Original Article

The impact of organizational education on nurses' career resilience during the COVID-19 pandemic

Mohammad Abbaszadeh[1] [ID], Tavakkol Aghayari Hir[1], Mahnaz Jabraeili[2], Ebrahim Mohammadpour[1]* [ID]

[1]Department of Social Sciences, Faculty of Law and Social Sciences, Tabriz University, Tabriz, Iran
[2]Department of Pediatrics, Faculty of Nursing and Midwifery, Tabriz University of Medical Sciences, Tabriz, Iran

Abstract

Background: The current study was conducted to explore the level of career resilience among nurses working in medical centers affiliated with the Tabriz University of Medical Sciences, and examine whether organizational education and other characteristics, such as background variables, have any effect on that resilience. This is of particular importance in light of the COVID-19 pandemic, which resulted in nurses playing a more prominent role than other medical staff when dealing with infected patients and consequentially experiencing a greater impact on their career resilience.

Methods: This research study was a descriptive correlational design using a stratified sampling technique. A total of 351 participants, all nurses from medical education centers affiliated with the Tabriz University of Medical Sciences, were selected. Questionnaires covering career resilience, organizational education, and demographic items were used to collect the data. SPSS 22 was used to carry out the analyses, including t-tests, Pearson correlations, and linear regression tests.

Results: The results showed that nurses had an average career resilience score of 56.4 out of a possible 100 with an average organizational education score of 48.6. Bivariate relationships revealed statistically significant associations between career resilience and organizational education ($P<0.001$), years of employment ($P<0.001$), and education level ($P<0.05$). Although there was no statistically significant relationship between career resilience and sex in the bivariate analysis, sex was found to be significant in the multivariable analysis ($P<0.05$).

Conclusion: Organizational education is essential for nurses to maintain career resilience. To that end, hospitals and medical education centers should offer regular programs centered on enhancing career resilience and helping nurses manage job-related stress.

Introduction

Humans have long been familiar with epidemics in the course of history, and now we are collectively confronting COVID-19.[1] The disease began at the end of 2019 before spreading rapidly across the globe within just a few months,[2-4] making it one of the most serious global health crises to date.[5,6] This posed an immense challenge to facilities such as hospitals that require significant use of human resources.[7]

The COVID-19 pandemic created immense pressure and challenges for medical staff, particularly nurses, who are key providers of healthcare. Unlike many other professions that had the option to work remotely or on a part-time basis during the crisis, nurses had to intensify their work hours exponentially to care for COVID-19 patients in an ever-increasing number of cases. These nurses confronted daunting conditions such as inadequate access to personal protective equipment, dwindling supplies of medications, fear of infecting their family members with the virus, and physical and mental fatigue from working long shifts and making difficult decisions regarding lifesaving resources such as respirators. As a result, many nurses experienced significant levels of stress which negatively impacted their overall performance and quality of care. These stresses also led some nurses to leave the hospital environment altogether.[8,9]

These conditions have thus had a dire impact on the performance of nurses, resulting in decreased resilience in their job field.[10,11] Khanmohammadi et al found that nurses in the coronavirus wards of Khatam-ul-Anbia hospital in Gonbadkavus had an average resilience that was lower than normal.[12] Moreover, special departments at the Tabriz University of Medical Sciences tended to see more nurses leave the profession.[13]

Corresponding author: Ebrahim Mohammadpour, Email: e.mohammadpour70@gmail.com

As the COVID-19 pandemic continues to take its toll, nurses have been particularly impacted in terms of career resilience. Career resilience, defined as the capacity to cope with destructive and unpromising changes in the workplace, gives a person the strength to encounter job-related tensions such as stress, displacement, and job pressure.[14] Decreased career resilience can lead to reduced service quality and efficiency, decreased motivation, increased absenteeism, and changing work patterns. Despite the challenges posed by this new environment, nurses equipped with high levels of career resilience can approach stressful situations with flexibility and maintain morale during life-threatening pressures.

