Archives of Anesthesiology and Critical Care (In Press); x(x): xx-xx.

Available online at http://aacc.tums.ac.ir

Research Article

Distress Tolerance and Factors Affecting It among Nurses Working in the COVID-19 Intensive Care Unit

Mehdi Dehghani Firoozabadi[1], Sajjad Mirzaee[2], Afzal Shamsi[2]*

[1]Department of Anesthesiology, School of Medicine, Tehran Heart Center, Tehran University of Medical Sciences, Iran.

[2]Department of Anesthesia, School of Allied Medical Sciences, Tehran University of Medical Sciences, Tehran, Iran.

ARTICLE INFO

Article history:
Received 07 February 2025
Revised 30 February 2025
Accepted 14 March 2025

Keywords:
Nurse;
Covid-19;
Distress tolerance;
Intensive care unit

ABSTRACT

Background: Nurses, as professionals in the caring profession, try to perform safe and effective nursing interventions all the time and support patients to achieve the most favorable treatment outcomes. Nowadays, one of the important and international issues in nursing is distress tolerance. This study aimed to determine distress tolerance and affecting it among nurses working in the COVID-19 intensive care unit.

Methods: This cross-sectional study was conducted in 2021 on 128 nurses working in the Intensive Care Units (ICU) of Ziaian Hospital in Tehran.We used a convenience random method to select the samples, based on the inclusion criteria. Data were collected using demographic questionnaires and the standard distress tolerance scale (DTS). We analyzed the data using SPSS-25 software, employing both descriptive and inferential statistical tests. $P<0.05$ was considered the level of significance.

Results: The results of this study showed that the mean age of the samples was 34.95±6.77 years. The highest scores of distress tolerance subscales included appraisal (17.89±3.62), tolerance (8.97±2.60), absorption (8.83±2.30), and regulation (2.25 ±8.39), respectively. The statistical test of linear regression showed that service history and shift work have a significant power to predict nurses' distress tolerance.

Conclusion: The distress tolerance of nurses working in the ICU units was low. Factors such as service history and shift work influence their distress tolerance. Accordingly, it is necessary to plan to improve nurses' distress tolerance.

Introduction

Distress tolerance is defined as the behavioral ability to persist in goal-directed behavior when experiencing emotional distress, or as an individual's self-reported, perceived ability to experience and withstand negative emotional states [1].

People with a high distress tolerance possess a critically analytical mindset regarding their capabilities and circumstances. They are able to identify multiple solutions to a specific problem, even in stressful situations. They use more suitable coping strategies and have higher flexibility. Therefore, the probability of their adaptation to different environments is higher [2]. Low distress tolerance also makes it difficult for individuals to manage and regulate their emotions in stressful situations [3].

Nowadays, one of the important and international issues in nursing is distress tolerance, since the distress of nurses and patients has a direct relationship, Therefore, reducing distress in either the nurse or the patient can impact the distress level of the other [4].

Owing to the complex conditions they have in the work environment with patients and their companions and the physical conditions of the work environment, nurses are exposed to stress [5]. The nursing profession has a stressful nature, and this stress has become a major

The authors declare no conflicts of interest.

*Corresponding author.
E-mail address: afzal_sh63@yahoo.com

problem for nurses [6], so that the American National Occupational Safety Association has identified nursing as one of the top 40 high-stress occupations [7]. The Intensive Care Unit (ICU) is one of the most critical units in a hospital where nurses work [8].

This unit is inherently stressful due to its complexity, its active and productive nature, and the use of complex technical equipment, which is one of its challenges. Nurses working in these unit's experience significantly more depression, irritability, anxiety, and anger than nurses in other units [9].

These nurses suffer from more stress due to facing many stresses, including sick patients who need ventilators, unstable condition of patients, constant checking of vital signs and unstable level of consciousness in patients, and prevention of bedsores. In this regard, the health of nurses working in COVID-19 units is crucial due to their high risk of infection and subsequent complications [10], since COVID-19 has caused numerous problems for nurses, such as extreme fatigue, physical discomfort due to long working hours in these units, concern about infection, and psychological distress [11].

