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Relationship between Resiliency and Clinical Symptoms of Nurses in the Covid-19 Pandemic

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Background: Nursing is a highly stressful job with employees often facing elevated levels of physical and mental workload. The Covid-19 pandemic has further exacerbated the workload of nurses, causing various effects on their physical and mental health. The aim of this study was to examine the relationship between clinical symptoms and nurses' resilience during the Covid-19 pandemic, especially focusing on nurses affiliated with Neyshabur University of Medical Sciences.

Materials and Methods: In this descriptive cross-sectional study, 169 nurses working in Neyshabur University of Medical Sciences were randomly selected to examine their resiliency and clinical symptoms. Standard questionnaires were used to collect data and descriptive and analytical statistics were performed using Spss V21at a significant level of 0.05.

Results: The results revealed that among the participants, 14.78% were stressed, 21.29% experienced anxiety and 17.15% showed some degree of depression. The resilience score was determined as 58.13±14.82. A significant negative correlation was observed between resilience and clinical symptoms (stress, anxiety and depression). There was a significant positive correlation between years of service and nurses’ resilience. Stress exhibited a significant correlation with anxiety and depression.

Conclusions: If stress, anxiety and depression in nurses are not effectively managed, it can lead to job burnout. In order to prevent such situations, nursing managers and planners should try to increase nurses' resilience by providing necessary training and psychological support.

Introduction

The emergence of the acute respiratory syndrome caused by SARS-CoV-2 in China’s Wuhan province in December 2019 became a rapidly spreading global epidemic, exerting profound effects on healthcare system. The global number of confirmed cases surpassed 770 million, with an alarming death over five million, until 13 September 2023. Iran has also has been severely impacted by this disease, with confirmed cases over 7 million and death count passed 146,000 [1].

Healthcare workers (HCWs) are among the most vulnerable groups to contagious diseases indifferent countries [2]. However, the lack of recorded data has limited the availability of accurate statistics on the number of infected and deceased HCWs specially as a result of Covid-19 [3], World Health Organization (WHO) reported that around 14% of infected cases were among HCWs, with

percentage reaching even higher, up to 35%, in some developing countries [4]. According to WHO's, at least 115,000 HCWs worldwide are estimated to have died due to Covid-19 by May 2021 [5]. Although the official statistics may not be readily available concerning, the data obtained from the medical system of the Islamic Republic of Iran indicated that 138 HCWs have lost their lives to this pandemic by July 23, 2020 [6]. Undoubtedly, working in nursing has been recognized as one of the most stressful professions since it's associated with excessive physical and mental workload, high responsibilities and expectations that Covid-19 pandemic has worsened these challenges and intensified the working environment for HCWs, especially nurses [7]. These unpresented situations have forced them to work more than before, causing fatigue, disordered sleep patterns, limited time with family, and, in some cases even separation from their families [8]. In the conditions of the epidemic of Covid-19, HCWs are obligated to wear a range of personal protective equipment (PEE) where 6 or 8-hour shifts they worked. In certain cases, they may also be required to undergo quarantine within the hospital for extended periods of several weeks [9]. The factors such as lack of manpower, lack of PPE, frequent deaths of patients, violence in the workplace, unknown nature of the disease and the existence of some ambiguities around this emerging virus

[10] contributed to put them at risk of experiencing various physical and mental problems and clinical symptoms [11]. The clinical symptoms such as depression, anxiety and stress may be seen as an unsuccessful response to life's challenges and stressors and cause harm to the individual [12]. These are commonly observed in people engaged in hard and stressful occupations such as nursing [11, 13]. A study conducted in India during the Covid-19 pandemic showed that nurses experience a high level of boredom and anxiety [14]. To address these challenges, resilience which involves resisting negative changes and fostering a positive capacity for adaptation can alleviate the various psychological, emotional, emotional and social damages [15, 16]. In fact, resilience is a fundamental aspect of one's personality which encompasses the person's abilities to confront, retreat and deals with the challenges [17]. Resilient people are normally able to think creatively and adoptedly when faced with the challenges [18]. Recent literature on the importance of resilience suggested that its key components including self-confidence, personal competence, trust in instincts, positive acceptance of change, control and spiritual influences can function as buffers through preventing individuals from experiencing stressful situations, and minimizing the occurrence of disorders and clinical symptoms in different occupations particularly industry [18-20].

