# Investigation of the Relationship between Trauma, Anxiety, Depression and Stress in Kerman Emergency Medical and Emergency Center 115

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*Authors' contributions*

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

| *Original Research Article* |
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## ABSTRACT

**Introduction:** The efficacy of psychological and pharmacological approaches is broadly similar in the acute treatment of psychopharmacology disorders.
One of the most important stressful environmental stimuli that can cause chronic stress is people's jobs. And since promoting the mental health of individuals in a society, especially its constituent classes, is essential to the dynamics and growth of that society, this research was conducted with the aim of investigating the relationship between trauma caused by accident and anxiety, depression, and stress in Kerman Emergency Medical and Emergency Center during 2019.

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**Methods:** This is a descriptive-correlational study. The statistical population was all 70 personnel members of Emergency Medical and 115 Emergency Centers in Kerman. The Depression, Stress and Anxiety Scale 21 and Trauma Screening were used as the instruments of measurement. Pearson and Spearman correlation coefficients through SPSS software were used to test the hypotheses.
**Results:** There is a significant and direct correlation between trauma caused by accidents and personnel anxiety with a correlation coefficient of 0.407. Also, there is a significant and direct correlation between trauma caused by accidents and personnel depression with a correlation coefficient of 0.407. There is also a significant and direct relationship between trauma caused by accidents and personnel stress with a correlation coefficient of 0.388.
**Conclusion:** Our data suggested that mental health along with personality traits is a solution to reduce stress and anxiety resulting from the personnel facing trauma caused by accidents.

## 1. INTRODUCTION

Pharmacotherapy is typically used as one component of a more comprehensive multiple modality treatment package, including psychoeducation of the parent and child, focused exposure-based psychotherapy with adjunctive family therapy when indicated, and long-term booster interventions that use an admixture of psychodynamic, cognitive-behavioral, and pharmacologic interventions [1].

Mental pressures caused by job are stressors that can endanger one's health by physical, mental and behavioral complications, if they are excessive [2]. These pressures can also reduce the quality of one's work in the organization by threatening organizational goals. Physical, mental, and mental stressors cause medical emergency technicians to be at high risk for accidents, errors, and other harm to persons, which can be avoided [2].

In today's modern industrialized societies, trauma is one of the most important topics that has been considered seriously in in most countries. Because trauma is the first cause of death in the first four decades of life and is the fourth most common cause of death throughout life [3]. Exposure to a trauma is a life-threatening experience that causes one to experience fear, panic or helplessness [4]. Lavoie believes that exposure to traumatic and highly stressful events can have severe and acute effects, but only one of the effects of these experiences leads to traumatic situations such as post traumatic disorder, depression and so on [5].

Post-traumatic stress disorder is a mental disorder that occurs after an unpleasant event such as rape, war, traffic accident and other factors that threaten one's life [6]. Psychological disorders such as depression and stress are common in emergency medical personnel and people who are at risk for traumatic events are more likely to develop it [7]. Laposa, et al. studies on hospital emergency personnel in Colombia and Reger, et al. studies on hospital emergency personnel in Germany showed that health sector employees, including medical emergency personnel, were at high risk for post-traumatic stress disorder [8,9]. It is therefore assumed that there is a significant relationship between trauma caused by accidents and anxiety, stress, and depression among medical emergency personnel. Therefore, considering the importance of mental health of emergency medical personnel and its effect on their performance, as well as limited study on the relationship between trauma and anxiety and stress in medical emergency personnel in Iran, the present study was conducted with the aim of investigating the relationship between trauma caused by accident and anxiety, depression, and stress in Kerman Emergency Medical and 115 Emergency Center Personnel.

## 2. METHODS

The present research is an applied one and a descriptive correlational study in terms of the type and nature. The statistical population of this research includes all 70 personnel members of Emergency Medical and 115 Emergency Centers in Kerman. Due to the limited statistical population, the sample size was considered equal to the statistical population. In this research, DASS-21 questionnaire and trauma screening questionnaire were used in order to collect the required data [10]. DASS-21 questionnaire is a set of three self-report subscales designed to measure negative emotional states of depression, anxiety, and

stress. Anxiety and depression were assessed by the Hospital Anxiety and Depression Scale (HADS).

Each question has 4 options that range from very high score 3, high score 2, low score 1, and not at all score 0. The validity and reliability of the questionnaire has been evaluated and confirmed in several studies. The trauma screening questionnaire consists of 10 questions on a 5-point Likert scale. The maximum score of the questionnaire is 50 and the minimum is 10. Validity of the questionnaire based on correlation with RTS questionnaire was 0.78 and reliability based on retest was 0.72.

