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Mediating Role of Self-efficacy in the Relationship of Social Support and Resilience in Nurses During the COVID-19 Pandemic: A Cross-sectional Study

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ABSTRACT

Introduction: During the COVID-19 epidemic, the mental status of nurses and other healthcare workers was strongly influenced by environmental conditions.

Objective: This study aimed to determine the association between social support and resilience with the mediating role of self-efficacy in nurses working in public hospitals.

Materials and Methods: In this cross-sectional study, 220 nurses working in the educational and medical centers of Rasht City, Iran, in 2021 were recruited by simple random sampling. The general self-efficacy scale, multidimensional scale of perceived social support questionnaire, and Connor and Davidson resilience scale were used to collect data. The Pearson correlation coefficient test was used to investigate the linear relationship of the variables. To evaluate the fit of the proposed model, the chi-square test, degrees of freedom, goodness of fit index, Tucker-Lewis index, comparative fit index, and root mean square error of approximation were calculated. Bootstrap test was used to investigate the role of self-efficacy in the middle of social support and resilience and to assess the direct effects of variables.

Results: The results showed that 201 women (91.4%) and 19 men (8.6%), with a mean age of 36±8.43 years, participated in this study. Moreover, 25.5% and 74.5% of participants worked in COVID-19 or non-COVID-19 wards, respectively. Data analysis using the Bootstrap test showed that self-efficacy mediated between social support and resilience (P=0.001). Also, the study findings have shown that the direct effects of social support on resilience are significant, with a path coefficient of 0.203 (P=0.004), so when social support increases, resilience increases, too. Also, in this research, the direct path of self-efficacy on resilience was significant with a path coefficient of 0.595 (P=0.001), so when self-efficacy increases, resilience increases, too.

Conclusions: Findings of this study have shown that nurses' self-efficacy serves as a mediator in the relationship between social support and productivity. Empirical evidence suggests that individuals who receive greater social support exhibit heightened levels of self-efficacy.

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Highlights

• Self-efficacy plays a mediating role between social support and productivity: Individuals with greater social support demonstrate higher levels of self-efficacy.

• The provision of social support by colleagues has been observed as a significant factor in improving nurses' self-efficacy and reducing stress.

• Individuals with a heightened level of self-efficacy are likely to exhibit greater perseverance and effort following instances of failure.

• This heightened resilience stems from increased self-efficacy, reinforcing their confidence and optimism in overcoming difficult situations.

Plain Language Summary

With the increasing prevalence of COVID-19, the rate of fatalities of this disease worldwide increases, and healthcare providers, including nurses, would have been impacted by psychological consequences like stress and anxiety. Due to the constant exposure of nurses to unfavorable work environments, the requirement of social support to increase the ability to face stressor conditions is high. Moreover, people's belief in their capacity to execute activities that lead to success would help nurses to be flexible in dangerous situations. Therefore, this study determined the relationship between perceived social support and self-efficacy in predicting nurses' psychological resilience during COVID-19. Our study has shown that social support directly affects the level of self-efficacy and, with the mediating role of self-efficacy, affects the individual's resilience to cope with unsuitable situations.

Introduction

COVID-19 was first identified in China in December 2019 and spread to numerous countries worldwide [1, 2]. The disease has increased the workload and the hazard of infection for all health caregivers, including nurses [3]. It created a significant rise in nurses' anxiety and stress levels [4], led to intense workload [5], anxiety man-agement, patient fear, and a stressful work environment [6]. These conditions threaten the nurses' health, well-being, and quality of services [7, 8].

Psychological resilience is a dynamic process [9] that is dominant in increasing personal strength in stressful conditions, developing productive coping strategies, and accommodating changing circumstances [10]. In this regard, a study conducted in the first weeks after the diagnosis of the epidemic in China showed that nurses had encountered various psychological problems such as anxiety, stress, and major depression [11]. Due to the con-stant exposure of nurses to human suffering and unfavorable work environments, resilience is essential for nurses to maintain mental health [12, 13], perceive denotation in their incidents, and lessen their responses to stressors in the workplace [14]. In this regard, some researchers have shown that nurses with a higher level of resilience, as a vital element in a changing healthcare system [15], can respond better to stressful situations. Resilience is essential as an effective coping mechanism [16], which is affected by several personal, managerial, and social components [17].

