

# A Test of the Interpersonal Theory of Suicide (Thwarted belonging and Burdensomeness) among Firefighters in Tehran

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## Abstract

**Introduction:** The purpose of this study was to investigate the interpersonal theory of suicide in firefighters in Tehran. This research was based on an interpersonal suicide theory in understanding whether two variables of thwarted belonging and burdensomeness play an important role in suicidal thoughts of firefighters or not.

**Method:** The present study was a quantitative and correlational study. The statistical population included all firefighters in Tehran, and 150 samples were selected by available sampling method. The tools used include the Interpersonal Needs Questionnaire, the Deafness Abusive Scale and the Depression Symptom Index Joiner.

**Results:** Data were analyzed by descriptive and inferential statistical methods using SPSS version 24 and correlation and predictor method and linear regression analysis. The results revealed that there is a positive and significant correlation between suicidal ideation with belongingness, burdensomeness, age and work experience, and there is a significant negative correlation between suicidal thoughts and education.

**Conclusion:** Considering the existence of suicidal thoughts in firefighters, it is recommended that programs be made to reduce these thoughts among them.

**Keywords:** Interpersonal Theory of Suicide, Firefighters, Belongingness, Burdensomeness

## Introduction

Researchers have shown that the occupations dealing with death and life have high rates of many psychological disorders such as depression, anxiety, insomnia and suicide [1]. In the meantime, firefighters, as a rescue team in charge of missions, are more likely to be involved in missions than other relief and rescue teams in facing various types of physical, psychological and social harm, complex working conditions, direct exposure to various types of accidents and damage factors. The shift in work and the urgency of staffing at any time of the day has caused firefighting to become the second most stressful job in the world [2]. Personality traits, psychological injuries, and negative events are both theoretically and practically related to suicide [3]. Studies have shown that such disorders as anxiety and depression are highly correlated with suicide attempts. Also, personality traits of suicide attempters indicate that personality traits, especially neuroticism, influence the experience suicide [4].

The results of early research has indicated that the level of thinking, planning and committing to suicide are extremely high among firefighters [5]. Duran et al., [6] report that such a problem is resulted from the work conditions of firefighters so that spending one-third of their lives at fire stations and confronting various types of death have increased the risk of suicide among them. According to the report of the National Fire Protection Association (NFPA) in the United States, there is a higher likelihood of suicide among

firefighters with respect to death cases seen while performing their missions [7]. Continued exposure to traumatic accidents increases the risk of Post-Traumatic Stress Disorder (PTSD) and suicide. According to a report of the US Fire Fighting Union, during the years 2000 and 2013, 360 firefighters committed suicide. In this regard, the factors increasing such a risk were reported to be the feelings of despair and frustration, the feeling of overcrowding in the society and having a background of suicide in the past [8].

Several different theories have examined the suicidal behavior, including handwritten suicide outbreaks. In such theories, emphasis has been placed on factors such as anxiety, depression, substance abuse, and panic disorder. Also, in different ideas to predict ideation and commit suicide, underlying factors such as gender, education, physical health, and negative experiences in life (failed communications and trauma) have been investigated. One of the most important of these theories is the "interpersonal theory of suicide". The argument of this theory is that suicide is the product of the interaction between the following perception of one's position: perception of being a heavy burden for others. The assumptions of this theory have been considered for the youth [9], adults [10], and elderly [11].

In confirming one's perceptions, Chu et al., [12] proved the presence of interpersonal stimuli including lack of belonging and a feeling of overhead regarding the suicidal behavior of the firefighters. Research on interpersonal processes has shown that the case of need for addiction, which in fact is felt to be an alienation in society, does not result in significant harm to the individual's psychological well-being. Accordingly, attachment is one of the essential and crucial needs of every human being, indicating the experience of a person's involvement in a system or environment. Thus, the individual feels that the attachment is an integral part of that system or environment. This concept, as an individual's experience, determines what an extent of a group is linked, accepted, and respected, and the defect in each one can provide a source of depression, anxiety, and suicidal thoughts [13]. Also, the feeling of a burden on the family is also a very powerful predictor of suicide among both adults and the youth. When a person feels to be ineffective and evaluates his actions in vain, he feels a sense of frustration and self-denial, providing a capacity for isolation, depression and suicidal thoughts. This theory suggests that suicidal thoughts are an operational form of suicidal tendencies and also the suicidal ideation for the suicide is not sufficient, but self-harm should be created, as well [14]. Briefly, the basic assumptions of interpersonal suicide theory, suicidal tendencies, and the ability to commit suicide are among the key factors.

