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Experiences and Occupational Challenges of Prehospital Emergency Technicians: A qualitative study

Behzad Moradi [1*], Sajad Yarahmadi [2], Fatemeh Ansari [1], Reza Ansari [3]

[1] Social Determinants of Health Research Center, School of Allied Medical Sciences, Lorestan University of Medical Sciences, Khorramabad, Iran
[2] Social Determinants of Health Research Center, School of Nursing and Midwifery, Lorestan University of Medical Sciences, Khorramabad, Iran
[3] Social Determinants of Health Research Center, School of Medicine, Lorestan University of Medical Sciences, Khorramabad, Iran

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ABSTRACT

The prehospital emergency medical system is a vital component of the healthcare system that plays a crucial role in reducing mortality and complications arising from critical conditions. Emergency medical technicians (EMTs), as frontline healthcare providers, are frequently exposed to stressful situations, psychological pressure, and organizational constraints. A comprehensive understanding of their lived experiences is essential for improving the quality of prehospital emergency service. This study aimed to explore the experiences and occupational challenges of prehospital emergency technicians in Khorramabad, Iran. This qualitative study was conducted in 2025 using a conventional content analysis approach. Nineteen prehospital emergency technicians in Khorramabad, affiliated with Lorestan University of Medical Sciences, were purposively selected for this study. Data were collected through semi-structured interviews and analyzed concurrently until data saturation was achieved. Trustworthiness was ensured by applying Lincoln and Guba's criteria. Data analysis revealed four main categories: psychological and emotional stress, professional and organizational challenges, interpersonal communication, and coping strategies used by the nurses. The findings revealed that technicians experience anxiety and mental fatigue during critical missions, and that a lack of equipment and organizational pressures negatively affect their job satisfaction. Conversely, practical communication skills and individual and team coping strategies are vital for enhancing resilience and improving performance. The professional experiences of prehospital emergency technicians involve complex interactions among psychological, organizational, and social factors. Improving working conditions, providing psychological support, enhancing communication skills training, and strengthening teamwork can promote mental well-being, increase job satisfaction, and improve the quality of emergency medical service.

Keywords: Prehospital emergency technicians; Occupational challenges; Qualitative content analysis

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[*] Corresponding author: Behzad Moradi. Social Determinants of Health Research Center, School of Allied Medical Sciences, Lorestan University of Medical Sciences, Khorramabad, Iran. email: moradi.behzad2018@gmail.com

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Introduction

The prehospital emergency medical system, as one of the fundamental pillars of the healthcare system, plays a vital role in reducing mortality, disabling complications, and adverse outcomes arising from emergency conditions [1]. This sector serves as the "gateway" through which many patients enter the healthcare continuum, and its effective performance can mean the difference between life and death [2].

Prehospital emergency technicians, as frontline operational personnel, are responsible for identifying, assessing, performing primary resuscitation, and safely transferring patients. They work in environments often characterized by unpredictable circumstances, intense time pressure, limited resources, and life-threatening situations [3].

The nature of their work is inherently associated with high levels of occupational stress, psychological strain, and heavy ethical responsibilities [4]. Frequent exposure to traumatic scenes, patient deaths, traffic accidents, and hazardous situations can lead to occupational burnout, anxiety, depression, and decreased job satisfaction [5].

In addition, working night shifts, facing adverse weather conditions, meeting high public expectations, and occasionally receiving insufficient managerial or peer support further pressure these groups. Such conditions not only affect their physical and mental well-being but also directly impact the quality of patient care they provide [6].

In recent years, there has been growing scholarly attention to the condition of prehospital emergency technicians in Iran. However, most existing studies have adopted a quantitative approach, focusing primarily on performance indicators such as response time, cardiopulmonary resuscitation success rates, and the effectiveness of training programs [7].

The human and experiential dimensions of this profession—including perceptions, emotions, meanings, and lived challenges—have received far less in-depth exploration than the other dimensions. Understanding these dimensions requires qualitative research, which enables the discovery of hidden layers of experience and the interpretation of the meanings embedded in human behaviors and emotions.

Within Iran's healthcare system, prehospital emergency technicians face specific challenges, including staff shortages, inadequate equipment, fatigue from consecutive shifts, insufficient organizational psychological support, inappropriate interactions with patients or their families, and poor coordination between emergency units and other healthcare departments [8]. In small and medium-sized cities such as Khorramabad, these challenges may be even more pronounced because of resource limitations and more centralized organizational structures. Moreover, the region's cultural, social, and economic characteristics can influence how technicians experience their work and cope with occupational stressors.

