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The Relationship Between Perceived Stress and Spiritual Intelligence and Resilience of Emergency Medical Technicians

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ABSTRACT

Background and Objectives: Emergency medical technicians (EMTs), as the front line of dealing with patients with COVID-19, are exposed to the intensification of stress caused by these conditions, and it is essential to identify related factors, such as resilience and spiritual intelligence in this context. This study was conducted to determine the relationship between perceived stress, spiritual intelligence, and resilience of EMTs during the COVID-19 pandemic.

Methods: This cross-sectional study was conducted on 108 EMTs in Shahroud in 2021. Data collection tools included the demographic checklist, Cohen's perceived stress questionnaire, King's spiritual intelligence questionnaire, and Conrad Davidson's questionnaire (CD-RISC). To analyze the data, descriptive and inferential (independent t-test, Pearson correlation, and multiple regression) statistics were used.

Results: The mean scores of perceived stress and resilience of employees were at medium and high levels, respectively. There was no significant relationship between perceived stress and spiritual intelligence (r=-0.49, P=0.24), but there was a meaningful negative correlation between perceived stress and resilience (r=-0.31, P=0.002). A positive and significant relationship was observed between perceived stress score and age and work experience.

Conclusion: Considering the significant relationship between perceived stress and resilience in the present study, it is suggested that the administrators provide solutions such as creating training courses to manage stress and increase resilience in EMTs.

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Introduction

As a vital part of healthcare, public health, and disaster management systems, pre-hospital emergency operational staff deal with patients who need emergency services. They face various patients in different situations [1], and the patients and the injured are sometimes in critical condition. Working in an undefined and unsafe environment creates more stressful conditions for emergency medical technicians (EMTs) compared to those who work in other healthcare departments [2]. These conditions impose excessive psychological pressure on the employees of this department [3] and the constant exposure of staff to stress and anxiety and their complications provide the grounds for psychological consequences in their mental health [4, 5]. Chronic stress imposed on individuals over a long period (days and weeks) leads to perceived stress and the person perceives it as a threat to his/her physical and psychological well-being [6]. Job stress has been reported as a significant factor causing mental disorders [7] and exacerbating job burnout [8]. The spread of coronavirus in different countries has increased the exposure of the medical staff to this virus [9]. Due to the frequent exposure of EMTs to COVID-19 patients and their presence in virus-infected environments, they are more likely to be infected with COVID-19 [10], which can cause massive stress for them. One of the strategies to cope with stress is to build resilience [11, 12], which can be considered a factor in preventing and reducing burnout caused by job stress [13, 14].

Resilience refers to a dynamic process that leads to adaptation to adverse and catastrophic conditions. Resilience in the workplace is defined as reducing the effects of stress using behaviors that facilitate transformation [15]. In stressful situations, those with higher resilience have better mental health than those with lower resilience [4]. Another strategy for coping with stress is using individual traits, such as spiritual intelligence [16]. People with spiritual tendencies manage stress better. They make the most appropriate decisions in stressful times and increase their resilience using spiritual intelligence [17]. Spiritual intelligence enables one to choose proper solutions to life problems, to display appropriate behaviors, such as kindness, humility, gratitude, and wisdom, and to have a better life with increased self-confidence [18]. Spiritual intelligence comprises four elements of critical existential thinking, personal meaning production, transcendental awareness, and conscious state [19]. In stressful environments, spiritual intelligence enables people to better understand and deal with negative emotions, reduce their adverse effects, and prevent the recurrence of such feelings [20]. High spiritual intelligence increases the ability to control and manage emotions [21]. The type and severity of people's reactions to stress depend on how people perceive the stressful event and the degree of feeling of danger and threat. People experience various levels of stress depending on their traits, living conditions, available facilities, and life experiences [22]. Work is a source of stress in everyone's life, and this is especially true for emergency medical teams [22, 23].

EMTs often face very frustrating and stressful scenes when doing their duties and missions. Additionally, the coronavirus outbreak has increased the level and severity of stress among them. Considering the adverse psychological effects of this pandemic, the EMTs suffer more pressure in these particular circumstances due to their exposure to patients with COVID-19 and its adverse psychological effects. Thus, it seems essential to study psychological issues, including perceived stress, and their impact on such vital factors as resilience and spiritual intelligence that can be associated with adaptation and reduced stress. Due to the lack of studies in this field, the present study was done to determine the relationship between perceived stress to spiritual intelligence and resilience of pre-hospital EMTs during the COVID-19 pandemic

Study design

This is a cross-sectional (descriptive-analytical) study conducted on the EMTs of Shahroud University of Medical Sciences during the COVID-19 pandemic from September to November 2021.