Suicide tends to grow as a result of experiencing the loss of belongings, a sense of overreaching in society, and frustration. The loss of belongings is defined as the individual's awareness of whether emotional assets, identities, connections, and even feelings of linkage to these assets have been lost or not. Likewise, the feeling overcrowded in the society is a perception that perceives

one's burdens on the family, friends and society as a whole, and such a feeling is enhanced when one loses his life [15].

The results of Murario's cross-sectional study [16] shows that, after controlling the age, gender, and signs of severe depression, lack of adherence and feeling of heavy burden, there is a significant positive relationship between heavy burden and suicide thoughts [16].

As mentioned above, firefighters as a group with high-risk work conditions need more attention. The nature of the firefighting department is such that the firefighters encounter a variety of unexpected events and accidents, severe injuries in people, personal dangers and emotional pressures over time, isolation and emptiness because of their labor difficulties. All of these contribute to the creation of negative mental thoughts caused by the negative events that have occurred in operational missions. The relationship between these variables is such that factors including negative environmental experiences, grief, health problems and injuries can lead to various types of disorders such as depression, anxiety, types of fears, suicidal thoughts and PTSD. When these factors gather together in different sensitive work conditions such as in the firefighting workplace, which regularly deal with traumatic accidents, they will partly lead to the formation of unselfish feelings and heavy burdens.

Also, research conducted in recent years, including among a group of native American/Alaskan firefighters in 2019, showed that painful and provocative incidents are a very important mediator in suicide attempts in such businesses, and more exposure to painful accidents among firefighters is an important factor in the high suicide rate among this population [17]. Physical hazards such as chemicals, explosions, collapsing buildings, radiological contamination have been studied in this career. These traumatic events and other psychological factors such as death, injuries, and the potential for continued injury or death of the person and colleagues as well as victims of other accidents increase their job losses [18].

Therefore, regarding the necessity of the presence of firefighters in every society as one of the occupations that is concerned with saving the lives of members of the community and the importance of their mental health during their occupation, it is necessary that the factors involved in increasing the rate of suicide, burden and lack of belongingness in this stratum to be examined more closely.

Given that the rate of suicide of firefighters is increasing globally and is similar to that of research outside of Iran in 2016, as well as the fact that there has been no research in this field in Iran, the factors contributing to the creation of suicidal thoughts and committing it among firefighters was investigated using an interpersonal theory of suicide in the present study.

Since two variables of irrelevance and heavy burden can predict suicidal behavior, the following assumptions are to be examined in the present study:

- There is a positive correlation between attachment and suicidal thoughts.
- There is a positive correlation between the burden, attachment, age and work experience.
- There is a positive and significant correlation between the heavy burden, non-adherence and age.
- There is a negative correlation between suicidal thoughts and education.

**Method**

The present research was a fundamental and descriptive correlational work in terms of purpose and data collection, respectively. The statistical population of the present study included all firefighters in Tehran being employed in 2017. In this study, using a random sampling, 150 firefighters were selected from three different fire stations in Tehran during three shifts (morning, noon, and night). The subjects were between the ages 23 and 56 years old (M = 34.03, SD = 6.446), and all of them were male. On average, according to their age, they had a work experience of 10.36 years. By obtaining permission from the General Office of the Firefighting Department, each of the three station shifts was visited separately and on different days, and were asked by three questionnaires (Interpersonal Needs Questionnaire, Deadly Suicidal Abstinence Scale, and a general demographic questionnaire). Data was analyzed using SPSS software Ver. 24.

The tools used in this study were as follows:

**Demographic Questionnaire**

This questionnaire included the age, marital status, educational level and work experience in the firefighting department.

**Interpersonal Need Questionnaire**

The questionnaire was created in 2009 by Joeinner et al. to assess the causality of behavior and suicidal ideation in people. It has 15 questions including: level of feeling of belongingness to others (attachment) (9 questions) and feeling of burden (6 questions). Subjects have the closest likelihood of their choice on a 7-point Likert scale including: 1 = I am not right at all to 7=I am very good, for each question. The reliability of this questionnaire was confirmed in 2014 by Van Orton et al., and its validity and reliability in the Iranian society have been studied in present study ( $\alpha = 0.856$ ), which is acceptable [19].

