

Research Paper: Investigating the Role of Empathy in Psychological Capital Impact on Stress Caused by Contracting COVID-19 in Nurses: A Case Study of Nurses of Tehran Oil Hospital



Akbar Bahmani^{1*}

1. Department of Public Administration, Payame Noor University, Tehran, Iran.



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ABSTRACT

Background: Rapid transmission and sudden outbreak of new coronavirus have caused widespread stress among the community and treatment staff. Regarding the consecutive peaks of the disease, its persistence stress, in the long run, creates destructive effects and leads to physical weakness and psychological complications. Hence, the present study seeks to find proper ways to promote psychological capital and reduce the stress of contracting COVID-19 with the mediating role of empathy.

Materials and Methods: The present research was an applied and analytical study. It is a cross-sectional study conducted in 2020. The study's statistical population comprised 510 nurses working in Tehran Oil Industry Hospital. Using a simple random sampling method and Krejcie and Morgan table, a sample of 160 was selected. The data collection tool was a standard questionnaire whose validity and reliability have been confirmed. For data analysis, we used the structural equation modeling method and the Pearson correlation test to examine the relationship between variables.

Results: The findings showed the significant and direct effect of psychological capital on empathy and a significant inverse impact of both empathy and psychological capital on the stress of contracting COVID-19 in nurses. The mediating role of empathy in the relationship between psychological capital and contracting COVID-19 stress was also confirmed.

Conclusion: Accordingly, by promoting the components of psychological capital in nurses, the hospital managers can prepare them for daily stress during the coronavirus epidemic. Also, by strengthening the empathy indicators in employees along with psychological capital, the tensions related to this disease can be overcome more than ever.

* Corresponding Author:

Akbar Bahmani, PhD.

Address: Department of Public Administration, Payame Noor University, Tehran, Iran.

E-mail: bahmani.akbar@gmail.com

1. Introduction

Today, nursing is one of the most important professions in the health and treatment system, which, apart from its crucial position, includes an important and large part of the staff working in the field of treatment. However, this profession has its stressful features, such as constant caring for patients, being responsible for human health, performing clinical procedures, facing emergency situations, and working shifts. These conditions in healthcare professions can reduce the quality of patient care [1, 2]. In addition to these challenges, today's world faces a virus called COVID-19 from the coronavirus family with symptoms such as fever, cough, and shortness of breath [3]. The disease was first reported in December 2019 in Wuhan, China, and caused unprecedented and widespread confusion in human societies [4]. The unpredictable nature and rapid spread of the disease at younger ages in subsequent mutations and changes in virus behavior have led to anxieties that can sometimes lead to psychological and social disorders, especially for high-risk, vulnerable groups, such as people with underlying diseases and the elderly [5].

Meanwhile, hospital staff and nurses are the most important group of devotees. They rightly remind everyone of their sacrifices and martyrdom. In this context, one way to reduce the psychological vulnerability due to stress and worries caused by the disease contraction in the COVID-19 epidemic is to make nurses resilient and improve psychological capital among hospital staff. Also, a cordial and empathetic relationship can help reduce the stress [6] caused by contracting COVID-19.

Psychological capital is particularly important in the success of medical staff in healthcare organizations. This capital helps people think better under challenging circumstances, calm their minds with a positive attitude, and improve performance by controlling anger, anxiety, and fear, thus paving the way for inner insight and creative ideas [7, 8]. Psychological capital includes self-confidence, optimism, hope, and recover after enduring problems (resilience) [9]. Psychological capital can be defined as the developmental status of positive psychology, which has four components of self-efficacy/self-confidence, hope, optimism, and flexibility [10]. Diseases such as COVID-19 cause high stress and anxiety due to its rapid transmission and contraction. Psychological capital is one of the main factors in tolerating and reducing psychological diseases. In this regard, resilience increases adaptability, hope reduces unbearable feelings,

and optimism leads to more job belonging, satisfaction, and performance [7].

On the other hand, one of the factors that deter and resolve disease-related stress and worries is empathy [11]. Empathy is the ability to understand emotional states and thoughts and experience similar emotions with others and respond to them with appropriate and equal emotions and share with their feelings [12]. This virtue improves social relationships and promotes supportive behaviors. This factor effectively reduces anxiety and worries caused by contracting COVID-19 [13]. Empathy is an important ability that synchronizes a person with the thoughts and feelings of others [14]. Kawano's studies show that nursing is more exposed to stressors than other occupations [15].