A deep understanding of the professional experiences and challenges faced by prehospital emergency technicians is crucial, not only from an individual and psychological standpoint but also in terms of health policy, service quality improvement, and retention of skilled personnel. Identifying the factors that influence job satisfaction, motivation, and resilience among these professionals can serve as a basis for designing effective organizational interventions and supportive strategies to enhance their performance [9]. Furthermore, analyzing their lived experiences can help health administrators develop policies that better align with real-world conditions.

Given the scarcity of qualitative research in this area, conducting an in-depth study exploring the personal and professional experiences of prehospital emergency technicians can fill a significant gap in local knowledge. Therefore, the present study aimed to explore and interpret the experiences and occupational challenges of prehospital emergency technicians in Khorramabad using a qualitative, field-based approach. The findings are expected to provide a comprehensive understanding of their challenges, needs, coping strategies, and psychological and professional outcomes, ultimately contributing to improving working conditions, promoting mental health, and enhancing the effectiveness of the prehospital emergency system at the national level.

Materials and Methods

Study design and Field

This qualitative study was conducted in 2025 using a conventional qualitative content analysis approach in prehospital emergency medical centers affiliated with the Lorestan University of Medical Sciences in Khorramabad, Iran. This study aimed to explore and gain an in-depth understanding of the experiences and occupational challenges of prehospital emergency medical technicians (EMTs) working in Khorramabad.

The selected approach enabled the researcher to extract the latent meanings embedded in the data without applying predefined theoretical assumptions through direct interaction with the participants. This

systematic analysis facilitated the identification of experiential and conceptual patterns, yielding rich insights into the human and professional dimensions of EMTs' work.

Participants and sampling procedure

The study population comprised all EMTs employed at urban and road emergency bases (EMS 115) in Khorramabad. Participants were selected using purposive sampling, meaning that individuals with sufficient experience in prehospital emergency care who could articulate their experiences clearly and comprehensively were recruited.

The inclusion criteria required that participants have at least 2 years of experience in prehospital emergency services, sufficient exposure to a variety of emergency missions, willingness to participate in the study, and the ability to clearly and effectively express their experiences. The only exclusion criterion was the participant's withdrawal from the study or failure to complete the interview process.

To enhance data richness, the researcher used maximum variation sampling, ensuring diversity in the participants' ages, genders, education levels, years of work experience, workplace settings (urban or rural), and marital statuses. The final number of participants was determined by data saturation, as no new concepts or codes emerged from the additional interviews. A total of 19 EMTs participated in this study.

Data collection

Data were collected through in-depth, semi-structured interviews. Before each interview, the study objectives and procedures were explained to the participants, and written informed consent was obtained. Interviews were conducted in quiet and private locations—usually at EMS stations or other agreed-upon venues—to allow the participants to express their experiences freely.

The interview questions were open-ended and flexible, allowing participants to share their personal and professional experiences in depth. Examples of the guiding questions included: "Can you describe your overall experience working in prehospital emergency services? "What challenges or problems do you usually face during different missions?"

To elicit deeper insights, the interviewer used probing questions such as "Could you explain that further?" or "How did you feel in that situation?" to encourage participants to elaborate on their experiences.

Each interview lasted approximately 30–60 minutes and was audio-recorded with the participants' permission. All recordings were transcribed verbatim immediately after the interviews and reviewed multiple times to achieve a comprehensive understanding of the data.

Data analysis

Data analysis was conducted using conventional qualitative content analysis following the framework proposed by Graneheim and Lundman [10]. Analysis began concurrently with data collection, allowing emerging insights to guide subsequent interviews and deepen the data collection.

Initially, the transcripts were read repeatedly to gain an overall understanding. Meaning units (words, phrases, or sentences related to the study objectives) were identified, condensed, and abstracted into initial codes. These codes were constantly compared for similarities and differences and subsequently grouped into subcategories. Related subcategories were then merged into main categories, representing broader patterns and conceptual themes.

The analytic process was iterative, reflective, and comparative, ensuring conceptual consistency and depth of interpretation of the data. To enhance the credibility and transparency of the findings, direct quotations from the participants were incorporated into the report, illustrating the relationship between the data and the derived categories.

Trustworthiness

To ensure the trustworthiness of the findings, the criteria proposed by Lincoln and Guba, including credibility, dependability, confirmability, and transferability, were applied (11). Credibility was enhanced through prolonged engagement, member checking, and peer debriefing to verify the accuracy of the interpretations. Dependability and confirmability were ensured by maintaining an audit trail and involving multiple researchers in the coding and analysis processes to reduce bias. Transferability was supported by rich descriptions of the study context and participants, enabling readers to assess the applicability of the findings in similar settings.