Setting and participants

A total of 108 EMTs, including those working in the pre-hospital emergency center in Shahroud participated in the study. The study population included all selected participants based on the inclusion criteria and availability. Inclusion criteria were having a relevant degree (emergency medical services, nursing, and anesthesia technology (B.Sc.) at any level of education), having at least one year of operational experience in a pre-hospital emergency during the COVID-19 pandemic, the lack of stress caused by events, such as divorce and losing loved ones, father, and mother during the research period, and no history of psychiatric illness.

Data collection tools

Data collection tools included personal information collection forms (age, education, marital status, work experience, average work hours, and type of employment), Cohen's perceived stress questionnaire, King's spiritual intelligence self-report inventory (SISRI), and Conrad Davidson's questionnaire (CD-RISC).

CD-RISC was developed in 2003 by Connor and Davidson in the United States to measure resilience [24]. Cronbach's α was used to determine the reliability of this scale and a reliability coefficient of 0.89 was obtained. It consists of 25 items, which are evaluated on a five-point Likert scale ranging from 0-4: Not true at all (0), rarely true (1), sometimes true (2), often true (3), and true nearly all of the time (4). The lowest score on this scale can be zero and the highest score can be 100. A higher score indicates a higher resilience [25]. The perceived stress scale was developed in 1983 by Cohen et al. It measures perceived stress over the past month, thoughts and feelings about stressful events, and managing and coping with stress [26]. This scale has been translated into different languages and used and normalized in other countries. In the present study, the 14-item perceived stress scale was used and Cronbach's α values of 0.84, 0.85, and 0.86 were obtained for this scale in three studies [27]. Ebrahimi and Ghaffari [28] localized this test in Iran and obtained Cronbach's α coefficient of 0.84. In the study by Hosseini et al. [29], the face and content validity of the scale was confirmed and Cronbach's α coefficient was calculated to be 0.85, indicating the good internal consistency reliability of questions. The Cohen's perceived stress questionnaire consists of 14 items, which are evaluated on a five-point Likert scale ranging from 0-4 (0=never, 1=almost never, 2=sometimes, 3=fairly often, and 4=very often). For eight items of this scale, scores are obtained by reversing the responses. The highest score on this scale can be 56 and the lowest score can be zero. A higher score indicates higher perceived stress.

SISRI was developed by King in 2008. This inventory consists of 24 items and includes four subscales: Critical existential thinking, personal meaning production, transcendental awareness, and conscious state expansion. The items are rated on a five-point Likert scale, ranging from zero (not at all true) to four (completely true). Item 6 is rated reversely. The overall score obtained can range from 0 to 96. Higher scores indicate higher levels of spiritual intelligence [30]. The validity and reliability of the SISRI were investigated by Raghib et al. and Cronbach's α coefficient was calculated to be 0.88. Experts have confirmed the face and content validity of the inventory. To estimate the convergent validity, Gobari Bonab's spiritual intelligence inventory was also used that the correlation coefficients of the were calculated to be 0.66. Exploratory factor analysis and first-order confirmatory factor analysis were used to calculate the construct validity of the inventory. The results showed that this inventory is a reliable tool to measure spiritual intelligence and it can be used in educational and research settings due to its validity and reliability [31].

Data collection

Data collection was self-reported and participants were asked to respond accurately at appropriate times during the shift or outside. EMTs who did not want to participate in the study or completed the questionnaires incompletely were excluded from the study.

Data analysis

After completing and collecting the questionnaires, the data were analyzed using the Pearson correlation coefficient, independent t-test, and one-way analysis of variance and described as Mean±SD. The enter method was performed in logistic regression analysis and odds ratio (OR) values were presented at a 95% confidence interval (95% CI). Results were considered statistically significant if the P obtained in the analysis was <0.05 and bidirectional. SPSS software, version 23 was used to analyze data.

Results

The meanage of the participants was 33.89±6.44 years and most of them were married (74.60%) and had a bachelor's degree or higher (54.20%). The demographic characteristics of the participants are presented in Table 1.

The mean score of perceived stress was obtained to be 37.60±4.01, indicating the mean level of perceived stress among EMTs. Additionally, the mean score of resilience was 74.27±8.37, indicating a high level of resilience among the participants. The mean score of spiritual intelligence was calculated to be 50.17±1.07, showing the mean level of spiritual intelligence among the participants. There was no significant relationship between perceived stress and spiritual intelligence. There was a significant correlation between perceived stress and resilience and the correlation coefficient indicated a decrease in resilience with an increase in perceived stress (Table 2).