Based on the studies conducted, psychological problems in nurses who directly take care of corona patients are more than in other nurses [12-13]. Based on the results of a systematic review study, there is a significant increase in psychological problems within the healthcare team, especially among nurses working in COVID-19 units. Researchers found that rapid, continuous, and timely preventative psychological interventions are essential to prevent the collapse of healthcare systems in response to epidemics [14].

Because distress tolerance is important for medical staff, especially nurses in ICUs and during the COVID-19 outbreak, and because no study had been done in this area before, this one was done to find out how distress tolerance is affected by things that nurses in the ICUs of COVID-19 deal with.

Methods

This cross-sectional study was conducted in 2021 on 128 nurses working in the Intensive Care Units (ICU) of Ziaian Hospital in Tehran. Using the sample size formula and the results of similar studies from the past, along with a correlation coefficient of 1.5, 95% confidence, and 90% test power, 120 people were chosen as the sample size. However, we studied 135 people, taking into account the 15% probability of dropout in the samples. We conducted a convenience random sampling based on the inclusion criteria, after obtaining the necessary permissions and adhering to the research's ethical principles. Inclusion criteria for the study were: provision of informed consent, an associate's degree or higher in nursing, more than one year of work experience, and working in a COVID-19 unit for more than 6 months. Unwillingness to continue participation in the research and incomplete questionnaires were considered as exclusion criteria.

In this study, data was collected using two questionnaires: a demographic information questionnaire (including gender, age, marital status, employment status, and type of shift work) and the Distress Tolerance Scale (DTS). The Distress Tolerance Scale has 15 questions and 4 subscales (distress appraisal or subjective evaluation, absorption by negative emotions, regulation efforts to relieve distress, and distress tolerance) and was developed by Simons and Gaher in 2005. We score this scale using a five-point Likert scale Azizi et al. also reported the Cronbach's alpha value of the distress tolerance scale as 0.67, and the test-retest reliability of this questionnaire was obtained at 0.79 [15].

This study was approved by the Ethics Committee of Tehran University of Medical Sciences with the ethics code IR.TUMS.MEDICINE.REC.1400.544. All ethical principles in research, such as confidentiality, obtaining informed consent, etc., have been observed in this study. We analyzed the data using SPSS-25 software and employed descriptive and inferential statistical tests (regression). P value of less than 0.05 was considered as significant level.

Results

The results of this study showed that the mean age of the samples was 34.95±6.77 years. The highest percentage of samples were male (61.7%) and married (89.8%). Other demographic characteristics are presented in (Table 1).

The results of the study showed that the mean distress tolerance score in nurses was 44.09 ± 5.09. The mean distress tolerance score and its subscales are presented in (Table 2). We used a linear regression model to identify factors influencing distress tolerance and the impact of each. The Factors of service history and shift work have a significant predictive power for distress tolerance, such that these variables together predict 26.9% of the variance in the distress tolerance variable (Table 3).

Table 1- Demographic variables

Variable		n	%
Gender	male	79	61.7
	female	49	38.3
Marital status	single	13	10.2
	Married	115	89.8

Employment type	formal	62	48.4
	In treaty	18	14.1
	Project-based	34	26.6
	Contractual	14	10.9
Shift type	Fixed morning	17	13.3
	Fixed evening	17	13.3
	Fixed night	16	12.5
	Rotational	78	60.9

Table 2- The mean scores of the total distress tolerance and its subscales

Variable	Mean±SD
Tolerance	8.97±2.60
absorption	8.83±2.30
Appraisal	17.89±3.62
Regulation	8.39±2.25
total score of distress tolerance	44.09±5.09

Table 3- Regression analysis of variables predicting distress tolerance in nurses

Variable	B	SE	β	P
(Constant)	8.283	1.264		0.000
Service history	0.468	0.147	0.273	0.002
Gender	-0.201	0.467	-0.038	0.668
Marital status	-0.557	0.780	-0.065	0.476
Service history	-0.303	0.210	-0.127	0.151
Shift work	0.442	0.207	0.189	0.035
Adjusted R2=0.269, f=8.969				

