



An Elucidation on the Challenges of Pre-hospital Emergency Technicians: A Study on Emergency Medical Technicians in Shiraz, Iran

Ahmad Dadmehrnia¹, Seyed Ali Akbar Faghihi¹, Hamid Reza Koohestani², Ghadir Pourbairamian³ and Mohammad Hasan Keshavarzi^{1,*}

¹Clinical Education Research Center, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

²Social Determinants of Health Research Center, Saveh University of Medical Sciences, Saveh, Iran

³Education Development Center (EDC), Ardabil University of Medical Sciences, Ardabil, Iran

*Corresponding author: Assistant Professor of Medical Education, Ph.D, Clinical Education Research Center, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran. Email: keshavarzi20014@gmail.com

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Abstract

Background: The identification of the strengths and weaknesses of pre-hospital emergency technicians, as the first providers of treatment services to critically ill patients, is of utmost importance.

Objectives: This study was conducted to explain the challenges faced by emergency medical technicians in Shiraz, Iran, within 2021 - 2022.

Methods: The present study was a qualitative study that was conducted using the traditional qualitative content analysis (Graneheim and Lundman, 2004). Sampling in this study was purposeful. A semi-structured interview was conducted with 17 emergency technicians in Shiraz. Lincoln and Guba's standards were used to validate the data.

Results: This study identified 3 categories and 12 subcategories. These three categories include management challenges, professional problems, and cultural barriers. Subcategories were "insufficient emergency medical services (EMS) stations", "lack of human resources", "role ambiguity", "lack of organizational support", "lack of job prestige", "high job stress", "crowded missions", "lack of psychotherapy and counseling", "high-risk profession", "public's false perception of EMS job", "abuse of emergency call center services", and "disrespectful behavior".

Conclusions: Considering that the provision of EMS is an inherently stressful and highly anxious job, some measures can be taken to reduce the mental effects of such pressure on the technicians. In addition, they should run public awareness campaigns to improve the cultural level of society to better understand the duties and activities of EMS workers at the community level.

Keywords: Pre-hospital Emergency, Challenges, Occupation, EMS, EMT

1. Background

Following the Tehran Airport Roof Collapses in 1354, in the scene of which numerous individuals were buried in the rubble, the Ministry of Health launched a system that could meet individuals' need for emergency medical services (EMS). As a result, the Tehran EMS was designed and launched, and afterward, several other emergency centers were gradually launched in other capital cities. In response to the consequences of the war and the increase in the urban population, EMS, using its equipment and facilities, began to provide free EMS and took steps to expand the provision of these services throughout the

country (1).

Traumatic road injuries in developing countries, including Iran, are a major leading cause of death. According to official briefs, traffic accidents in Iran are considered the second cause of death (2), and 57% of victims die before reaching the hospital (3). Sufferers of road accidents constitute 31.9% of patients who need EMS (4). The financial burden of road accidents is very staggering and high. Appropriate transfer of injured and other patients is a pre-hospital emergency task (5) that can significantly reduce treatment costs. Pre-hospital EMS is a set of essential services and skills that are provided before transferring the patient to the hospital in emergencies,

such as accidents, critically ill patients, and natural or human disasters (1).

The main goal of pre-hospital emergency services is to provide medical services to injured individuals who are in urgent need of life-saving services; however, the correct and quick transfer of the injured to medical centers by trained personnel is also considered one of their important duties. The scope of EMS duties has differences across various countries. However, what is common among all EMS is that these forces should be fully prepared to attend the assigned missions and perform primary care for the injured (4).

Pre-hospital care plays a vital role in saving the lives of trauma patients (6). Several factors, such as accurate information system, spatial accessibility, ambulance equipment, skilled staff, the average time to reach the patient, dispatch and communication network, appropriate transfer of injured patients, and type of care, are important in the efficiency of pre-hospital care (7-9). Several global studies have considered various qualitative and quantitative indicators while evaluating pre-hospital medical services (10-12). The results of a study on emergency patients have shown that delay in primary care, lack of adequate care in patient transfer, and inappropriate communication are among their dissatisfactions (13).

On the one hand, occupational stress is a chronic problem that occurs due to hard working conditions and affects individual performance and the physical and mental health of a person (14). In the initial stages, work stress can put the body in an emergency state and enhance the work efficiency of the person. At this time, a person always insists to him/herself that "I have to do my work better"; however, if these conditions are ignored and not properly addressed, the body will remain in an emergency state, and as a result, the work efficiency will be automatically reduced, and the health of the person is endangered (14-16). The symptoms of occupational stress are diverse in different individuals and depend on countless factors, such as different work situations and conditions, the duration of exposure to stress, and the amount of stress inflicted on the person (17).