Table 1. Demographic charectriscs of pre-hospital emergency operational staff

Variables	Category	No. (%)
Age (y)	≥35	67(56.80)
	<35	51(43.20)
Work experience (y)	<5	30(25.40)
	5-10	32(27.10)
	>10	56(47.50)
Education level	Associate degree	54(45.80)
	Bachelor and higher	64(54.20)
Marital status	Single	30(25.40)
	Married	88(74.60)
Workload (h)	≥250	60(50.80)
	>250	58(49.20)

Table 2. Correlation between perceived stress and resilience and spiritual intelligence in pre-hospital emergency operational staff

Variables		Mean±SD	Pearson's Correlation Coefficient
Perceived stress	Resilience	74.27±8.27	r=-0.49 P=0.24
	Spiritual intelligence	50.17±1.07	r=-0.31 P=0.002

Education level (associate, bachelor, and higher degrees) and marital status (single/married) had no significant effect on the level of perceived stress. A significant positive correlation was found between the total score of perceived stress and the age and work experience of the samples. However, there was no significant correlation between working hours per month and the level of perceived stress (Table 3).

Based on the regression analysis results, a one-unit increase in the frequency and severity of spiritual intelligence increased the risk of perceived stress by 0.97 times, and a one-unit increase in resilience score increased the risk of perceived stress by 0.95 times. Also, the score of the perceived stress decreased by 3.4 points with the increase in the age of the participants by ten years. In addition, the score of the perceived stress increased by 4.5 points with the increase in the work experience of the participants by ten years. The perceived stress score of the group with lower levels of education was higher by 1.75 points than the group with higher levels of education. The perceived stress score of single participants was more by 2.46 points than the married ones (Table 4).

Discussion

According to the results, the mean scores of perceived stress of the samples were generally at a moderate level. Mirhaghi and Sarabian [32] also showed an intermediate level of perceived stress in pre-hospital emergency operational staff. In the study by Seyed Javadi et al. [8], stress could be seen in more than 74.8% of medical emergency staff. In the study conducted by Motie et al. [33], more than 50% of pre-hospital EMTs reported a moderate level of stress. In addition to reporting moderate to high levels of stress among most pre-hospital emergency staff, Moshtagh Eshgh et al. [34] showed that the working environment of most EMTs was accompanied by a moderate level of stress that could negatively affect the body, mind, and performance of the staff and the productivity

Table 3. Correlation between perceived stress and age, work experience, and working hours of pre-hospital emergency operational staff

Variables	Mean±SD	Perceived Stress
Age (y)	33.89±6.44	R=0.18 P=0.04
Work experience (y)	5.88±10.41	R=0.24 P=0.009
Workload (h)	44.23±239.09	R=-0.93 P=0.32

Table 4. Analytical regression of perceived stress relationship and its related factors in pre-hospital emergency operational staff

Variables	%95 Confidence Interval	P
		P>T
Resilience	0.97 (0.95-0.99)	0.12
Spiritual intelligence	0.95 (0.93-0.98)	0.01
Work experience	0.46 (0.11-0.81)	0.011
Workload	0.03 (0.16-0.22)	0.77
Education level	1.76 (0.05-3.46)	0.05
Marital status	2.47 (0.06-4.89)	0.05

of the organization. Thus, the results of recent studies are consistent with the findings of the present study. Roger et al. [35] and West et al. [36] in the United States reported that 80% of pre-hospital emergency staff had a moderate to high level of stress. Specific working conditions in the pre-hospital emergency departments, including continuous exposure to unpredictable situations and the presence of stressful physical and psychological stimuli, critically ill patients, and problems related to various organizational and managerial factors, cause multiple types of stress [2-5]. This justifies the different levels of stress in most pre-hospital emergency operational staff.

Our results showed no relationship between perceived stress and spiritual intelligence. Although there were few relevant studies, studies conducted on medical groups were considered. In the present study, the level of spiritual intelligence of EMTs was equal to 50.17. In the study by Goudarzi et al. [37] and Shahrokhi et al. [38], the level of spiritual intelligence in critical care nurses was moderate and there was a statistically inverse relationship between perceived stress and spiritual intelligence. Various studies conducted on other groups have reported different results [19, 39]. No significant relationship between these two variables in the present study could be due to the intensification of stress caused by the outbreak of COVID-19. Considering the inverse relationship between perceived stress and spiritual intelligence and the mediating effect of spirituality on a person's adaptation to stresses at work and life, strengthening the spiritual intelligence of individuals, especially pre-hospital emergency operational staff who face multiple stresses in different missions, can play a beneficial role in improving mental health and controlling emotions, such as stress and anxiety. Therefore, using the appropriate programs to train spiritual intelligence and better understand how to improve it in EMTs can help to increase their mental health. These programs can include appropriate workshops and training courses. Some studies have indicated the positive effect of training spiritual intelligence [40-42].