The present study aims to investigate the role of resilience in the preventing clinical symptoms in nurses at Neyshabur University of Medical Sciences.

Materials and Methods

This cross-sectional descriptive study was conducted among nurses working in teaching hospitals affiliated with Neyshabur University of Medical Sciences between Aprils to September 2022. A total of 250 nurses were working at the hospitals during the study period from which 169 nurses were selected to participate using Yamane formula: n=N/1+N (e); where n represents the number of samples, N signifies the total population (N=250), e represents the error tolerance set at 0.05, and 10% attrition rate was taken into account to determine a representative sample size. In order to gather the data, the questionnaires were administered to the nurses using a convenient sampling method throughout various work shifts.

The participants were asked to complete both questionnaires of Depression, Anxiety and Stress (DASS-21) [21] and Connor-Davidson resilience Scale (CD-RISC) [22]. The Connor- Davidson resilience Scale, created by Conner and Davidson, consists of 25 items that are ranked on a Likert scale ranging from one (not true at all) and five (true nearly all the time). The total score ranges from 25 to 125, with a higher score indicating greater. DASS-21 enjoys a high level of reliability (i.e. 0.73) and in terms of validity, this scale has been confirmed in Iranian society with the help of factor analysis method of 0.79 (6). DASS consisting of 3 subscales with 7 items each rated on

4-point Likert scale and the total score range from 0 - 42. Depression score was classified as normal (0-9), mild (10-13), moderate (14-20), severe (21-27) and extremely severe (28 and above). Anxiety score was classified as normal (0-7), mild (8-9), moderate (10-14), severe (15-19) and extremely severe (20 and above). Stress score was classified as normal (0-14), mild (15-18), moderate (19-25), severe (26-33) and extremely severe (34 and above). The reliability of the scale was obtained with Cronbach's alpha coefficient for depression, anxiety and stress in Iranian society equal to 0.73, 0.77 and 0.76 respectively and for the whole test was 0.7 [23]. Also, the validity of the scales was obtained with confirmatory factor analysis method for depression, anxiety and stress equal to 0.80, 0.76 and 0.77 respectively [24].

The Statistical Package for the Social Sciences (SPSS 21.0 for Windows) were applied to analyze the data. Further, to describe the respondents' socio-demographic characteristics, as well as to assess their resilience and depression, anxiety and stress, the descriptive analyses were employed. To examine the relationship between depression, anxiety, stress, age, years of experience and resilience, Pearson correlation was used ($P<0.05$).

Ethical considerations

The ethics committee of the Islamic Azad University Neyshabur Branch approved the study protocol. Oral consent was obtained from participants before collecting data in accordance with the principle of the Declaration of Helsinki [25].

Results

Table 1 shows the participants' demographic characteristics. The majority 110 (60%) of the respondents were males and 85.2 % of them were married. More than three quarters of them 137 (81%) held a Bachelor's degree in nursing science, while a smaller percentage 19% (32 participants) possessed masters and PhD certificate. Over half of the respondents (54.4%) reported having less than 10 years of professional experiences.

Variable	Characteristics	Frequency	Percentage
Sex	Male	110	65.1
	Female	59	34.9
Marital Status	Single	25	14.8
	Married	144	85.2
Education	Bachelor's degree	137	81
	Master's degree	28	16.6
	PhD	4	2.4
Age		Mean = 34.25; SD = 7.85; Max = 52	
Years of experiences		Mean = 10.14; SD = 7.63; Min = 1; Max = 32	

Table 1. Sociodemographic Characteristics.

Based on the data presented in Table 2, the findings indicate that the prevalence of stress, anxiety, and depression among the participants as follows, respectively: 14.78 % (moderate = 8.87, severe = 4.73 and extremely severe = 1.18), 21.29% (moderate = 12.42, severe = 7.10 and extremely severe = 1.77) and 17.15 % (moderate = 14.79, severe = 2.36). The participants' resilience level was high (Mean =58.13, Standard deviation = 14.82).

Level	Stress		Anxiety		Depression	
	F	%	F	%	F	%

Normal	114	67.45	91	53.84	103	60.94
Mild	30	17.75	42	24.85	37	21.98
Moderate	15	8.87	21	12.42	25	14.79
Severe	8	4.73	12	7.1	4	2.36
Extremely Severe	2	1.18	3	1.77	0	0
Resilience			Mean = 58.13; SD = 14.82; Min = 27; Max = 101			

Table 2. Level of Stress, Anxiety, Depression and Resilience.