Stress factors are divided into several major categories as follows:

Stress factors in the work environment: Physical factors (e.g., lighting, thermal comfort, working space, noise, and vibration), occupational factors (e.g., workload, role ambiguity, job problems, positional changes, economic pressure, time-saving pressure, and too little or too much responsibility), managerial factors (e.g., lack of organizational support and structural weakness), factors related to relationships with colleagues (e.g.,

lack of solidarity and weak group support), and factors related to individual expectations (e.g., primary hopes and expectations and retirement concerns)

Factors beyond the work environment (e.g., family life, marital conflicts, parenting, financial issues, and friends and social relations) (18, 19).

However, the unavailability of medical services and healthcare facilities, lack of a suitable place to rest, inappropriate work evaluation, and a lower ratio of missions to staff and EMS centers are among the most important factors of job stress in emergency technicians, which reduce their efficiency (20). Among individual stressors, the incompatibility of work schedules with personal life conditions has had the greatest effect, with 86% incremental effect. Contrary to hospital research, in pre-hospital emergency technicians, stress is more intensified due to managerial factors and the work environment (19). On the same ground, suitable planning is necessary to identify the challenges faced by the pre-hospital emergency system as the first provider of services to patients.

2. Objectives

This study was conducted to explain the challenges faced by the emergency medical technicians (EMTs) working in Shiraz, Iran.

3. Methods

This study was conducted using the qualitative content analysis method. Qualitative content analysis includes a process of condensing categories or themes from raw data based on valid inference and interpretation (21). The approach used in this study is conventional content analysis. In this approach, the classification of codes is directly derived from the data text, and the knowledge generated from content analysis in this method is based on the unique perspective of the participants and the real data of the text (22).

3.1. Sampling

The population of this study was made up of 17 emergency workers in Shiraz within 2021 - 2022 (see Table 1). Sampling in this study was purposeful and with maximum diversity. The participants in the study were diverse in terms of academic fields, work experience, expertise, and professional duties. The inclusion criteria were experienced employees. The exclusion criteria were unwillingness to participate in the research.

Table 1. Demographic Characteristics of Participants

Participant Number	Gender	Field of Study	Marital Status	EMT Work Experiences
1	Male	Nursing	Married	5
2	Male	Medical emergency	Married	8
3	Male	Medical emergency	Married	6
4	Male	Medical emergency	Married	6
5	Male	Medical emergency	Married	5
6	Male	Nursing	Married	15
7	Male	Medical emergency	Single	7
8	Male	Medical emergency	Married	8
9	Male	Medical emergency	Married	7
10	Male	Nursing	Married	9
11	Male	Medical emergency	Married	6
12	Male	Medical emergency	Married	5
13	Male	Medical emergency	Single	8
14	Male	Operating room technician	Single	11
15	Male	Nursing	Married	11
16	Male	Nursing	Married	9
17	Male	Medical emergency	Married	6

Abbreviation: EMT, emergency medical technician.

3.2. Data Collection

Individual interviews are an ideal method to collect highly personalized information from the participants (23). The interview is one of the qualitative data collection tools, which makes it possible to establish direct communication and to evaluate the perceptions, attitudes, interests, and opinions of the interviewee more deeply. A semi-structured interview was used in this study. Semi-structured interviews are one of the most common interview techniques (24, 25). The interviews were conducted based on the interview guide. The time, place, and manner of conducting the interview were determined according to the participant's opinion. The interviews continued until data saturation was reached. The average duration of the interview was 45 minutes. In the interview, the problems experienced by emergency technicians while working in this profession were asked.

3.3. Data Validation

To validate the findings, four criteria of Lincoln and Guba were used (26) as follows:

(1) **Credibility:** To be believable, the researcher did his/her best to collect the required data by establishing proper communication, allocating sufficient and appropriate time, and gaining the trust of the participants in the research. The codes and classes extracted by the

participants in the research were reviewed through the member check technique.

(2) **Transferability:** The researcher made it possible to follow the research path and characteristics of the studied population with detailed and targeted explanations of the research process.

(3) **Reliability:** By reviewing the extracted themes and codes by expert and experienced professors in the field of content analysis (peer check), the researcher attempted to ensure that his/her understanding of the participants' statements was correct.

