The HAI has demonstrated good reliability and criterion validity (Salkovskis et al., 2002).



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Figure 2. The modified final model of the mediating role of emotional processing in the relationship of psychological capital and health anxiety with the psychological vulnerability

Table 1. Demographic variables of the nurses working in COVID-19 units

Age (y)	Work Experience in the COVID Unit (Months)	Gender, No. (%)	
		Male	Female
33.42±6.25	7.16±3.63	97(48.50)	103(51.50)

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Table 2. Mean±SD and Pearson correlation coefficients of the studied variables

Variables	Mean±SD	1	2	3	4
Psychological capital	87.42±32.12	1			
Psychological vulnerability	68.29±27.18	-0.51*	1		
Health anxiety	49.16±19.21	0.11	0.62*	1	
Emotional processing	75.98±28.33	0.34*	-0.69*	-0.46*	1

*P<0.05

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The reliability of the Persian version of this tool has been calculated as 0.89 (Nargesi et al., 2017). Cronbach's alpha coefficient was 0.87 in the current study.

Emotional processing scale (EPS)

The EPS was designed by Baker et al. (2007) to identify emotional processing styles and potential deficits. The 25-item scale includes five dimensions, i.e., suppression, impoverished emotional experience, unregulated emotion, avoidance, and the sign of unprocessed emotion each with five items. The subjects answer each item on a 5-point Likert scale (not at all to indefinitely). The minimum and maximum scores obtainable on this scale are 25 and 125, respectively. A higher score indicates a higher level of emotional processing. It takes only five minutes to complete the scale. In this study, the total score of the scale was used. The Cronbach's alpha for EPS was obtained to be 0.89 (Kharamin et al., 2021). In this study, Cronbach's alpha coefficient was calculated as 0.85.

Data analysis

Data were analyzed using descriptive statistics, including mean and standard deviation, and Pearson correlation

coefficient. The fitness of the model was evaluated through SEM using SPSS and AMOS software version 25 at the 0.05 level of significance.

3. Results

The results related to demographic characteristics revealed that 21.50% of the subjects were under 25 years old, 36.00% were 25 to 35 years old, 28.50% were 35 to 45 years old, and 14.00% were over 45 years old. Furthermore, most subjects were female. The descriptive statistics and Pearson correlation between the research variables are shown in Tables 1 and 2 respectively. The initial suggested model to describe the connection between the variables is shown in Figure 1.

Table 3 demonstrates that the initial model has to be modified based on the Root-Mean-Square Error of Approximation (RMSEA=0.129). In order to correct the model, the path from psychological capital to emotional processing was removed. The RMSEA=0.036 in the final model indicated that the model fits well. Figure 2 shows the final modified model.

Table 3. Fit indicators of the initial and final models

Fit Indicators	χ^2	df	(χ^2 /df)	IFI	TLI	CFI	NFI	RMSEA
Initial model	2.16	1	2.16	0.52	0.63	0.58	0.61	0.129
Final model	4.64	2	2.32	0.91	0.93	0.97	0.92	0.036

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IFI: Incremental Fit Index; TLI: Tucker-Lewis index; CFI: Comparative Fit Index; NFI: Normed Fit Index; RMSEA: Root Mean Square Error of Approximation

Table 4. The direct relationship between research variables in the models

Path	Initial Model		Final Modified Model	
	β	P	β	P
Psychological capital to psychological vulnerability	-0.59	0.001	-0.53	0.002
Health anxiety to psychological vulnerability	0.68	0.014	0.49	0.011
Emotional processing to psychological vulnerability	-0.73	0.001	-0.67	0.031
Psychological capital to emotional processing	0.21	0.324	-	-
Health anxiety to emotional processing	-0.59	0.003	-0.48	0.001

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Table 4 shows the results of estimating path coefficients for testing direct hypotheses. The results showed that there was a direct relationship between health anxiety and psychological vulnerability ($\beta=0.49$; $P=0.011$). There was a negative relationship between psychological capital and psychological vulnerability ($\beta=-0.53$; $P=0.002$), emotional processing and psychological vulnerability ($\beta=-0.67$; $P=0.031$), and between health anxiety and emotional processing ($\beta=-0.48$; $P=0.001$) in nurses working in the COVID units during the pandemic. There was no significant relationship between psychological capital and emotional processing in the nurses (Table 4).

The Bootstrap method was used to evaluate the significance of mediation relationships (Table 5). The results showed that emotional processing mediated the relationship between health anxiety and psychological vulnerability ($P=0.001$). The indirect path from psychological capital to psychological vulnerability through the mediating role of emotional processing was not significant (Table 5).