Based on this, it is known that educational programs can help enhance the resilience of nurses in high-risk organizations, and should thus be of utmost importance. Various types of research have shown that education provided by organizations plays a significant role in increasing resilience. For instance, Flandin et al found that providing education in high-risk organizations may lead to an increase in safety for employees.[15] Similarly, Madrigano et al argued that organizational programs can help develop a resilient workforce, particularly between medical staff and nurses.[16] McAllister and McKinnon also agreed that educational content can improve nurses' resilience.[17] Additionally, Walsh et al concluded that educational programs are effective in promoting resiliency among nursing students.[18] Further attention should thereby be given to factors that can decrease stress, pressure, and other related negative experiences of nurses and increase resilient behaviors.

Taking into account the high rate of infection and death caused by the COVID-19 pandemic during its peak in Tabriz (northwest Iran), as well as the indication from the report of the Director of Nursing at the Tabriz University of Medical Sciences that more than 60% of nurses in the province of East Azerbaijan had contracted this virus over the past two years, more so than any other medical staff, identifying factors affecting career resilience among nurses becomes a vital issue. Additionally, studies conducted abroad revealed a positive relationship between organizational education and career resilience. Despite an abundance of investigations into the topic of career resilience among nurses domestically, there has yet to be any research conducted on a national or provincial level that examines how organizational education impacts career resilience among nurses. The results of this research can help fill the knowledge gap about the role of organizational education in increasing the knowledge of medical staff, especially nurses, and helping them in major health crises such as the COVID-19 pandemic. For this reason, this research was conducted to "study the effect of organizational education on the career resilience of nurses during the COVID-19 pandemic".

Materials and Methods

The current descriptive correlational study employed a stratified random sampling method to select 351 nurses affiliated with the Tabriz University of Medical Sciences. This population of 3025 nurses was comprised of 574 men and 2451 women. Using Cochran's formula, 65 male and 286 female nurses were selected from 11 centers based on the relative share of nurses of each hospital; 95 nurses from Imam Reza hospital (AS), 47 nurses from Shahid Madani hospital, 33 nurses from Shahada hospital, 47 nurses from Sina hospital, 31 nurses from Razi hospital, 49 nurses from Mardani Azar children's hospital, 25 nurses from Al-Zahra hospital, 11 nurses from Taleghani hospital, 6 nurses from Nikukari hospital, 5 nurses from Alavi hospital and 2 nurses from Asadabadi hospital. It took three months to collect data in the summer of 2022.

The research process was initiated by obtaining the necessary permissions from the Tabriz University of Medical Sciences and selected hospitals to distribute the questionnaires. Following, those in charge of each department were informed of the research objectives and assured that the questionnaires contained no identifiable information and all data would be treated with confidentiality. Once informed consent was obtained, a link to an online questionnaire created via Porsline was sent to all willing nurses via SMS or virtual network with a deadline of 15 days. The drop rate of the samples was considered to be 20% and information was collected from 420 nurses. Incomplete questionnaires (N = 70) were excluded from the analysis process and only those completed in full were considered for analysis.

Inclusion criteria included having at least six months of employment and willingness to participate in the study, while exclusion criteria were incompleteness of the questionnaire and unwillingness to continue completing it. Descriptive and inferential statistics were used to analyze data using SPSS 22. Frequency tables (percentage), mean, standard deviation, standard error, skewness, and kurtosis statistics were utilized to describe nominal and interval variables. Bivariate analysis was performed taking into account measurement levels of independent and dependent variables for t-tests for sex and education, Pearson's correlation test for interval variables (organizational skills and number of years of employment), and linear regression for multivariate analysis. This process was carried out step by step. Results were considered significant at $P < 0.05$.