**Inclusion:** Going to the Kerman Medical Emergency Center, the researcher provided the staff with a pre-arranged, anonymous questionnaire. Data collection tools in the research included demographic checklists including age, work experience, employment status, education, employment date, number of children, spouse employment, income, supplementary insurance.

## 2.1 Statistical Analysis

The data were then analyzed by SPSS software version 20. Trauma, depression, anxiety, and stress variables were analyzed using a two-tailed Student's t-test or the Mann-Whitney U test as appropriate (D'Agostino and Pearson normality test). Categorical variables were examined using Fisher's exact test. A P value below 0.05 was considered an index of statistical significance. Univariable comparisons were reported as odds ratios (ORs) with 95% confidence intervals (95%

CIs). Trauma, depression, anxiety, and stress variables are expressed as means ± standard deviation (SD).

## 3. RESULTS

According to the data analysis, among the subjects, 37 (52.9%) were single, 33 (47.1%) were married, 23 (32.9%) hold associate degree and 47 (67.1%) hold bachelor degree. Also, 60 (85.7%) of subjects were 30 years old and younger and 10 (14.3%) were between 31-40 years old, 58 (82.9%) have less than 10 years of work experience and 12 (17.1%) have 10-20 years of work experience.

Of the 70 subjects studied, 6 (8.6%) have a very low depression score, 40 (57.1%) have a low score, and 24 (34.3%) have a high depression score, 5 (1.1%). 7%) have a very low anxiety score, 46 (65.7%) have a low score, and 19 (27.1%) have a high anxiety score, and 7 (10%) have a very low stress score, 57 (81.4%) have a low score, and 6 (8.6%) have a high stress score (Table 1).

Table 3 shows the correlation between trauma caused by accidents and anxiety, depression and stress of the personnel. These findings confirm the research hypotheses indicating that there is a significant relationship between trauma caused by accidents and anxiety, depression and stress of the personnel. In addition, the positive correlation coefficient indicates that with increasing trauma caused by accidents, anxiety, depression and stress of the personnel increase.

**Table 1. Comparison of frequency distribution and their status characteristics with variables of depression, anxiety and stress**

| Variable | Status | Frequency | Frequency percentage |
|----------|--------|-----------|----------------------|
| Depression | Very low | 0 | 8.6 |
| | Low | 40 | 57.1 |
| | High | 24 | 34.3 |
| | Very high | 0 | 0 |
| Anxiety | Very low | 5 | 7.1 |
| | Low | 46 | 65.7 |
| | High | 19 | 27.1 |
| | Very high | 0 | 0 |
| Stress | Very low | 7 | 10 |
| | Low | 57 | 81.4 |
| | High | 6 | 8.6 |
| | Very high | 0 | 0 |

**Table 2. Mean and standard deviation of trauma, depression, anxiety, and stress variables**

| Variable | Mean | Standard deviation |
|---|---|---|
| Depression | 9.17 | 2.67 |
| Anxiety | 8.98 | 2.16 |
| Stress | 7.97 | 2.07 |
| Trauma | 21.4 | 4.94 |

**Table 3. Pearson correlation test between trauma caused by accidents and anxiety, depression and stress of the personnel**

| Variable | Anxiety | Depression | Stress |
|---|---|---|---|
| Correlation coefficient | 0.407 | 0.407 | 0.388 |
| Significance level | 0.000 | 0.000 | 0.001 |

**Table 4. Regression model between trauma caused by accidents and anxiety, depression and stress**

| Variable | F statistic | Sig level of F | Coefficient | t statistic | Sig level of t | Coefficient of determination |
|---|---|---|---|---|---|---|
| Anxiety | 0.000 | 13.54 | 5.17 | 0.166 | 0.000 | 4.85 |
| Depression | 0.000 | 13.52 | 4.46 | 0.166 | 0.001 | 3.39 |
| Stress | 0.001 | 12.05 | 4.46 | 0.151 | 0.000 | 4.36 |

Since the p-value of the F-test in the three regression models is less than the significance level of $\alpha = 0.05$ (Table 4), therefore, the anxiety, depression and stress of the personnel can be predicted using the variable of trauma caused by accidents. According to the coefficients obtained in Table 4, the regression equations for estimating the variables of anxiety, depression, and stress with the variable of trauma caused by accidents are as follows:

Anxiety = 5.17 + 0.18 × trauma caused by accidents

Depression = 4.46 + 0.22 × trauma caused by accidents

Stress = 4.46 + 0.16 × trauma caused by accidents

Also, according to the coefficients of determination in Table 4, 16.6% of the personnel anxiety prediction, 16.6% of the personnel depression prediction and 15.1% of the personnel stress prediction are explained by trauma caused by accidents.