(4) **Verifiability:** The researcher provided parts of the interview text to the qualitative research experts and the supervising professors to check the work steps and the method of data collection and analysis and to apply their constructive opinions at different stages.

3.4. Data Analysis

Granheim and Lundman's method was used for data analysis (27). The content analysis of the interviews was performed after the completion of each interview. The interview transcript was precisely listened to. The semantic units were determined in the text. These units were combined based on similarity, and codes were extracted. Similar codes were classified into subcategories, and then the main categories were created.

3.5. Ethical Considerations

To comply with the ethical considerations, permission to conduct the research was obtained from the Ethics Committee of the Shiraz University of Medical Sciences (IR.Sums.REC.1399.1323). In addition, while providing information to the participants about the objectives of the research and obtaining permission to record audio, written informed consent was obtained.

4. Results

From the 17 interviews conducted, 3 categories and 12 subcategories were obtained (see Table 2). The challenges of emergency technicians were extracted into three categories: management challenges, professional problems, and cultural barriers.

4.1. Management Challenges

Undoubtedly, all organizations face management challenges over time. These challenges can hinder the activities of their employees. In this category, four subcategories were “insufficient EMS stations”, “lack of human resources”, “role ambiguity”, and “lack of organizational support”.

4.1.1. Insufficient EMS Stations

The lack of EMS stations, which administer EMS across a larger area for emergency measures, is deemed a challenge. One of the participants said:

“We are facing a lack of bases in different parts of the city. The lack of roadside emergency response stations has slowed down the process of providing emergency care. Due to the shortage of EMS stations in the city, we do not have a proper response to accidents.” (P 3)

4.1.2. Lack of Human Resources

The lack of human resources, especially specialized ones, is a problem that exerts extra pressure on other workers to compensate for the shortages. One of the participants stated:

“To cover the 24-hour shifts in the emergency medical bases, 9 employees are needed, while our station has only 6 staff in the best conditions. Many stations have rotations with only 4-5 individuals, and this causes double pressure on them.” (P 11)

4.1.3. Role Ambiguity

The lack of a clear description of duties accepted by related institutions causes disruptions in the process of providing services to patients. One of the participants said:

“When the patient is brought to the hospital with all kinds of problems, we have to beg the hospital staff to admit the patient. Even there, the hospital staff does not fulfill their duties because there is no correct job description.” (P 5)

4.1.4. Lack of Organizational Support

It refers to the lack of sufficient support and organizational advocacy for its specialized human resources. One of the participants stated:

“If we are beaten by a patient or a family member during our mission, we have to take personal action to complain, and the system does not follow any prosecution on violence against staff and does not support us.” (P 8)

4.2. Professional Problems

It refers to the problems related to the professional nature of the EMT job. Some professions inherently face steeper challenges. The neglect of these challenges, in the long run, can cause problems in the work cycle. This category includes 5 subcategories of “lack of job prestige”, “high job stress”, “crowded missions”, “lack of psychotherapy and counseling”, and “high-risk profession”.

4.2.1. Lack of Job Prestige

Emergency paramedics do not have a proper job position and are not treated with dignity in society, and individuals usually do not have a correct understanding of their job. One of the participants said:

“When individuals see us driving an ambulance or pushing a stretcher, they think we are the service force, or most individuals say you are an ambulance driver. Some of them think we are their servants, and even they are not ready to take the corner of the stretcher to transfer their patients.” (P 16)

4.2.2. High Job Stress

It refers to a load of pressure caused by work and activity. One of the participants stated:

“Given the urgency of the missions and the sick patients and the traumas we face, this job is full of stress and anxiety. You must always be quick because the fear of the patient’s death is always accompanying you.” (P 2)

Table 2. Codes Under the Categories and Subcategories of Problems Faced by Emergency Medical Services (EMS) Technicians

Category and Subcategory	Codes
Management challenges	
Insufficient EMS stations	Limited EMS stations, lack of resting facilities
Lack of human resources	Unused vacation leave, mission overload
Role ambiguity	Uneven distribution of work by the organization, task interfering
Lack of organizational support	Lack of legal and judicial support, uncertain employment status
Professional problems	
Lack of job prestige	Lack of appropriate position in the medical team, performing unrelated duties
High job stress	A feeling of fear, inability to concentrate, restlessness, fatigue for no reason
Crowded missions	High emergency dispatch, high workload
Lack of psychotherapy and counseling	Lack of family counseling, lack of psychological therapies
High-risk profession	Ambulance accidents, road traffic, heartbreaking scenes
Cultural barriers	
Public's false perception of EMS job	Illogical demands, lack of familiarity with emergency operation
Abuse of emergency call center services	Unreasonable calls, spoofed call
Disrespectful behavior	Conflict with the emergency staff, insults, profanity

Abbreviation: EMS, emergency medical services.