Psychological, caring, and supportive resources are provided as social support by social networks, including significant others, family, and friends. They are influential in increasing nurses' resilience [18-20]. The foremost task of social support is to act as a moderator by decreasing or balancing the psychological damage brought by life-menacing occasions and the ongoing challenges of life [21]. In addition, it is important to meet people's basic social needs, have equal love, compassion, and group belonging, and find financial, psychological, and emotional peace in stressful circumstances [22]. Social support can play an influential role in self-efficacy [23]. Self-efficacy is considered an essential characteristic of a successful professional nurse [24, 25] and helps be flex-ible in high-risk situations and have a stable mental state [26]. Self-efficacy can improve people's resilience, rely more on their knowledge and expertise, and increase their desire to work and willingness to care for patients with infectious diseases [27-29].

During the COVID-19 pandemic, nurses were at the front line of the fight and were under much pressure [30]. As a result, nurses must be armed with the required physical and psychological arsenal to main-tain continuity of care [11]. Paying attention to these issues can pave the way for effective interven-tions and improve the psychological status of nurses during and after the epidemic. Although many studies have been conducted on the medical aspects of COVID-19, only a handful have focused on nurses' social support and self-efficacy during the epidemic and its psychological outcomes. Conse-quently, the present research was conducted to determine the relationship between perceived social support and self-efficacy in predicting nurses' psychological resilience during COVID-19.

Materials and Methods

This cross-sectional study was conducted on nurses in educational and medical centers of Rasht City, Iran, dur-ing October and November 2021. To determine the sample size, we considered the type I error of 0.05 and the study power of 0.8. According to a pilot implementation of the Connor-Davidson resilience scale in 30 nurses and the researcher's expectation, the effect size was considered 0.04 (less than the mean score), and the number of independent and mediator variables was 4. So, a sample size of 210 was determined. Accounting for a 10% drop, 231 nurses were entered into the study. They were selected by simple random sampling based on the list of nurses at the main hospitalization centers for patients with COVID-19. Informed consent to participate in the study, work experience of at least one year, and receiving the COVID-19 vaccine were the inclusion criteria. However, failure to complete at least 10% of the questions in each questionnaire was considered the exclusion criterion.

The multidimensional scale of perceived social support was used to measure the perceived social support. Zimet et al. designed this 12-item scale to measure perceived social support. This scale has three subscales of support for the family, friends, and significant others. It evaluates the level of perceived social support on the 7-point Likert scale from strongly disagree (point 1) to strongly agree (point 7). The minimum and maximum scores are 12 and 84 [31]. The Persian version of this tool was used in this study [32].

The general self-efficacy scale (GSE) was used to measure the self-efficacy. This scale has 10 questions scored on a 4-point scale from strongly disagreeing with (point 1) to strongly agreeing with (point 4). The minimum score of the subject in this test is 10, and the maximum is 40, and the higher the score of the person, the higher the level of perceived self-efficacy beliefs in the person [33]. The Persian version of the GSE was used in this study [34].

The Connor-Davidson resilience scale (CD-RISC) was used to measure resilience. Connor and Davidson developed this scale, which applies to people 15 years and older. It has 25 items scored from 0 (completely incorrect) to 4 (always correct). The minimum and maximum scores of the subject on this scale are 0 and 100, respectively [35] and The Persian version of the CD-RISC was used in this study [36].

Demographic and occupational data were collected with a researcher-made questionnaire of age, sex, working unit, marital status, employment history, work experience, career position, and education level.