Resilience demonstrates a statistically significant positive correlation with years of experience (r= 0.145, p<0.05). In other words, with the increase of years of experience, the participant's resilience score increased. Also, resilience shows a statistically significant negatively correlation with anxious (r = -0.346, p< 0.01), negatively correlated with stressed (r = -0.397, p <0.01) and negatively correlated with depression (r = -0.633, p <0.01). Moreover, the results show that there is a statistically significant positive correlation between stress and depression (r = 0.640, p< 0.01) (Table 3).

	Years of experience	Stress	Anxiety	Depression	Resilience
Years of experience	1				
Stress		1			
Anxiety		0.662**	1		
Depression		0.640**	0.618**	1	
Resilience	0.145*	-0.397*	-0.346**	- 0.633**	1

Table 3. Correlation among Resilience, Depression, Anxiety, Stress, Age and Years of Experience among the Respondents.

** Correlation is significant at the 0.01 level (2- tailed); * Correlation is significant at the 0.05 level (2- tailed)

Discussion

The present study aimed at investigating the association between resilience and clinical symptoms (depression, anxious and stress) among nurses during the Covid-19 pandemic. Our results showed a significant positive correlation between resilience and years of experiences in nurses. In simpler terms, as the years of experience increased years of, so did the resilience score. This finding is consistent with previous studies examining the relationship between resilience and clinical symptoms among nurses [10, 26] as well as faculty members in medical schools [18]. Younger nurses, with less experience in facing with challenging situations, may experience additional stress with less resilience due to their limited proficiency in using adaptive mechanisms [27]. However, as they get experienced through acquiring different nursing techniques and communication skills, their resilience is more likely to improve [10, 14, 28]. Age plays an important role in resilience, as people tend to enhance their resilience over time through the accumulation of experience, participating in training courses and acquiring new skills [29]. Therefore, it is important to manage mental symptoms among younger nurses, who are considered a high-risk group it comes to develop clinical symptoms. The results of this study showed that there is a statistically significant positive correlation between stress, anxiety and depression. Simply put, increasing the level of nurses' stress may results in increased level of depression and anxiety among them, which is in line with the findings of other study [10]. Numerous factors, such as staffing shortage, inadequate equipment, potential violence from both patients and colleagues, and prolonged work shifts have emerged as significant sources of stress and work pressure for nurses in previous studies [26, 30]. Although during Covid-19 pandemic, in addition to the previous factors, the other factors including

unknown nature of the disease, high mortality rates, prolonged period of quarantine, and initial vaccine unavailability exacerbated nurses' stress levels at work [7, 8, 28].

Our findings revealed that a significant negative correlation was found between resilience and stress, meaning that higher nurses' resilience score corresponded to lower stress levels. Resilience can be described as the ability and strength to bounce back in difficult situations. It serves as a mediating factor that can greatly alleviate stress, especially in demanding professions such as nursing. The Covid-19 pandemic has caused a difficult and exhausting situation, wherein people with more resilience are more successful. The results of our study are in line with the research investigating the relationship between resilience and occupational stress in nurses [26]. People's resilience on various factors including support from family and colleagues, communication skills, as well as some individual's characteristics such as hope, self-belief and maintaining balance in daily activities [31]. Despite the relatively high mean resilience score, supportive measures are needed to reinforce it. Without enough support for nurses, their resilience may decrease over time due to work difficulties and leading to increased clinical symptoms such as anxiety, depression and stress will increase, that in turn, it may contribute to job burnout [32].

In conclusion, our results showed that nurses caring for Covid-19 patients experienced elevated levels of stress, depression and anxiety. However, high levels of resilience have potential to alleviate these negative feelings. An important issue for nursing managers to prioritize supporting nurses using different methods to help them maintain and strengthen their resilience during epidemics. Psychological support should be available to nurses through face-to-face, telephone or internet counseling. Furthermore, providing the essential training to enhance the resilience of nurses and other healthcare workers should be considered. Additionally, nurse supervisors should carefully plan shift arrangement to promote the pairing of less experienced staff. This way, over time, the resilience of less experienced staff can be strengthened as they learn from their more experienced colleagues.

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Conflict of interest

The authors state that they have no Conflict of Interest (COI).

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