Discussion

The aim of the present study is to determine distress tolerance in nurses working in intensive care units. In the present study, nurses had a low mean distress tolerance score, which is consistent with findings reported by Taheri et al. [16]. The low distress tolerance of nurses in the present study might be due to their direct contact with critically ill patients suffering from COVID-19 and the subsequent problems. In a study conducted by Hodaei et al., results showed that mental problems such as depression, anxiety, and mental distress increased during the Covid-19 pandemic [17]. The results of a systematic review and meta-analysis showed that during the COVID-19 pandemic, the prevalence of mental health problems (such as anxiety, depression, etc.) was significantly high among healthcare workers [18]. The results of the studies conducted by Kaveh et al. and Taghizadeh et al. indicated that mental problems caused by the covid-19 pandemic in the treatment team, especially nurses, were significantly higher than in other people in society [19-20]. In the fight against COVID-19, nurses had the most significant involvement among healthcare workers, as they are in direct contact with patients from the moment they enter the hospital until their discharge. Therefore, their psychological distress is much greater compared to other healthcare staff [19,21]. The results of several studies also show that nurses experience various mental sufferings while caring for Covid-19 patients [22]. Melnyko et al. reported in a study that the negative impact of COVID-19 on the health of nurses who were in direct contact with COVID-19 patients was greater than that on other nurses [23].

In the study by Sirati Nair et al., most of the medical staff, especially nurses, who worked directly with Covid-19 patients reported severe and unhealthy levels of stress and mental distress [24]. Low psychological distress in nurses working directly with COVID-19 patients during the pandemic has also been reported in several other studies [25-28], These results are similar to the results of our study. Individuals with higher distress tolerance tend to react to distress with greater adaptation compared to individuals with lower distress tolerance [29]. Nurses with high distress tolerance report greater resilience and higher social adjustment [30].

In our study, shift work had a positive and significant effect on distress tolerance, which is consistent with the results of the study by Abd et al. [31] as well as the study by Saksvik-Lehouillier et al. [32]. The results of the studies indicated that nurses with night time or rotational shifts have poorer physical and mental health, more absenteeism, less job satisfaction [33], and more stress and fatigue compared to daytime shifts [34]. Abdul Salam et al. showed that irregular sleep was significantly and negatively associated with lower distress tolerance [31]. This may be because poor sleep quality, irregular sleep patterns, and insufficient or excessive sleep duration can lead to poor concentration, fatigue and low energy, feelings of helplessness, and distress intolerance.

The results of a study carried out by Saksvik-Lehouillier et al. showed that experience and history were the effective variables in distress tolerance. Nurses who had just started nighttime work had less tolerance than more experienced nurses in nighttime work [32]. The results of these researchers' study are similar to the findings of our study. With increasing age and experience, nurses' ability to manage workplace stress increases. People who have a higher service history have more ability to cope successfully in difficult situations [35-36]. Increased age, education, and work experience enhance nurses' ability to cope with stress and critical situations. These capabilities improve nurses' adaptability, leading to more effective and flexible performance [37].

Strengths and Limitations

The Covid-19 pandemic, conducting studies on a large number of nurses working in the ICU is the strengths of our research. some nurses did not have a higher willingness to participate in the study due to the Corona situation, so they entered the study with informed consent by choosing the right time (beginning of the shift), giving sufficient information, and answering their questions.

Conclusion

Finally, the distress tolerance of nurses working in the ICU units was low. Also, factors such as service history and shift work affect their distress tolerance. Thus, it is necessary to plan to improve nurses' distress tolerance. It is recommended to conduct more studies on nurses in other regions of Iran as well as other countries. We recommend conducting a similar study on other members of the healthcare team.

Acknowledgments

Tehran University of Medical Sciences' nursing master's thesis served as the basis for this article. We hereby appreciate Tehran University of Medical Sciences and all the nurses for their cooperation in this study.

References

[1] Mohammadipour M, Afzood A, Zolfaghari S, salmabadi M. The Role of Spiritual Intelligence and Distress Tolerance on Coronavirus Anxiety in Students. Health Spiritual Med Ethics. 2021; 8 (2):95-102. Available from: http://jhsme.muq.ac.ir/article-1-434-fa.html

[2] Azizmohammadi S, Rakebi N, Kamran Koochesfehani S, Asadi H. Role of self-compassion and distress tolerance in the social health of female household heads (Persian). Middle East J Disabil Stud. 2019; 9:56. Available from: http://jdisabilstud.org/article-1-1462-en.html

[3] Bardeen JR, Fergus TA, Orcutt HK. Examining the specific dimensions of distress tolerance that prospectively predict perceived stress. Cogn Behav Ther. 2017; 46(3):211-23.