**Deadly Suicidal Abstinence Scale**

The questionnaire, which includes 7 questions, was developed by Ribbro al., in 2014, and measures the extent of one’s courage and insensitivity to death and acts of self-affirmation. Responses to the Likert scale are variable

from 0 (not at all to me) to 4 (quite similar to me), and the higher the total scores, the more reflective of death. The convergent validity of this questionnaire has been confirmed by Ribbour et al. [20]. In 2014, its reliability and validity in Iranian society was studied in this study and confirmed ( $\alpha = 0.647$ ).

**Symptoms of Depression Questionnaire**

This questionnaire consists of four questions about suicidal thoughts. This scale was developed in May 1997 by Metalsky and Joenier. Responses are graded from 0 to 3 (0 = I do not have suicidal thoughts, 1= I sometimes have thoughts of suicide, 2= I often have thoughts of suicide, 3= I always have suicidal thoughts), indicating the level of suicidal thoughts. In the present study, individuals’ thoughts about suicide at the beginning of being employed by the Firefighting Department was considered as the starting point [21]. The psychometric properties of this questionnaire were confirmed by Joenir et al. in 2002. Also, its validity and reliability were confirmed in this study ( $\alpha = 0.957$ ).

**Results**

Table 1 presents mean, standard deviation and correlation between research variables.

As it can be seen in table 1, there is a positive and significant correlation between addiction and suicidal thoughts, heavy burden and suicidal ideation, and heavy burden, attachment, and age and work experience at a level of 0.01. Also, education and suicidal thoughts have a negative and significant correlation.

Linear hierarchical regression test was used to investigate the independent and interactive effects of heavy burden, attachment and suicidal thoughts. In the first step, the work history and education were taken into consideration: 4.4% of the variance in the total score of DSI-SS (suicidal ideation). In the second step, heavy burden and addiction were considered regarding suicide thoughts, and 32.3% of the model explained the total variance of the DSI-SS score. In step 3, the interaction between addiction and heavy burden was introduced, no increase in total variance was observed. In general, the model performance was significant ( $p < 0.001$  and  $15.158 = \{45 \text{ and } 5\} F$ ). The results on the main effect of reckless death were not significant ( $P = 0.208$  and  $1.266 = \{145 \text{ and } 5\} t$ ). The results were significant regarding attachment ( $p = 0.001$  and  $6.095 = \{145 \text{ and } 5\} t$ ) and heavy burden ( $p = 0.034$  and  $2.142 = \{145 \text{ and } 5\} t$ ). The summary of the information is given in Table 2.

**Table 1. Mean, Standard Deviation and Correlation between Research Variables**

VARIABLES	1	2	3	4	5	6	7	M	S.D
Background	0							1.36	6.35
Suicidal Thoughts	-0.114	-						0.66	1.839
Brave	0.055	-0.06						10.6	5.422
Attachment	-0.071	0.554	0.045					9.23	5.925
Heavy Burden	-0.016	0.38	-0.1	1.437				27.41	12.314
Education	-0.05	-0.176	-0.099	-0.098	0.06	0.052	0	2.32	0.9
Age	0.931	-0.117	0.039	-0.061	-0.071			34.03	6.446

$P < 0.05^*$ ,  $P < 0.01^{**}$

**Table 2.** A summary of hierarchical linear regression results in predicting occupational suicide thoughts.

variable	b	B	S.E	t	R	R2
First Step						
Education	-0.371	0.178	-0.177	-2.038	0.210	0.044
Background	-0.034	0.025	-0.115	-1.359		
Second Step						
Background	-0.024	0.21	-0.79	-1.0132	0.360	0.600
Attachment	0.146	0.024	0.465	5.985		
Heavy Burden	0.28	0.12	0.179	2.316		
Third Step						
Attachment	0.149	0.020	0.475	6.095	0.68	0.606
Heavy Burden	0.026	0.12	0.166	2.142		

## Discussion

One of the important issues in the firefighting department is their psychological problems. Difficulties in the work of the firefighting bring about a variety of psychological injuries such as depression, anxiety and sometimes suicidal thoughts. According to suicidal ideation, suicidal thoughts can predict suicidal behaviors, but these tendencies alone are not enough, and variables such as selflessness toward suicide and depression can play an escalating role in suicidal behaviors. According to the results of this study there is a positive and significant correlation between attachment and suicidal ideation at the level of 0.01, these results are consistent with the research by Chu et al. [12]. The higher the lack of attachment in the person, the higher likelihood of suicidal thoughts [12]. The lack of attachment refers to the fact that a person has been socially isolated; this isolation may be developed as a result of the loss of close relatives, divorce or individual loneliness [22].