## 4. DISCUSSION

People's jobs are one of the major causes of stress. Job for each person is a constituent of social identity and a source of supplying the life's needs. Mental pressures caused by job are stressors that can endanger one's health by physical, mental and behavioral complications, if they are excessive [11].

Different jobs can be good or bad in terms of proportion for people with anxiety [12]. According to the research, 78% work environment, 8% family environment and 12% social environment are mentioned as the cause of anxiety and stress [13]. Exposure to a trauma is a life-threatening experience that causes one to experience fear, panic or helplessness [14]. Patterson, et al. believe that exposure to traumatic and highly stressful events can have severe and acute effects, but only one of the effects of these experiences leads to traumatic situations such as post-traumatic stress disorder, depression and so on [15]. Stress is also a response that body shows against external and internal events and has many adverse consequences including gastric pain and indigestion problems, palpitations, heart disease, headaches, high irritability and anger, disturbed sleep, depression, disruption of individual and organizational relationships, reduced performance, waste of resources, etc. [16]. Therefore, post-traumatic stress disorder with its debilitating and sometimes chronic symptoms can cause significant problems at the individual and social levels [17]. Nickerson, et al. showed in a study that both deliberate and accidental trauma are associated with a high level of mental disorders [18]. Lesperance, et al. in a study showed the effect of trauma on the increase of high-risk behaviors [19]. Earls, showed that anxiety is a result of trauma [20].

Calculation of Pearson and Spearman correlation coefficients in this study showed that there is a significant relationship between the trauma caused by accidents and anxiety in the personnel of Kerman Emergency Medical and 115 Emergency Center. Analysis of the regression model coefficients of these variables showed that trauma caused by accidents is a positive predictor of the personnel anxiety. The results of Lambert, et al. research show that there is a relationship between life accidents and anxiety [21], Cheng, et al. showed in a study that multiple exposure to trauma can predict anxiety [22], and Bahrami et al. also stated that people with post-traumatic stress disorder are more likely to have anxiety, which is consistent with the present research [23]. Regarding the possible explanation, one can say that exposure to trauma is a risky experience in life that causes one to experience fear, panic or anxiety.

Fagin, showed that multiple exposure to trauma is a strong predictor of depression [24], which is consistent with the results of this research. Regarding the possible explanation, one can say that exposure to trauma leads to results such as negative emotions, feelings of hopelessness and dejection, thereby increasing depression.

Mental health along with positive personality traits, in addition to being an effective coping with traumatic experiences, is an effective factor in preventing symptoms of traumatic stress disorder. According to Sullivan, people with psychological health have flexible spirit, minimal stress, and are usually flexible, genuine, and trustworthy in social relationships, and these traits protect the person against the symptoms of post-traumatic stress disorder when exposed to traumatic events [25].

The results of this study are consistent with the results of Bennett et al., which showed that trauma caused by accidents causes stress [26], Kessler et al. that showed there is a direct relationship between life accidents and stress disorder and anxiety [27]. Regarding the possible explanation, one can say that exposure to trauma increases stress through creating unrest, and consuming too much mental energy. Mental health along with positive personality traits, in addition to being an effective coping with traumatic experiences, is an effective factor in preventing symptoms of traumatic-stress disorder [28]. According to Mousavi, people with psychological health have flexible spirit, minimal stress, and are usually flexible, genuine, and

trustworthy in social relationships, and these traits protect the person against the symptoms of anxiety, stress and depression when exposed to traumatic events [29].

The limitation of the present study is that it is descriptive and that the relationships obtained are not causal and considerations should be made in this regard. Another limitation of the present study was the lack of matching of subjects in terms of socioeconomic status, level of education, and so on. Accordingly, it is suggested that experimental research be conducted in the future.

## 5. CONCLUSION

Taken together, there is a significant relationship between mental health of medical emergency personnel in anxiety and depression and PTSD through personality traits. In other words, mental health of emergency medical personnel has a direct correlation with exposure of the personnel to trauma caused by accidents. People with mental health and personality traits, such as openness to experience, are less likely to be harmed than neurotic people suffering from depression and anxiety at the same time when exposed to traumatic experiences. These conclusions are important and should be confirmed by further investigation

## CONSENT

As per international standard or university standard written participants consent has been collected and preserved by the author(s).

## ETHICAL APPROVAL

It is not applicable.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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*The peer review history for this paper can be accessed here:*
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