Liu's[19] questionnaire was used to measure career resilience by assessing four components and asking nineteen questions on a 6-point Likert scale (with values ranging from 1 = totally disagree to 6 = totally agree). All responses are averaged to generate a score out of 6, with higher scores indicating higher levels of career resilience. This questionnaire covers a range of items such as willingness to change, risk-taking, success, self-awareness, active learning, and independence.

The Taormina questionnaire (1997) was used to measure

nurses' organizational education, which is one dimension of the Organizational Socialization Questionnaire.[20] This subscale consists of 5 questions rated on a 6-point Likert scale ranging from 1 ("totally disagree") to 6 ("totally agree"). Scores closer to 6 indicate higher levels of received organizational education, while scores closer to 1 signify lower levels. Additionally, a demographic questionnaire was administered to collect data related to sex, years of employment, and education.

Occupational resilience and organizational education questionnaires were previously validated in research conducted in Iran, with demonstrated validity and reliability.[21,22] To evaluate the content validity (form type) of the measurement tool, the questionnaires were given to supervisors and advisors for their confirmation that the content of the questionnaires appropriately reflected their respective subject areas. Additionally, Cronbach's alpha was used to measure questionnaire reliability. The nurses' occupational resilience questionnaire had a Cronbach's alpha of 0.853 and the organizational education questionnaire had a value of 0.801; as both values are above 0.7, generally considered acceptable for social sciences research, their reliability is acceptable.

Results

Table 1 shows that of the 351 nurses who participated, 286 (81.5%) were female and the remaining 68 (19.4%) were male. Of these, 290 (82.6%) held a bachelor's degree while 61 (17.4%) had a master's or doctorate degree. Furthermore, their work history ranged between 1 to 29 years with an average of 13.1 years with a standard deviation of 7.42 years.

The organizational education index results ranged from 1 to 6, with an average of 3.43 and a standard deviation of 0.94. On a scale from 0 to 100, this equates to a score of 48.6, indicating that the organizational education received by nurses was average.

According to Table 1, nurses' occupational resilience index ranged from 2.74 to 5.84, with an average of 4.49 on a scale of 1 to 6 (equivalent to 56.4 on a 0-100 scale). This indicates that the nurses' resilience was slightly higher than the midpoint of the spectrum, with a standard deviation of 0.56.

Based on the results of Table 2, the average career resilience of male nurses was 4.56 and that of female nurses was 4.48. When comparing these averages using a t-test, the observed difference between the two groups was not statistically significant. However, nurses who possess master's/doctorate degrees had a higher average career resilience (4.53) than those with bachelor's degrees (4.34). This difference was found to be statistically significant ($P = 0.03$).

The results of Table 2 demonstrate a significant and positive correlation between organizational education and the career resilience index of nurses ($r = 0.42$, $P < 0.001$). Thus, as nurses receive more organizational education,

Table 1. Descriptive statistics of career resilience, organizational training, and demographic variables

		Frequency	Valid Percent
Gender	Male	68	19.4
	Female	286	81.5
	Total	351	100
Education	BA	290	82.6
	MSc or PhD	61	17.4
	Total	351	100

	Minimum	Mean	SE	Maximum	SD	Skewness	Kurtosis
Career resilience	2.74	4.49	0.03	5.84	0.56	-0.34	0.424
Organizational education	1.0	3.43	0.05	6.0	0.94	-0.29	0.136
Years of employment	1.0	13.1	0.39	29	7.42	0.048	-1.03

Table 2. Results of bivariate relationships between Career resilience and organizational training

Career resilience		Frequency	Mean	SD	df	t	P value
Gender	Male	65	4.56	0.52	1.107	349	0.271
	Female	286	4.48	0.57			
Education	BA	290	4.34	0.67	-2/01	349	0.044*
	MSc or PhD	61	4.53	0.76			

Career resilience	Organizational education	Years of employment
Pearson correlation	0.240	0.206
P value	0.000	0.000
N	351	351

*Significant at $P < 0.05$.

their levels of career resilience also increase.