Regarding the constant threat of the coronavirus and its consecutive peaks that affect the country and hospitals, the resulting stress, in the long run, would be destructive and lead to the weakened immune system and reduced ability of the body to fight diseases including COVID-19 [16]. Stress is an indeterminate body reaction to some demand and occurs when a person is exposed to a stressful stimulus [17]. In other words, it is a common negative feeling experienced by medical staff in the outbreak of infectious diseases [18]. Recent studies report that 73% of at-risk people, such as medical staff, are prone to contracting COVID-19. In the early stages of the COVID-19 outbreak in China, more than half of the respondents reported severe to moderate psychological impact of anxiety of getting the disease, and more than one-third reported moderate to severe anxiety [19]. In this regard, it seems that the dimensions of psychological capital, such as resilience, can reduce the anxiety and stress of the disease.

Similarly, Vinkers [20], in a study entitled "Resistance to stress caused by the epidemic of COVID-19", focused on resilience and its strengthening as a way to reduce the stress of the coronavirus [21]. Lee, in his study of psychological capital among young people and its effect on social anxiety (including fear and anxiety about getting sick in contact with others) during the COVID-19 epidemic, stated that psychological capital has a negative correlation with social anxiety. Also, Grogoli [22] examined empathy in the psychological consequences of coronavirus infection. According to him, empathy during the COVID-19 epidemic leads to better adaptation to the situation, adherence to social norms in the COVID-19 condition (such as social distancing), and less anxiety. Rashid and Bayat [23] and Naderi et al. [24] studied the relationship between the dimensions of psychological capital and empathy in the workplace. The

results of both studies confirmed the positive effect of psychological capital on empathy.

Little research has been done on how to evaluate the effect of psychological capital on the improvement of stress in COVID-19 conditions with the mediating role of empathy among nurses. Considering the pervasive impact of COVID-19 stress on personal, occupational, and social performance, as well as psychological consequences for nurses, this research intends to examine these consequences as dependent variables. Also, considering the important role of psychological capital in controlling the stress of contracting COVID-19, we want to explore the dimensions of psychological capital as an independent variable. Finally, regarding the mediating role of empathy among employees, this study examines how psychological capital affects empathy and how empathy affects the stress of contracting COVID-19.

2. Materials and Methods

This cross-sectional research was an applied and analytical study. It was conducted on nurses working in Tehran Oil Industry Hospital in 2020. The statistical population of the study included 510 nurses. The statistical sample of the present study was 142 hospital nurses who were selected using the Krejcie-Morgan table [25]. Considering the possibility of non-return of a number of questionnaires, a sample of 160 people was selected from the members of the statistical population using a simple random sampling method. It should be noted that having at least one year of work experience in the above hospital was considered a criterion for inclusion in the study.

To measure the empathy variable, we used the Davis questionnaire [26], with 21 questions and three dimensions (empathetic concern, perspective taking, and personal distress). To measure the psychological capital variable, we used the Luthans questionnaire [10] with 16 questions in four dimensions (hope, resilience, optimism, and self-efficacy). Also, to measure the COVID-19 stress variable, we used the Alipour et al. questionnaire [27] with 18 items. Finally, the required information was collected by a questionnaire consisting of 55 questions, which included questions related to the three variables. The answer to the questions was scored on a 5-point Likert scale, from 1 to 5, to the options of “strongly disagree”, “disagree”, “have no opinion”, “agree”, and “strongly agree”, respectively.

The reliability of the questionnaire was determined by calculating the Cronbach α coefficients as follows: psychological capital=0.89, the stress of contracting CO-

VID-19=0.89, and empathy=0.85. Also, the combined reliability coefficients were as follows: psychological capital=0.80, contracting COVID-19 stress=0.85, and empathy=0.85. So the reliability of the questionnaire was confirmed. Also, the validity of the questionnaire, in addition to expert approval (face validity), was confirmed with convergent validity with the following values: psychological capital=0.63, contracting COVID-19 stress=0.57, and empathy=0.66.

In the above study, we used a skewness-elongation test to determine the normality of variable distribution, the Pearson correlation test to examine the relationship between variables, and the structural equation modeling method to measure the fit of the research model and hypothesis testing. All analyses were done in SPSS software v. 22 and LISREL 8.8.