4. Discussion

The aim of this study was to investigate the relationship between psychological vulnerability and psychological capital and health anxiety through the mediating role of emotional processing in nurses working in the COVID units during the pandemic in Shiraz. The findings

revealed that there was a positive relationship between health anxiety and psychological vulnerability. There was a negative relationship between psychological capital and psychological vulnerability, emotional processing and psychological vulnerability, and health anxiety and emotional processing. According to the results, emotional processing had a mediating role in the relationship between health anxiety and psychological vulnerability. Also, the proposed model achieved a good fit. Estiri et al. (2016) showed that there is a positive and significant relationship between psychological capital and mental health in nurses. Landi et al. (2020) reported that there is a relationship between health anxiety and COVID-19 peritraumatic distress, anxiety, and depression.

The results indicated a negative and significant relationship between psychological capital and psychological vulnerability in nurses working in the COVID units during the pandemic. It means that psychological capital can be served as a crucial indicator to reduce psychological vulnerability. In psychological vulnerability, the individuals have a concerted view of the future. The psychological capital can change the viewpoint, reduce anxiety regarding the future, and diminish this clinical symptom (Meseguer de Pedro et al., 2021). Psychological vulnerability is an indication of the effort to prevent or suppress affection, thoughts, and other personal experiences, such as physical effects and anxiety symptoms. This unwillingness to tolerate acci-

Table 5. Results of indirect and mediation paths in the models

Predictor	Mediator Variable	Criterion Variable	Initial Model		Final Modified Model	
			β	P	β	P
Health anxiety	Emotional processing	Psychological vulnerability	0.13	0.001	0.14	0.001
Psychological capital			0.09	0.213	0.05	0.121

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dents, as well as the internal experiences and inefficient beliefs regarding internal experiences, provide a more experimental foundation to understand health anxiety psychology (Le Vigouroux et al., 2021).

The finding showed a significant and negative relationship between emotional processing and psychological vulnerability in nurses. The absence of an emotional process is an emotional cognitive trait and the individuals suffering from this disorder are incapable of regulating and understanding their emotions. Failure in perceiving and evaluating the emotional information in the process of cognitive processing causes distress for individuals. This distress can disrupt the organization of their emotions and cognitions (Dell'Acqua et al., 2022). Emotional processing as the behavioral and cognitive ability to coordinate with the mental, biological, and motivational processes stabilizes an individual's relationship with the environment and provides them with efficient and appropriate responses to face various situations. Consequently, it improves their self-efficacy (one of the components of psychological capital). Moreover, emotional processing raises an individual's feeling of control over their affairs, boosts their belief in affecting the situations, and improves their feeling of self-efficacy (Turliuc & Candel, 2021).

Based on the obtained result, health anxiety had a significant relationship with psychological vulnerability with a mediating role of emotional processing. Health anxiety can be caused by the misinterpretation of physical emotions as signs of an illness. Thus, due to the inaccurate interpretation of their physical effects, individuals who are unsuccessful in regulating their emotions are incapable of ending their negative emotional conditions (Heinen et al., 2021). Consequently, it increases emotional arousal and health anxiety.

5. Conclusion

Both psychological capital and emotional processing had a negative relationship with psychological vulnerability in nurses working in the COVID units during the pandemic. Health anxiety had a positive relationship with the nurses' psychological vulnerability. It can be concluded that the proposed model had a good fit. Studying other variables, such as interpersonal relationship problems, mood disorders, and behavioral disorders in nurses working in COVID units is suggested. In addition, it is advised to do proper planning in these wards to identify the extent of psychological vulnerability caused by COVID-19 in nurses and provide the required psychological interventions.

This study was performed only on nurses in COVID-19 units of Shiraz hospitals; therefore, generalizing the results to other nurses in COVID-19 units should be done with caution. It is also necessary to consider the limitations of self-report.

Ethical Considerations

Compliance with ethical guidelines

The study was approved by the Ethical Committee of Tonekabon Branch, Islamic Azad University (code: IR.IAU.TON.REC.1400.034). To practice the ethical considerations, all the subjects were asked to hand over their letter of informed consent and they were informed that they are entitled to leave the research in case they are willing to.

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Authors' contributions

Study conception and design, acquisition of data, analysis and interpretation of data: Rozita Mazhari; Administrative, technical, and material support, and study supervision: Abdolhassan Farhangi; Critical revision of the manuscript for important intellectual content: Farah Naderi and Abdolhassan Farhangi; Approved the final version of the manuscript: All authors.

Conflict of interest

The authors declared no conflict of interest.

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