Moreover, owing to the COVID-19 pandemic, sampling was done using an online survey form. The research tools were uploaded to the Porsline system, and the link was provided to the nurses through the hospital supervisor. IBM SPSS software, version 24, and Amos software, version 24 were used for data analysis. Also, the mean and standard deviation were calcu-lated for quantitative variables. Qualitative variables were reported based on frequency and percentage. Skew-ness and kurtosis were calculated to assess the normal distribution of the main variables (social support, self-efficacy, and resilience). The Pearson correlation coefficient test was used to investigate the linear relationship between the study variables. To evaluate the fit of the proposed model, the chi-square test (X^2), degrees of freedom (df), goodness of fit index (GFI), Tucker-Lewis Index (TLI), comparative fit index (CFI), and root mean square error of approximation (RMSEA) were reported. Bootstrap test was used to investigate the role of self-efficacy in the middle of social support and resilience and to assess the direct effects of variables. The findings were reported following the STROBE (strengthening the reporting of observational studies in epidemiology) guidelines [37].

Results

A total of 220 nurses answered the questionnaires completely (participation rate: 95.23%). Their demographic and occupational information is presented in Table 1. The results showed that resilience, social support, and self-efficacy are in the normal distribution. Moreover, the mean values of resilience, social support, and self-efficacy were 75.74±15.94, 47.33±7.05, and 33.11±5.07, respectively.

Table 1. Demographic and occupational information of the participants (n=220)

Variables		Mean±SD/No. (%)
Age (y)		36.10±8.43
Work experience (y)		11.34±9.15
Gender	Male	19(8.6)
	Female	201(91.4)
Marital status	Married	131(59.5)
	Single	89(40.5)
Employment type	Permanent	99(45.0)
	Contract and temporary	121(55.0)
Working ward	COVID-19	56(25.5)
	COVID-19 and non-COVID-19	164(74.5)
Career position	Nurses	198(90.0)
	Head nurses	22(10.0)
Education level	Bachelor	207(94.1)
	Master	13(5.9)
Working hours in 24 hours	≤8	106(48.2)
	>8	114(51.8)