3. Results

The demographic characteristics of the sample members showed that 75% of them were women and 25% men. Regarding the educational degree, 2% of the members had an associate degree, 78% had a bachelor's degree, and 20% had a master's degree. Of the participants, 65% had formal and informal employment status, and 35% had contractual employment status. The age of participants in the study was between 36 and 45 years.

The skewness-elongation test was used in SPSS software v. 22 to check the normality of the studied variables. The results of this test are presented in Table 1.

The normality of the data based on the skewness-elongation test is proved when the estimated values for the skewness and elongation of the data are within the range of +2 and -2. According to the numbers obtained in Table 1 and their placement within this range, the assumption of data normality was confirmed.

In this study, the Pearson correlation test was used to investigate the relationship between indicators (Table 2). The correlation test results showed a negative relationship between psychological capital and stress of contracting COVID-19, a positive correlation between psychological capital and empathy between nurses, and a significant negative correlation between nurses' empathy and contracting COVID-19 stress.

In the next step, to know the effect of the studied variables on each other, the research hypotheses were tested using the structural equation method and data analysis with the help of LISREL 8.8 software. The results can

Table 1. Normality test results

Variables	Skewness	Standard Error	Elongation	Standard Error
Psychological capital	-0.570	0.271	-0.183	0.501
Contracting COVID-19 stress	-0.275	0.242	-0.660	0.572
Empathy	-0.031	0.237	-0.642	0.266

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Table 2. Correlation coefficient between research variables

Independent Variable	Dependent Variable	r*	p**
Psychological capital	COVID-19 stress	-0.370	0.0001
Psychological capital	Empathy	0.330	0.0001
Empathy	COVID-19 stress	-0.411	0.0001

* Pearson correlation test; ** Significant at P<0.01.

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be seen in Figures 1 and 2. Standard coefficients and significant numbers are used to confirm or decline the hypotheses. The significant number in LISREL software is generally the same as the Sig. concept in SPSS software, with the difference that for a coefficient to be significant, its number must be greater than 1.96 or less than -1.96. They are generally used to confirm or reject the research hypotheses. The larger significance number indicates that the independent variable has a stronger effect on the dependent variable.

According to Figure 1, the standard coefficient between psychological capital and stress of contracting COVID-19 was -0.62, which indicates the negative and significant effect of psychological capital on contracting COVID-19 stress. The standard coefficient between psychological capital and empathy is 0.74, indicating a positive and significant impact. Also, the standard coefficient between empathy and contracting COVID-19 stress is 0.67, indicating a negative and significant effect of empathy on contracting COVID-19 stress.

Table 3. Results of the structural equation modeling

Relationships of Research Variables	t-Value	Direct Effect (R)	Indirect Effect	Total Effect	Result	Relationship
Psychological capital- contracting COVID-19 stress	-2.74	-0.62	-	-0.62	Confirm	Direct
Psychological capital-empathy	4.84	0.74	-	0.74	Confirm	Direct
Empathy - contracting COVID-19 stress	-3.62	-0.67	-	-0.67	Confirm	Direct
Psychological capital - empathy – contracting COVID-19 stress	-	-	0.74*0.67=-0.495	-0.495	Confirm	Direct

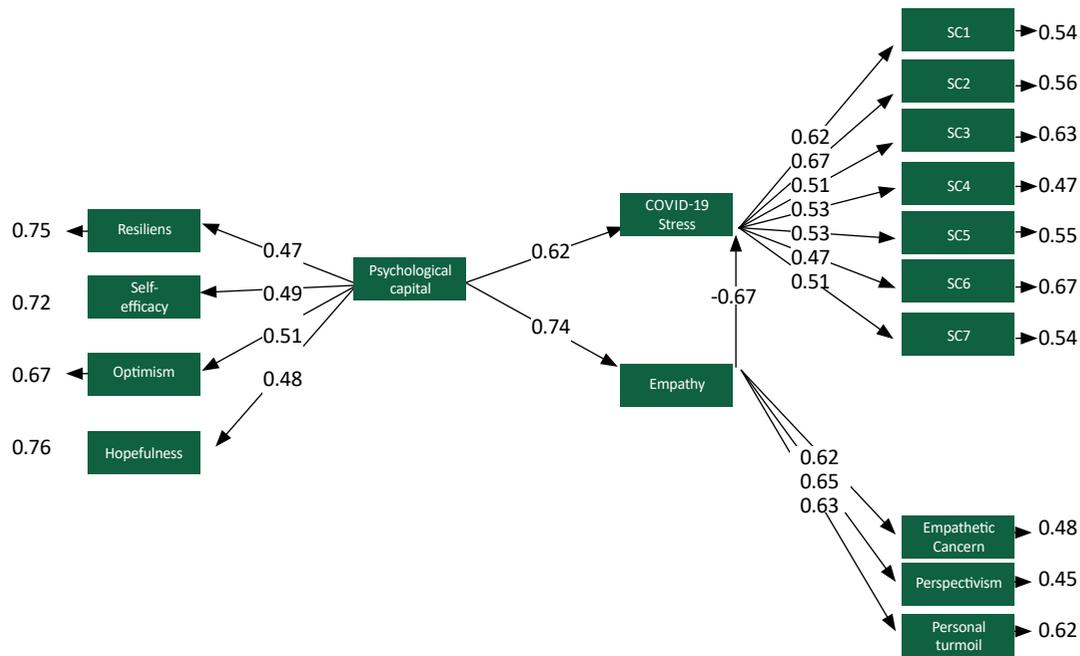
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Table 4. Conceptual model fit test results