[4] Grulke N, Larbig W, Kächele H, Bailer H. Distress in patients undergoing allogeneic haematopoietic stem cell transplantation is correlated with distress in nurses. Eur J Oncol Nurs. 2009;13(5):361-7.

[5] Jackson J. Commentary: Optimism and distress tolerance in the social adjustment of nurses: examining resilience as a mediator and gender as a moderator. J Res Nurs. 2019; 24(7):513-4.

[6] Pouraboli B, Esfandiari S, Ramezani T, Miri S, Jahani Y, Sohraby N. Effectiveness of their teaching skills to reduce stress job psychological empowerment of nursing staff in intensive care units in the center of Shiraz Shahid Rajaee 1392. J Clin Nurs Midwifery. 2016; 5(1):23-35.

[7] Waldron HA. Occupational health practice: Butterworth-Heinemann; 2013.

[8] Pashaee S, Lakdizaji S, Rahmani A, Zamanzadeh V. Priorities of caring behaviors from critical care nurse's viewpoints. Prev Care Nurs Midwifery J. 2014; 4(1):65-73.

[9] Kushali AN, Hajiamini Z, Ebadi A, Khamseh F, Rafieyan Z, Sadeghi A. Comparison of Intensive Care Unit and General Wards Nurse's Emotional Reactions and Health Status. Adv Nurs Midwifery. 2013; 23(80):15-23.

[10] Liu C-Y, Yang Y-z, Zhang X-M, Xu X, Dou Q-L, Zhang W-W, et al. The prevalence and influencing factors in anxiety in medical workers fighting COVID-19 in China: a cross-sectional survey. Epidemiol Infect. 2020;148.

[11] Arnetz JE, Goetz CM, Arnetz BB, Arble E. Nurse Reports of Stressful Situations during the COVID-19 Pandemic: Qualitative Analysis of Survey Responses. Int J Environ Res Public Health. 2020; 17(21):8126.

[12] Kang L, Ma S, Wang Y, Cai Z, Hu J, Wei N, et al. Impact on mental health and perceptions of psychological care among medical and nursing staff in Wuhan during the 2019 novel coronavirus disease outbreak: A cross-sectional study. Brain Behav Immun. 2020, 87, 11–17.

[13] Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. JAMA Netw Open. 2020; 3(3):e203976 .

[14] Varghese A, George G, Kondaguli SV, Naser AY, Khakha DC, Chatterji R. Decline in the mental health of nurses across the globe during COVID-19: A systematic review and meta-analysis. J Glob Health. 2021 Apr 10; 11:05009. J Glob Health. 2021; 11:05009.

[15] Shams J, Azizi A, Mirzaei A. Correlation between distress tolerance and emotional regulation with students smoking dependence. Hakim Journal. 2010 Apr 10;13(1):11-8.