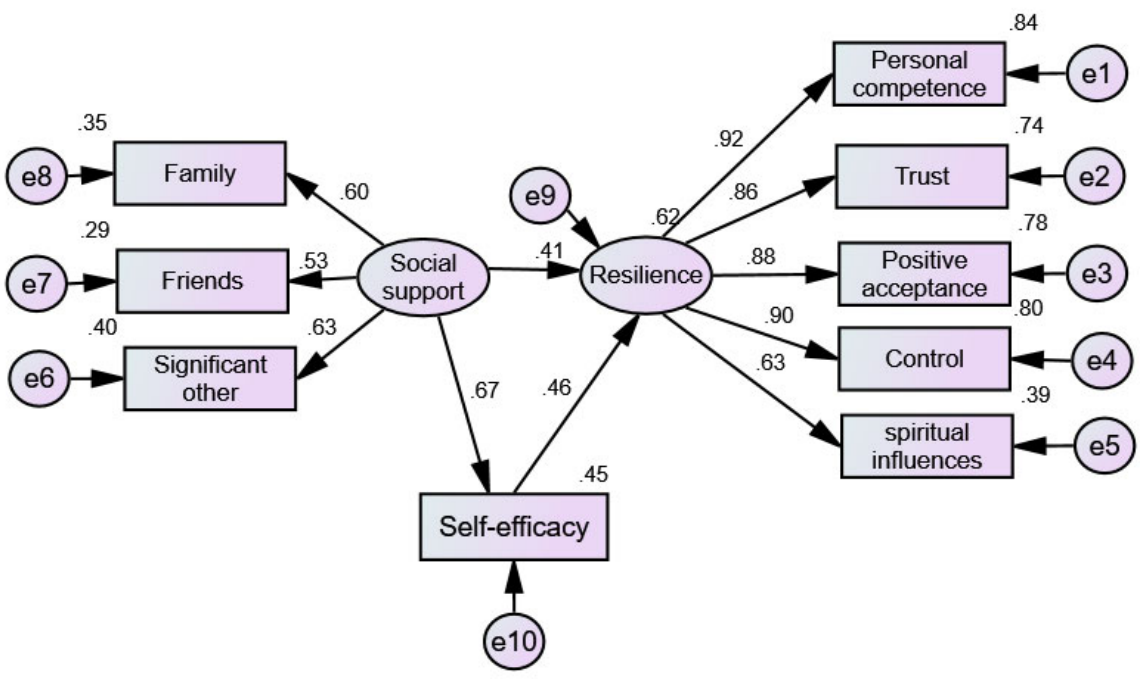

Figure 1. Structural equation model of the effect of social support on self-efficacy mediated by resilience

Table 2. Descriptive statistics and correlation between study variables (n=220)

Variables	Mean±SD	Skewness	Kurtosis	1	2	3
Resilience	75.74±15.94	-0.51	-0.44	-		
Social support	47.73±7.05	-0.45	0.40	r=0.51 P=0.01*	-	
Self-efficacy	33.11±5.07	-0.33	-0.38	r=0.70 P=0.01*	0.52*	-

*The Pearson correlation test.

Table 3. Fit indicators of the proposed model

Model	χ^2	df	P	χ^2/df	CFI	GFI	TLI	RMSEA
Proposed	40.21	25	0.02	1.60	0.98	0.96	0.98	0.05
Level fitting	-	-	-	1-5	>0.90	>0.90	>0.90	<0.08

Abbreviations: df: Degrees of freedom; CFI: Comparative fit index; GFI: Goodness of fit index; TLI: Tucker-Lewis index; RMSEA: Root mean square error of approximation; χ^2: Chi-square test.

Table 4. Bootstrapping standard direct and indirect effects

Variables	β	Standard Error	95% CI		Critical Ratio	P
			Lower	Upper		
Social support, resilience	0.41	0.12	0.17	0.65	3.54	0.001
Social support, self-efficacy	0.67	0.05	0.57	0.70	5.12	0.001
Self-efficacy, resilience	0.46	0.10	0.19	0.62	6.39	0.001
Social support, self-efficacy, resilience	0.31	0.07	0.17	0.44	-	0.002

The Pearson correlation coefficient test results showed that social support (r=0.51, P=0.01) and self-efficacy (r=0.70, P=0.01) were positively and significantly related to resilience. A positive and significant relationship existed between self-efficacy and social support (r=0.52, P=0.05).

Table 2 presents that the variance inflation factor (VIF) for the social support and self-efficacy variables was 1.386, and the tolerance was 0.721, so there is no multiple collinearity relationship between the variables. Durbin–Watson statistic was also calculated to be 1.98, which is between 1.50 and 2.50, indicating a lack of autocorrelations. Figure 1 shows the structural equation model of the effect of social support on self-efficacy by mediated resilience and reveals the social support effect on nurses' resilience both directly and through the mediation of self-efficacy and predicts a total of 62% of the variance of resilience.

The results show that the fit indices consisted of χ^2/df=1.60, CFI=0.98, GFI=0.96; TLI=0.98; RMSEA=0.05 showing their good condition, and the proposed model fits (Table 3).

Bootstrap test was used to investigate the direct and indirect effects of variables in the proposed model (Table 4). Bootstrap results showed that the direct impact of social support (β=0.41, P=0.001) and self-efficacy (β=0.46, P=0.001) on resilience was significant. The direct effect of social support on self-efficacy (β=0.67, P=0.001) was also significant. The results also showed that the accompanying consequence of social support on resilience with the conciliating role of self-efficacy was significant (β=0.31, P=0.001). It should be noted that no adjustment has been made through modification indexes. With the total effect size (β=0.72, P=0.001), the variance accounted for (VAF) was calculated as 43%, indicating the partial mediating role of self-efficacy in the relationship between perceived social support and resilience in nurses (Table 4).