CIMN/ DF	P	GFI	NFI	CFI	RFI	IFI	RMSEA
1.91	0.0001	0.911	0.912	0.955	0.912	0.955	0.077

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CMIN/DF: Chi-square fit statistics/Degree of Freedom; GFI: Goodness-of-Fit Index; NFI: Normed Fix Index; RFI: Relative Fit Index; IFI: Incremental Fix Index; CFI: Comparative Fix Index; RMSEA: Root Mean Square Error of Approximation



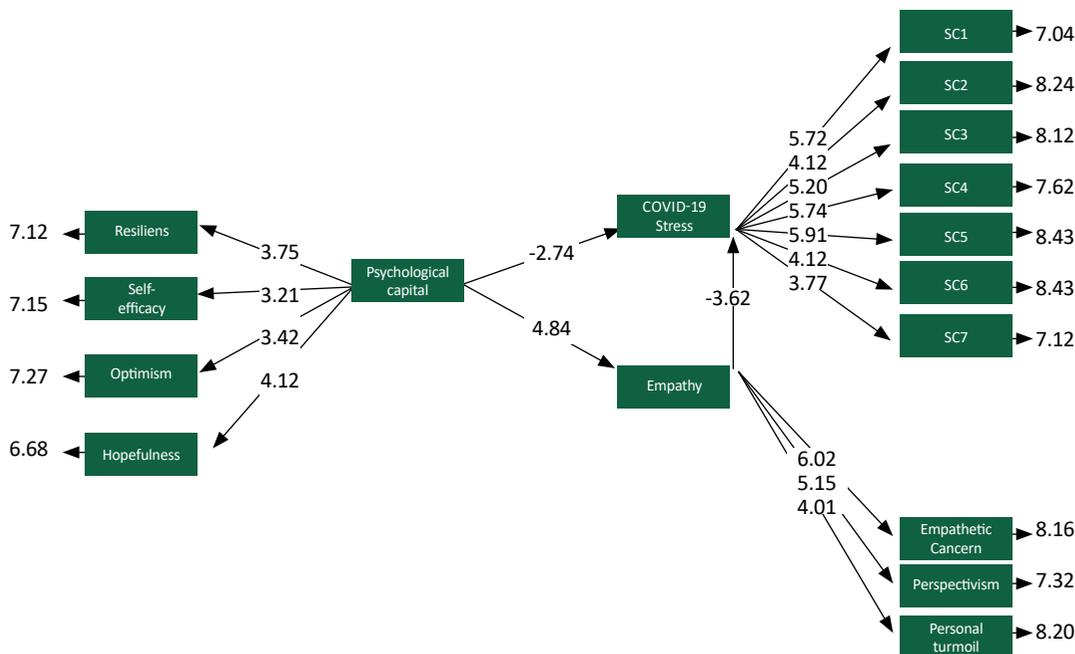
Chi-Square=169.55, df=87, P=0.0000, RMSES=0.077

Figure 1. Values of standardized coefficients obtained from structural equation modeling

According to Figure 2, the significant numbers are as follows: between psychological capital and contracting COVID-19 stress, -2.74; between psychological capital and empathy, 4.84; and between empathy and contracting COVID-19 stress, -3.62. These values are outside the range of -1.96 and +1.96, so there are significant relationships between psychological capital, contract-

ing COVID-19 stress, and empathy. A summary of the modeling results of structural equations and the effects of mediating variables is presented in Table 3.