[16] Takhayori M, Fakhri M, Hasanzadeh R. The mediating role of cognitive emotion regulation in the relationship between object relationships and emotional distress tolerance in nursing students of Tehran University. Iran J Med Educ. 2021; 21(0):297-307.
[17] Hodaei NA, Ahadi B, Farah Bijari A. Relationship between personality traits and coping styles with distress tolerance during coronavirus outbreak. Shenakht J Psychol Psychiatry. 2022;8(6):37-49. Available from: http://shenakht.muk.ac.ir/article-1-1252-fa.html
[18] Pappa S, Ntella V, Giannakas T, Giannakoulis VG, Papoutsi E, Katsaounou P. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis. Brain Behav Immun. 2020; 88:901-7.
[19] Kaveh M, Davari-tanha F, Varaei S, Shirali E, Shokouhi N, Nazemi P, et al. Anxiety levels among Iranian health care workers during the COVID-19 surge: A cross-sectional study. MedRxiv. 2020.
[20] Taghizadeh F, Hassannia L, Moosazadeh M, Zarghami M, Taghizadeh H, Dooki AF, et al. Anxiety and depression in health workers and general population during covid-19 epidemic in IRAN: A web-based cross-sectional study. MedRxiv. 2020.
[21] Mirhosseini SH, Nouhi Sh, Janbozorgi M, Mohajer HA, Naseryfadafan M. The role of spiritual health and religious coping in predicting death anxiety among patients with coronavirus (Persian). Stud Islam Psychol. 2020;14(26):29-42. Available from: http://islamicpsy.rihu.ac.ir/article_1776_en.html
[22] Gillespie BM, Chaboyer W, Wallis M. The influence of personal characteristics on the resilience of operating room nurses: a predictor study. Int J Nurs Stud. 2009; 46(7):968-76.
[23] Melnyk BM, Hsieh AP, Tan A, Teall AM, Weberg D, Jun J, et al. Associations Among Nurses' Mental/Physical Health, Lifestyle Behaviors, Shift Length, and Workplace Wellness Support During COVID-19: Important Implications for Health Care Systems. Nurs Adm Q. 2022; 46(1):5-18.
[24] Sirati Nir M, Karimi L, Khalili R. The Perceived Stress Level of Health Care and Non-Health Care in Exposed to COVID-19 Pandemic. IJPCP. 2020; 26 (3):294-305. Available from: http://ijpcp.iums.ac.ir/article-1-3217-fa.html
[25] Du J, Dong L, Wang T, Yuan C, Fu R, Zhang L, et al. Psychological symptoms among frontline healthcare workers during COVID-19 outbreak in Wuhan. Gen Hosp Psychiatry. 2020; 63:1-9.
[26] Allsopp K, Brewin CR, Barrett A, Williams R, Hind D, Chitsabesan P, et al. Responding to mental health needs after terror attacks. BMJ. 2019; 366: l4828.
[27] Amin S. The psychology of coronavirus fear: are healthcare professionals suffering from corona-phobia? Int J Healthcare Manag. 2020; 13(3):249–56.
[28] Pappa S, Ntella V, Giannakas T, Giannakoulis VG, Papoutsi E, Katsaounou P. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: a systematic review and meta-analysis. Brain Behav Immun. 2020; 88:901–7.
[29] Zvolensky MJ, Vujanovic AA, Bernstein A, Leyro T. Distress tolerance: Theory, measurement, and relations to psychopathology. Curr Dir Psychol Sci. 2010; 19(6):406-10.
[30] Falavarjani MF, Yeh CJ. Optimism and distress tolerance in the social adjustment of nurses: examining resilience as a mediator and gender as a moderator. J Res Nurs. 2019; 24(7):500-12.
[31] Abd El Salam RM, El Kholy SEH. Factors Associated with Distress Tolerance among Community Dwelling Older Adults. Alex Sci Nurs J. 2017; 19(2):37-56.
[32] Saksvik-Lehouillier I, Bjorvatn B, Hetland H, Sandal GM, Moen BE, Magerøy N, et al. Individual, situational and lifestyle factors related to shift work tolerance among nurses who are new to and experienced in night work. J Adv Nurs. 2013; 69(5):1136-46.
[33] Burch JB, Tom J, Zhai Y, Criswell L, Leo E, Ogoussan K. Shiftwork impacts and adaptation among health care workers. Occup Med. 2009; 59(3):159-66
[34] Winwood PC, Winefield AH, Lushington K. Work-related fatigue and recovery: the contribution of age, domestic responsibilities and shiftwork. J Adv Nurs. 2006; 56(4):438-49.
[35] Ansari Shahidi M, Tat M, Badrizadeh A, Maleki S. The role of ethical intelligence and professional value in predicting nurses'resilience. Yafteh. 2018; 20(3):77-86.
[36] Gillespie BM, Chaboyer W, Wallis M. The influence of personal characteristics on the resilience of operating room nurses: a predictor study. Int J Nurs Stud. 2009; 46(7):968-76.
[37] Afshari D, Nourollahi-darabad M, Chinisaz N. Psychosocial Factors Associated with Resilience Among Iranian Nurses During COVID-19 Outbreak. Front Public Health. 2021; 9:714971.