The second hypothesis was also confirmed at the level of 0.01. In other words, there is a correlation between heavy burden and suicidal thoughts. This result is in line with the results of Chu et al. [12], which means that a person who feels heavy burden in the society, will gradually become socially isolated, and the likelihood of thoughts of suicide incidence is higher for such a person. This feeling is shaped by numerous negative experiences among firefighters that can lead to persistent obsessions, and one sees himself as a burden to the society and considers the family as a result of successive criticism.

The third hypothesis in this research was confirmed at the level of 0.01. In other words, there is a positive and significant correlation between the heavy burden, non-adherence and age. The results of investigating this hypothesis are in line with the results of Chu et al. [12, 14], i.e., if one feels to be burdensome on society, has no attachment and has a higher age, there will be a higher chance of suicidal thoughts. The combination of these three variables also has a great impact on suicidal ideation, the higher work experience for the firefighters, the lower likelihood of suicidal thoughts. The fourth hypothesis of the research was confirmed at a level of 0.01, meaning there is a negative correlation between suicidal ideation and education. This result is in line with the results of Elgin [23], who believes that certain educational factors, such as academic failure, learning disabilities, and lower general education levels, can increase the risk of suicide among individuals. Also, he

argues that the suicidal rates are lower among the educated people. This can be due to lower self-esteem among the people who have experienced disability and failure in academic achievements [23].

In general, this study showed that interpersonal needs and interactions in firefighters are predictors of suicidal thoughts, and also suggested that lower levels of education can play a role in predicting suicidal thoughts. Stanley et al. [5] have reported that the prevalence of suicidal ideation, plans, and suicide attempts among American firefighters is 15.5% to 46.8%. All this suggest that the outcome of the current study was as meaningful as expected, namely, in terms of external outcomes, interpersonal needs have been shown to be a prelude to suicidal thoughts among firefighters. The two sub-scales of interpersonal needs, namely attachment and feeling of heavy burden in society, generally play a very important role in predicting suicidal ideation, the less one's sense of belongingness and heavy burden to society, the less suicidal thoughts. On the other hand, education plays a decisive role in creating suicidal thoughts, namely, the lower the level of education, the higher suicidal ideation. According to research carried out in various countries, as well as the present study, it is concluded that the job of firefighting and the hard work of this profession cause interpersonal harm and, consequently, may lead to suicidal thoughts. Hence, there should be plans to reduce this feeling of heavy burden and increase accountability. To this end, such measures as psychological counseling on a weekly basis, mental refinement and interpersonal skills training, are recommended to significantly reduce the effects of injuries and hardship among firefighters.

A study was conducted for examining the interpersonal theory of suicide in a large group of American firefighters (863) who completed self-report questionnaires on the heavy burdens and belonging, occupational suicidal ideation, and suicide attempt. Trilateral interaction was reported in this study between heavy burdens, belonging and suicidal ideation to be significantly associated with suicide attempts [12]. Another study conducted on interpersonal suicide theory among a sample of 3428 military personnel showed an interaction among these factors: interpersonal theory, the current suicidal ideation, depression control, anxiety and insomnia. This study aimed to examine interpersonal theory propositions in a sample of the US army recruiters [24].

These studies have pointed out to the importance of working on firefighters. Also, these mentioned studies

included the theory among all firefighters and the militaries. This is while, the present study was conducted in the city of Tehran, especially at high-risk stations and our sample was composed of firefighters who were more at risk.

It is suggested to undertake further investigations regarding the impact of other variables such as self-sufficiency and conflicts between the role of the occupation and the family on the extent of suicidal ideation among the firefighters. The limitations of this research are the low level of familiarity of firefighters with the objective and process of this study and their incomplete cooperation, the prevailing atmosphere among the employees such that they relate everything to financial issues. This issue increased their resistance to filling in the questionnaire, because they evaluated their problems only financially.

Also, since there were not many similar studies in Iran, the aspects of interpersonal theory of suicide could not be compared to similar national studies.

### Conflict of interest

The authors declared no conflicts of interest.

### Ethical Approval

All ethical principles were considered in this article. The participants were informed about the purpose of the research and its implementation stages. They were also assured about the confidentiality of their information. Moreover, they were allowed to leave the study whenever they wish, and if desired, the results of the research would be available to them.

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