Discussion

The results showed that self-efficacy significantly mediates the relationship between social support and productivity. These results are compatible with previous studies showing that high social support is related to higher levels of self-efficacy [23]. Another study showed that the negative effect of perceived stress on the quality of life can be mediated by social support and self-efficacy variables [38]. Although our findings are compatible with previous studies, this study further confirms the relative mediating effects of self-efficacy in the association between resilience and social support in Iranian nurses during the COVID-19 epidemic.

Research evidence shows that support in the workplace can empower personnel, increase self-efficacy, and develop professional performance [18, 39, 40]. It leads to greater apprehension, encouragement, courageousness, respect, and a sense of professional success [41], increased motivation, improved performance, and work attitude [42-44]. Social support from colleagues can inhibit stress and reduce psychological problems. Therefore, executing strategies that assist social support can notably enhance nurses' self-efficacy [45]. In this study, it was shown that self-efficacy mediates the relationship between resilience and social support. Particularly, social support directly or through the mediating effects of self-efficacy affects resilience. The finding showed why self-efficacy is a connection between social support and resilience. Understanding high social support may expand self-efficacy and boost resilience. Bandura reported that support relationships improved individual self-efficacy [24]. Research has shown that support programs for nurses can play a crucial role in their self-efficacy [46] and enhance the quality of nursing care [47]. Therefore, social support is vital to boost the resilience of nurses, protect them, and promote behaviors that improve stress regulation [48].

In the explanation, it can be argued that people who receive greater social support benefit more from the verbal encouragement of those around them. They experience more efficiency in life crises and overcome problems because, in Bandura's interpretation, one of the most effective ways to grow self-efficacy is to receive verbal encouragement from those around them [24]. In contrast, self-efficacy is essential in resilience [18, 49, 50] and human endeavors. In other words, highly self-efficient nurses will be more likely to survive after exposure to failure. When a low self-efficacy nurse experiences problems, it will experience stress and anxiety that can interfere with other functions and even reduce self-efficacy. However, individuals with high self-efficacy are assured of their capacity to overcome difficult situations [51]. They are optimistic about the future, and this positive expectation of their future will help them against obstacles. Most people committed to achieving goals are better at dealing with problems, and instead of magnifying them, they make them natural and sometimes even think of problems as challenge that can make them stronger [50].

Although our results have provided evidence of the mediation of self-efficacy in the relation between resilience and social support of Iranian nurses during the COVID-19 pandemic, this research is accompanied by limitations.

First, this study was done in two hospitals, and future research could use wider sampling at the national level to increase the generalization of the results. This study was carried out within the framework of a correlational project, so our suggestion to future researchers is to conduct experimental and longitudinal research to achieve causality. In this study, we used self-report questionnaires that can be answered with social bias and lack actual answers. It is also recommended that exploration interviews be used to understand better the variables of self-efficacy and social support, which requires qualitative and even hybrid research design. Due to the COVID-19 epidemic and observing social distance, we collected the desired data online. Our suggestion is to collect data face-to-face.

This study gave a detailed understanding of how self-efficacy and social support improve nurses' resilience. This paper has identified paths to improve the resilience of nurses through social support and self-efficacy. Accordingly, it would be suggested that medical education managers and planners provide the necessary training and therapeutic programs for nurses' psychological empowerment during COVID-19 and afterward.

Ethical Considerations

Compliance with ethical guidelines

The present study was approved by the Ethics Committee of Guilan University of Medical Sciences (Code: IR.GUMS.REC.1400.363). All participants signed the informed consent form.

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Authors' contributions

Conceptualization, study design, data analysis, interpretation, review, editing and final approval: All authors. Sampling and writing the initial draft: Sajjad Saadat and Maryam Jafroudi; Recruiting the participants: Sajjad Saadat and Maryam Zhaleparvar.

Conflict of interest

The authors declared no conflict of interest.

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