4.2.3. Crowded Missions

The number of missions that the emergency technician is required to attend during a circadian cycle is very critical. One of the participants stated:

“Since we are living in a big city like Shiraz, where many accidents and traumas happen, this makes us always involved in multiple missions throughout the night.” (P10)

4.2.4. Lack of Psychotherapy and Counseling

It is necessary to provide consultancy services to emergency technicians to deal with fatigue, stress, and depression caused by the nature of their job. One of the participants pinpointed:

“In other systems, psychological counseling and mental health are part of periodic tests. In the emergency department, mental and emotional health should be one of the main characteristics of technicians and should be constantly addressed, but this occurs nowhere in the country. I do not think they have taken a step in this regard; this is while the EMTs need psychological support, and it should be on the top agenda of the EMS system.” (P 13)

4.2.5. High-Risk Profession

It refers to the risks that a professional can bring to its personnel. One of the participants stated:

“In a mission, I am alone as a technician, and I am faced with situations, such as dealing with a critical patient,

angry companions, insufficient facilities in a situation that you are taking the patient to the nearest hospital with problems, such as driving, the possibility of an accident, and the hard procedure of patient's admission in the hospital.” (P 17)

4.3. Cultural Barriers

The category of cultural problems is rooted in attitude issues and individuals' beliefs about EMS. The challenges that arise from individuals' lack of correct knowledge and their false beliefs about this profession, as a result, sometimes lead to problems in this field. In this category, three subcategories are classified as “public's false perception of EMS job”, “abuse of emergency call center services”, and “disrespectful behaviors”.

4.3.1. Public's False Perception of EMS Job

Individuals do not have proper knowledge of the EMS work and the inherent value of the EMS profession. One of the participants asserted:

“Cultural problems and lack of familiarity with EMS is not a new thing. Individuals are not familiar with the description and duties of this profession and sometimes have unreasonable demands from technicians.” (P 15)

4.3.2. Abuse of Emergency Call Center Services

Unnecessary and busy calls to the emergency center are one of the problems of this profession. One of the participants indicated:

“Sometimes it happened to me that to save someone, the team reached the place with the maximum speed from the high-traffic and accident-prone streets to save a life, but there was no patient.” (P 9)

4.3.3. *Disrespectful Behavior*

One of the participants stated in this context:

“Unfortunately, in some cases, I witnessed inappropriate behavior from individuals around the patient. The reality is that every emergency technician has been beaten at least once during their career. We respect the patient’s family’s grieving and anger, but some individuals are very irrational and expectant and treat us with violence.” (P 4)

5. Discussion

According to the results of this study, one of the problems faced by EMS technicians is management challenges. In line with this study, Bayrami et al. have pointed to organizational challenges that include the lack of human resources and management challenges (28). In addition, in line with the present research’s findings, Mohammadi et al. showed that one of the most important challenges from the point of view of pre-hospital emergency technicians is equipment and supplies. A large number of technicians expressed their displeasure with the rescue vehicles in terms of thermal comfort, low-quality first aid supplies and consumables, worn equipment, and lack of cutting and releasing equipment (29). Additionally, the results of a study by Hosseini et al. showed that the equipment and facilities available in the ambulances are associated with the quality of medical services and patient satisfaction and are considered important challenges for employees (30).

On the same ground, the results of a study conducted in 2017 in Rasht, Iran, demonstrated that to increase patient satisfaction with EMS, in addition to conducting continuous training courses to enhance the skills and abilities of EMTs, there is a need to equip the ambulances with modern medical devices. In addition, to show a professional image to the public, the EMS providers’ uniforms should be neat, clean, and tidy at all times (31). The result of Waitikas’ study showed that the unserviceable broken ambulance fleet in the pre-hospital emergency is one of the most important difficulties of the emergency service system, which is not completely consistent with the findings of the present study (32).

Career-related problems are among other challenges that emergency workers face, according to the findings of this study. In this regard, the results of Cheraghi et al.’s study showed that ethical and professional challenges are

some of the most important issues that human resources working in emergency jobs confront every day, and dealing with how to manage them poses numerous challenges for them (33).