Table 4 presents the model fit indices in structural equation modeling. As seen, the research model has a good fit, and the level of acceptance of the indicators has been met.



Chi-Square=169.55, df=87, P=0.0000, RMSES=0.077

Figure 2. Significant values obtained from structural equation modeling

To explain the fit indices of Table 4, it is necessary to mention that the CIMN/DF index (Chi-square statistics to the degrees of freedom) of between 1 and 3 indicates the high confirmation of the model. The other three indices are CFI (Comparative Fit Index), IFI (Incremental Fit Index), and NFI (Bentler-Bont Normalized Fit Index), which always take a number between 0 and 1. The closer this number is to 1, the better the model fits the data. RMSEA (Root Mean Square Error of Approximation) is another fit index of the model that the appropriate value for this index is less than 0.1. According to the values obtained in Table 4 and based on fit indices, the conceptual model of the research is in a favorable condition.

4. Discussion

The prevalence and global epidemic of the new coronavirus as a pandemic disease have caused stress of its contraction and widespread anxiety among the nurses. Because of the continued presence of the disease and its consecutive peaks, the persistence of the stress, in the long run, would be destructive and result in the weakening of the immune system, psychological disorders, and reduced body power in the fight against diseases, including COVID-19. Therefore, psychological care besides health care is necessary to prevent coronavirus spread. The present study was conducted to investigate the effect of psychological capital on contracting COVID-19 stress with the mediating role of empathy among the nurses working in Tehran Oil Industry Hospital. The current study results showed a significant positive and direct effect of psychological capital on nurses' empathy, which is in line with the results of Rashid and Bayat [23] and Naderi et al. [24].

To explain the study findings, we can say that in COVID-19 conditions in hospitals, nurses suffer from high stress due to the poor state of patients, watching the suffering of COVID-19 patients, and the high rate of virus transmission [6]. In this situation, nurses with high psychological capital dimensions such as optimism and hope will experience more positive emotions. They will most likely have a higher ability to empathize with others because they have a more positive view of their abilities. Another dimension of psychological capital is self-efficacy. People with high self-efficacy are usually motivated from the inside. This is a constructive ability to communicate and empathize with others, especially in stressful situations.

Regarding resilience, it should be said that having self-confidence in people with high resilience affects emotional experiences in dealing with others [8] and helps to

improve relationships in COVID-19 conditions, which leads to understanding the worries and anxieties of others in stressful COVID-19 situations.

Other results of this study showed a significant negative association between empathy and contracting COVID-19 stress among nurses that is consistent with Grignoli's [22] results. As understanding the feelings of others, empathy is one of the main elements in social relations between people [12]. People with high empathy perceive the feelings of others better and look at issues from their perspective [14]. This critical emotional response can enhance caring and compassion for others. It is noteworthy that empathy can both affect and be affected by stress. This is when people experience more stress and anxiety than their psychological capacity compared to their colleagues. A significant negative effect between psychological capital and contracting COVID-19 stress among nurses was another result of these studies, which was consistent with Lee's findings [21].

Psychological capital helps nurses be more relaxed in stressful conditions of COVID-19 [20]. Because these people have high resilience, they can adapt and return to the original state and adjust the levels of disability in stressful situations of the COVID-19. Also, because people with psychological capital are optimistic, they are more in control and better assess their abilities to cope with stress. Optimistic people usually have a more active and constructive engagement with their jobs. They believe that they can control and eliminate stressful movements and fluctuations around them and thus achieve better results. Also, characteristics such as self-efficacy in people with high psychological capital lead to greater control and resistance in stressful situations [8]. In these conditions, more efforts are made to cope with the stressful conditions of the disease.

5. Conclusion

The study results show that the nurses of Tehran Oil Hospital have the desired level of psychological capital and empathy. Also, their psychological capital and empathy reduce the stress of contracting COVID-19. Therefore, it is suggested that hospital head nurses and managers use appropriate psychological techniques and hire nurses with higher psychological skills and empathetic characteristics. Holding special training programs for the COVID-19 period to improve resilience, self-efficacy, optimism, and hope and seeking help from psychologists to improve psychological capital should be the continuous agenda of hospital managers.

Ethical Considerations

Compliance with ethical guidelines

The participants were informed about the purpose of the research and its procedure. They also made sure that their information was kept confidential, and they could leave the study whenever they wished and were provided with research results if they wanted.

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Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

The authors declared no conflict of interest.

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