Results

Data obtained from 19 in-depth interviews with urban and road prehospital emergency medical technicians revealed that several fundamental dimensions shaped their professional experiences. The participants' mean age was 31.5 years, and their average work experience was 8.2 years. The complete demographic characteristics are presented in Table 1.

The findings were categorized into four main themes: psychological and emotional strain, professional and organizational challenges, interpersonal communication, and coping strategies, each containing several subthemes.

The detailed categories and subcategories are presented in Table 2.

Table 1. Demographic Characteristics of Study Participants

p	Gender	Age (years)	Marital Status	Field of Study	Work Experience (years)	Education Level	Work Setting
1	Female	25	Single	Emergency Medical Services	3	Associate Degree	Road
2	Female	28	Married	Nursing	5	Bachelor	Urban
3	Male	31	Married	Emergency Medical Services	8	Bachelor	Road
4	Female	37	Married	Anesthesia	12	Master	Urban
5	Male	29	Single	Nursing	6	Bachelor	Urban
6	Male	33	Married	Emergency Medical Services	9	Bachelor	Road
7	Male	42	Married	Emergency Medical Services	15	Associate Degree	Road
8	Male	23	Single	Emergency Medical Services	2	Associate Degree	Road
9	Male	48	Married	Nursing	20	Bachelor	Urban
10	Female	35	Married	Anesthesia	10	Bachelor	Urban
11	Male	27	Single	Emergency Medical Services	4	Bachelor	Road
12	Male	40	Married	Emergency Medical Services	14	Associate Degree	Road
13	Male	32	Married	Nursing	8	Bachelor	Urban
14	Male	24	Single	Emergency Medical Services	2	Associate Degree	Road
15	Male	45	Married	Anesthesia	18	Bachelor	Urban
16	Female	30	Married	Nursing	7	Bachelor	Urban
17	Male	26	Single	Emergency Medical Services	3	Associate Degree	Road
18	Male	38	Married	Nursing	11	Master	Urban
19	Male	50	Married	Emergency Medical Services	20	Associate Degree	Road

Table 2. Categories and subcategories

Categories	Subcategories
Psychological and Emotional Strain	Fear and Anxiety
	Impacts on Mental Health
	Shortage of Equipment and Resources
Professional and Organizational Challenges	Organizational Pressure and Workload
Interpersonal Communication	Supportive Communication
	Managing Family Members
	Peer Support and Teamwork
Coping Strategies	Skills Practice and Continuous Training
	Personal Stress Management Strategies

1. Psychological and Emotional Strain

This theme reflects the intense psychological and emotional experiences of emergency medical technicians (EMTs) during critical missions. It comprised two subthemes: fear and anxiety during missions, and impacts on mental health.

In the first subtheme, participants described the anxiety and concern they experienced regarding their ability to provide effective assistance in stressful and traumatic situations. For example, Participant 7, a road technician, stated:

"*Every time I arrive at a serious accident scene, my heart starts racing, and I worry that I may not be able to help effectively.*"

In the second subtheme, continuous exposure to traumatic scenes and heavy workloads led to psychological fatigue and, in some cases, professional burnout among the participants. Several participants emphasized their need for short breaks and

psychological support. Participant 12, an urban technician, mentioned:

"*After difficult missions, I feel deeply exhausted and sometimes just need a short break to recover.*"

This theme highlights that psychological and emotional strain is an inseparable aspect of EMTs' work experience and has a direct impact on their mental well-being and the quality of care they provide to patients.

2. Professional and Organizational Challenges

Another major theme was the professional difficulties and organizational constraints that EMTs frequently encounter during their missions. This theme included two subthemes: shortage of equipment and resources, and organizational pressure and workload.

In the first subtheme, participants reported the limited availability of essential equipment and medications, which negatively affected the quality of emergency care. For instance, Participant 5, a road technician, noted the following:

"*Sometimes we arrive at the scene and realize that the necessary equipment to save the patient isn't available; it's really stressful and worrying.*"

The second subtheme, organizational pressure and workload, reflected the effects of long shifts, staff shortages, and lack of managerial support on nurses' job satisfaction and stress levels. Participant 14, an urban technician, explained:

"*Sometimes we have to work for 24 hours straight, and I feel there's no real support from management.*"

This theme indicates that resource limitations and organizational pressures not only influence EMTs' performance but also highlight the urgent need for managerial and structural support and appropriate shift planning.