Furthermore, the results of a study by Motie et al. showed that contrary to hospital research, in pre-hospital emergency technicians, stress is intensified due to management factors and the work environment. The low number of ambulances in the urban areas of Mashhad, Iran, the type of base structure in the form of warehouses, and the lack of some facilities inside the base are the most common external factors causing tension (20). In this regard, Mackenzie defines different roles to justify the stressful job conditions of pre-hospital emergency workers according to the conditions encountered in the missions. Mackenzie claims that it is very important to use some factors, such as employees’ knowledge, technical skills, and behavioral skills, which technicians should use in their missions depending on the conditions. In addition, while providing on-scene care, several roles might appear unintentionally, and depending on the experience and awareness of the employees, the need to use them arises (34).

In the same vein, in a qualitative study by Porter et al., with the multiplicity of duties of emergency personnel, they introduced non-technical roles for emergency workers and considered them complementary to clinical roles. In a mission where the patient needs cardiopulmonary resuscitation, in addition to obtaining technical knowledge, it is important to control the patient’s companions and how to communicate a rescue outcome with compassion. Emergency workers, under their constitutional duty, might not be expected to do all these things; however, the situations require these measures (35).

Khorasani Zavareh and Mohammadi introduced various factors influencing the creation of different roles for emergency workers. The experience of employees, heavy workload, limited workforce, and lack of ambulances and pre-hospital emergency centers create uncommon and off-duty activities for employees. In addition, the lack of enough time for employees to rest at work, a large number of calls, a multiplicity of activities, lack of employees in each shift, especially in rural and remote road areas, and worn-out equipment and facilities cause employees to take roles as utility operators, cooks, and repair men that indirectly affect their primary role as emergency workers (36).

Additionally, according to Gibbons et al., numerous conditions (e.g., dispatch time, timely arrival at the scene, medical and emergency measures, road traffic, and bringing the injured safely to the treatment center) are not

in the control of emergency technicians while performing missions. This is while the non-fulfillment of any of the above-mentioned terms is considered a duty violation of the emergency technician in the opinion of the patient who needs emergency aid (37).

Another category that was obtained from this study is the cultural problems that EMS technicians face, which creates many problems both for the missions and the employees themselves. In line with this category elucidated from the current study, a study by Seyyednozadi et al. showed that non-emergency calls and missions are a leading cause of delay in missing the “golden time” in trauma emergencies and critically ill patients (38).

Moreover, Saberi Nia et al. demonstrated that cultural problems and low awareness of the individuals are among the factors of emergency workers’ dissatisfaction with their jobs (39). In addition, Farrokhi et al., Bahadori, and Mushtaq Eshgh et al. as cited in Farrokhi et al. have parallel findings with those of the present study (40-43). In addition, individuals’ satisfaction with pre-hospital emergency services is also related to the type of illness of individuals who need emergency services. Callanchan et al. showed in a study that less than half (only 35%) of the patients with myocardial infarction who used pre-hospital emergency services in Dubai were fully satisfied (44). In addition, in a cross-sectional study by Jadidi et al., it was shown that patients’ satisfaction or dissatisfaction with the quality of pre-hospital emergency services significantly affects their satisfaction with the overall services they receive from the healthcare system (45).

The limitations of the present study were the restricted time of the EMTs due to their job assignments and busy schedules. Therefore, the researchers tried to overcome this limitation by determining the time and place of the interview according to the opinion of the emergency technicians.

5.1. Conclusions

According to the present study’s findings about challenges in the field of management, professional, and cultural problems of the pre-hospital emergency staff, it seems that due to the high anxiety and tension-provoking nature of this profession, some measures can be taken to reduce the psychological effects, solve the organizational problems, and respond to their needs and deficiencies. In addition, public awareness activities are needed to improve the general understanding of the duties and responsibilities of EMTs to improve the cultural level of society at the community level.

Footnotes

Authors’ Contribution: A. D. and M. H. K. conceived and designed the study. S. A. F., G. H. P., and H. R. K. helped draft the manuscript. G. H. P., H. R. K., and S. A. F. collected the data and interpreted them. All the authors had full access to all the data in this study and took responsibility for the integrity of the data and the accuracy of the data analysis. All the authors contributed to reviewing and editing the manuscript.

Conflict of Interests: The corresponding author is the reviewer of this journal. Other authors declared no potential conflict of interest.

Data Reproducibility: The dataset presented in the study is available on request from the corresponding author during submission or after publication.

Ethical Approval: The study was approved by the Ethics Committee of Shiraz University of Medical Sciences (IR.SUMS.REC.1399.1323).

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