Based on the results of Table 2, there is a significant and positive statistical relationship between years of employment and the occupational resilience index of nurses, evidenced by a correlation coefficient greater than 0.05 ($P < 0.001$). This suggests that as nurses' years of employment increase so does their level of career resilience.

The results of the multiple linear regression test showed that the independent variables explained 11% ($R^2 = 0.11$) of the variance in nurses' career resilience, as indicated by a multiple correlation coefficient of 0.35 and a modified explanatory coefficient of 0.11 (Table 3). Statistic B shows that a 1-unit increase in the score of organizational education increases nurse career resilience by a factor of 0.134, while an increase in the score of years of employment results in a 0.017 increase in career resilience. Moreover, the level of career resilience decreases by -0.154 when moving from male nurses to female nurses, and increases by a factor of 0.151 when comparing nurses with bachelor's degrees to those with master's and doctorate degrees.

Based on the results of Table 3, the organizational education received appears to have had the greatest impact on nurses' career resilience based on its beta statistic coefficient. Ultimately, years of employment, sex, and education variables appear to be the next strongest influences in descending order.

Discussion

The results of the study revealed that the level of career resilience among nurses is relatively low, at approximately 56 on a continuum from 0 to 100. This score is lower than average compared to other nurses, like those at Imam Reza (AS) and Sina hospitals which admit the majority of coronavirus patients, according to Luceño-Moreno et al.[9] Additionally, Khanmohammadi et al[12] indicate that the career resilience of coronary ward nurses is below the overall average for nurses. The nursing profession requires sensitivity and compassion due to its direct involvement with people's health and well-being; therefore, this low score is a cause for concern.

A key objective of this study was to examine the association between organizational education and career resilience. Results revealed a significant positive correlation between these two variables. This finding is supported by Speroni et al, who identified that providing educational resources on Ebola virus transmission and

symptom identification among nurses translated into enhanced safety and more resilient careers. Additionally, responses highlighted topics related to immunity, infection, and disease resistance concerning the current health crisis.[23] Moreover, Rieckert et al concluded that hospitals and medical centers can strengthen the resilience of medical staff by providing necessary education during the COVID-19 pandemic.[24] The findings of Babanataj et al also showed that resilience training boosts nurses' resilience levels in the intensive care unit (ICU).[25] Spiva et al additionally determined that educational interventions improved nurses' resilience levels.[26] It can also be argued that organizational education serves as a low-cost approach to strengthening resilience and enhancing the quality of work life for nurses. The education delivered by hospitals and medical education centers to nurses concerning the COVID-19 virus and resilience skills enhances their competencies, reduces adverse job stress effects, and provides efficient, effective care to patients while adapting to and being resilient within a stressful work environment and critical situations like the COVID-19 pandemic.

Furthermore, the results of this research showed that female nurses exhibited significantly less resilience than male nurses, which was further substantiated by Saeidi et al[27] and Huang et al.[28] Saeidi et al found that among hospital-affiliated nurses at Tabriz University of Medical Sciences, female nurses' burnout rate was much higher than those of male nurses. Similarly, Huang et al[28] reported that during the coronavirus outbreak, women in the radiology field had a significantly decreased level of career resilience when compared to men. To understand this phenomenon further, it is important to consider variables related to biological sex such as role pressure that can influence women's career resilience levels in the workplace; this is due to them having heavier workloads associated with caregiving and adherence to gender roles.