According to the results of the present study, the mean scores of resilience were at a high level. This may be due to the constant exposure of EMTs to stressful conditions, leading to an increase in the capacity to adapt to these various types of stress. Norouzinia et al. [43] also reported that exposure to stressful conditions led to the increased resilience of emergency medical students.

The results of the present study showed a significant negative correlation between perceived stress and resilience, indicating a decrease in resilience with an increase in perceived stress. Wood et al. [44] concluded that the high level of resilience and the increased tolerance threshold could reduce the helplessness of a person when facing stressful situations and crises and improve their mood and mental and physical health. In the study by Froutan et al. [4], the resilience of EMTs increased with the improvement of stress management. Friborg et al. [45] showed that resilience effectively reduced perceived stress. Khosravi et al. [19] concluded that resilience led to a successful adaptation to problems and the increased resilience could reduce perceived stress. McAllister et al. in 2009 [46] indicated that the negative consequences of stress in work environments could affect the retention of qualified staff. In this study, resilience was described as an ability to rebound from adversity and overcome difficult circumstances in one's life and resilient individuals were defined as people who possess personal attributes, such as an internal locus of control, pro-social behavior, empathy, positive self-image, optimism and the ability to organize daily responsibilities. Yun-Ling Chen et al. [47] demonstrated that increasing perceived stress significantly increased the risk of suicidal behaviors and reduced the effect of resilience on preventing suicide.

Other results showed a significant positive correlation between the two variables of age and work experience and the perceived stress in emergency operational staff, indicating the increase in perceived stress with an increase in age and work experience. In studies by Tung et al. [48] and McElroy et al. [49], perceived stress was significantly lower in older people than in younger people. Thus, their results are not consistent with the results of the present investigation. This could be due to the prevalence of various occupational and personal stresses in older and more experienced staff in the present study. The coronavirus pandemic and concerns caused by being exposed to COVID-19 patients could further increase their stress in them. Although the increased experience of the pre-hospital emergency operational staff can cause the adaptation gradually to work-related stress to increase and the intensity of the stress to reduce, the increase in age and work experience may also lead to various individual, family, and work-related stresses and physical and mental health problems in the staff.

Additionally, in this study, there was no significant relationship between perceived stress and working hours per month. However, the results showed a decrease in perceived stress with an increase in working hours. There was also no significant relationship between the two variables of education level and marital status and perceived stress. In agreement with these results, there was also no meaningful relationship between stress and working hours per week, marital status, and education level in the study by Seyedjavadi et al. [8]. In the research conducted by Motie [33], there was no significant relationship between stress and marital status and working hours. However, education level was significantly correlated with stress. Thus, the stress increased with the increase in the level of education.

One of the limitations of the present study was the use of self-report inventories so that factors, such as mental status and different working conditions could affect the answers to the questions of the inventories. It was tried to minimize the effects of these factors as much as possible by giving a suitable time to the pre-hospital emergency operational staff. Another limitation is our sample size. Thus, it is necessary to conduct more research in different conditions and environments using qualitative research methods to better generalize the results by clarifying the factors affecting stress in EMTs [50].

Conclusion

The results of this study showed a statistically significant negative correlation between perceived stress and resilience in EMTs. In other words, the increased resilience leads to decreased perceived stress, and the decreased resilience increase perceived stress in EMTs. Therefore, it is necessary to use supportive strategies and train stress management to increase resilience. These strategies include providing psychosocial support by managers, improving welfare facilities, assigning a resident psychologist to counsel the staff, holding stress management training courses, and improving the living conditions of EMTs. The authorities should also identify the causes of the stress and the problems of EMTs to provide long- and short-term programs, which are applicable and train how to deal with stressful situations in the medical environments and increase resilience in the workplace. In addition, using psychological assessment scales during the pre-employment screening process seems necessary to identify and employ people with higher resilience.

Ethical Considerations

Compliance with ethical guidelines

The present study was approved by the Ethics Council of Shahroud University of Medical Sciences (Code: IR.SHMU.REC.1399.047). The goals of the research were explained to the participants and their informed consent was obtained; all participants were assured that the information obtained would remain confidential.

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Authors' contributions

Data collection and drafting the manuscript: Mahdi Sadeghi and Seyed-Mahdi Esmaeili; Data analysis and data interception: Elahe Bahonar and Behnam Sbakian Bandpey; Review and editing: Mohammad Abbasi and Maryam Ehsani; Final approval: All authors.

Conflict of interest

The authors declared no conflict of interest.

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