The findings of Huang et al suggest that, during the coronavirus pandemic, the level of career resilience in female radiology medical staff was significantly lower than that of their male colleagues. This verifies the results presented in this research.[28] To understand this relationship, it is necessary to consider how women's social-structural roles, such as caregiving and gender roles, create double burdens and ultimately impede their professional resilience in the workplace.[29]

Research conducted by Manomenidis et al[30] suggested that the higher nurses' level of education, the stronger their resilience to career challenges. These findings echoed

Table 3. Multiple regression model of career resilience of nurses

Independent variables	B	Beta	t	Sig	R	R²	AdR²	F	P value
Organizational education	0.134	0.224	4.4	0.000					
Years of employment	0.017	0.222	4.2	0.000	0.35	0.12	0.11	11.53	0.000
Gender	-0.154	-0.106	-2.1	0.041					
Education	0.151	0/102	2	0.046					

those of this study, confirming that education is indeed an important factor influencing nurses' resilience.

Moreover, based on the findings of the research, it was observed that the nurses' career resilience increased alongside an increase in their years of employment. This finding is consistent with those of Clark et al and Carmassi et al, who concluded that nurses demonstrate improved career resilience with increasing years of employment.[31,32] This can be attributed to a stronger sense of coping capability within long-term nurses due to repeated exposure to challenging working scenarios in comparison with those having fewer years of experience. Such exposure leads to more adaptable and experienced nurses deriving higher levels of resilience at work. However, those having fewer years of employment are less familiar with stressful nursing conditions and are consequently less resilient.

This study has some limitations; first, the current study was conducted among nurses at medical education centers affiliated with the Tabriz University of Medical Sciences, and its results may not apply to nurses from other medical centers. Second, a self-report questionnaire was used in this study, and the possibility that some nurses provided inaccurate information and avoided correct answers to some questions to make their behavior look better is possible, although, in the analysis stage and data analysis, outlier questionnaires were discarded. Based on this, it is suggested to s utilize other measurement tools such as semi-structured and in-depth interviews for future studies. Additionally, this cross-sectional study was conducted at a single time, therefore, it cannot confirm a cause-effect relationship. Based on this, future research would adopt longitudinal or experimental methods to determine causal relationships. Since this study was conducted during the COVID-19 pandemic, it was not possible to go directly to hospitals to collect information in person, therefore, to overcome this limitation, an online questionnaire was designed and implemented.

Conclusion and Suggestions

Based on the results of the study, the career resilience of nurses was slightly higher than average. The grade of organizational education was also evaluated at an average level. Organizational education had a positive effect on nurses' career resilience during the COVID-19 pandemic. As the level of education and the number of years of employment increased, the career resilience of nurses increased. Educational initiatives are key to increasing career resilience among nurses. Policymakers, hospitals, and medical education centers at the Tabriz University of Medical Sciences should consider these findings when developing new programs that focus on career coping and resilience. Additionally, facilities must take special care to ensure nurses receive training in recognizing symptoms, preventing transmission, and using preventive measures related to COVID-19. By providing these educational opportunities, nurses will better be able to cope with job challenges and thus increase their overall resiliency.

Based on the results, female nurses had lower career resilience than male nurses. To address this, hospital officials and medical education centers should reduce the workload of female nurses by alleviating their housework roles such as caring for children by establishing kindergartens. Additionally, subordinate officials ought to reinforce female nurses' resilience with measures such as increasing maternity leave, decreasing shift work hours, and shifting job statuses to part-time or early retirement opportunities.

Authors' Contribution
Conceptualization: Mohammad Abbaszadeh.
Data curation: Ebrahim Mohammadpour.
Investigation: Tavakkol Aghayari Hir.
Methodology: Mahnaz Jabraeili.
Project administration: Mohammad Abbaszadeh.
Resources: Ebrahim Mohammadpour.
Software: Ebrahim Mohammadpour.
Supervision: Tavakkol Aghayari Hir.
Writing–original draft: Ebrahim Mohammadpour, Mahnaz Jabraeili.
Writing–review & editing: Mohammad Abbaszadeh, Tavakkol Aghayari Hir.

Competing Interests
There is no conflict of interest in this research.

Ethical Approval
This study was conducted with the ethics code of IR.TABRIZU. REC.1400.052. The consent of the nurses participating in the study was obtained to complete the questionnaire.

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