3. Interpersonal Communication

Interpersonal communication emerged as a central theme, underscoring the crucial role of communication skills in mission success and stress reduction among EMTs. Two subthemes were identified: supportive communication with patients and managing family members in critical situations.

In the first subtheme, participants underscored the importance of establishing calm and reassuring communication with patients, which contributed to mission efficiency and reduced emotional stress. Participant 9, an urban technician, described this as follows:

"*When I can communicate with the patient and calm them down, my job becomes much easier and less stressful.*"

The second subtheme, managing family members in critical situations, captured one of the most challenging aspects of EMTs' experiences. Participant 15, a road technician, commented on the issue:

"*Some families get extremely anxious in critical moments, and controlling the situation becomes difficult, but we have to stay patient.*"

This theme shows that effective interpersonal communication with patients and their families plays a key role in improving care quality, reducing stress, and strengthening emotional resilience among EMTs.

4. Coping Strategies

The findings revealed that EMTs employ various

coping strategies to manage psychological stress and occupational challenges in their work. This theme comprised three subthemes: peer support and teamwork, skills practice and continuous training, and personal stress management strategies.

In the first subtheme, participants emphasized the importance of teamwork and mutual support among colleagues in reducing anxiety and boosting confidence. Participant 7, a road technician, expressed:

"*The more skilled I am and the more my colleagues support me, the less anxious I feel and the better I can make decisions.*"

The second subtheme, skills practice and continuous training, highlighted the value of updating professional knowledge and enhancing competencies to build confidence and resilience.

The third subtheme, personal stress management strategies, included physical exercise, meditation, and communication with family members, all of which contributed to emotional recovery and improved psychological wellbeing. As Participant 12, an urban technician, stated:

"*After tough missions, exercising and talking with my family really help me relax.*"

This theme illustrates that both individual and collective coping mechanisms play an essential role in managing occupational stress, fostering resilience, and improving professional performance among prehospital emergency medical technicians.

Discussion

The findings demonstrated that the work experience of prehospital emergency medical technicians in urban and road settings is influenced by a complex interplay of key dimensions, including psychological and emotional strain, professional and organizational challenges, interpersonal communication, and coping strategies. These results are consistent with those of previous studies and underscore the importance of addressing psychological, professional, and social factors to understand the occupational experiences of this workforce.

One of the most prominent dimensions of emergency technicians' work experience is the psychological and emotional strain resulting from continuous exposure to critical and traumatic situations. The findings indicate that anxiety stemming from the responsibility of providing life-saving services in unpredictable conditions—particularly at traffic accident scenes and during human crises—directly affects the mental health of these professionals. These results align with prior reports indicating a high prevalence of anxiety, acute stress, and occupational burnout among emergency personnel [12].

Continuous exposure to stressful situations and high workloads highlights the necessity for organizations to design psychological support programs, provide specialized counseling, and create opportunities for short-term rest.

Professional and organizational challenges were also significant components of the participants' work experience. Equipment and resource shortages, organizational pressures, extended shifts, and insufficient staffing were identified as factors contributing to job dissatisfaction and reduced occupational motivation among technicians. These findings correspond with previous research on occupational stress and professional fatigue among emergency personnel [13]. Therefore, organizational restructuring, coherent shift planning, and adequate resource provision could play a pivotal role in enhancing performance and promoting mental well-being among this workforce.

Moreover, interpersonal communication in high-stress environments, such as prehospital emergency settings, plays a crucial role in service quality and psychological resilience. The results indicate that establishing supportive communication with patients and effectively managing family members during critical situations not only enhances mission efficiency but also alleviates the psychological strain on technicians. These findings are consistent with prior studies emphasizing the role of social support and communication skills in reducing stress and increasing job satisfaction among emergency staff [14].

Training in communication skills and emotion regulation can serve as effective strategies for improving interaction quality and enhancing the overall work experience.

Finally, the study revealed that technicians employed both individual and team-based coping strategies to manage psychological pressure and challenging work conditions. Collaboration and peer support, continuous skills practice and training, and personal stress management techniques (such as physical exercise and family interactions) were identified as primary coping mechanisms. These results align with research on psychological resilience and coping strategies among emergency personnel [15]. Enhancing coping skills may be a key factor in maintaining mental health and improving occupational performance [16].

Overall, the findings indicate that prehospital emergency medical technicians' work experience results from a complex interaction among psychological, organizational, and social factors.

A thorough understanding of these factors and attention to supportive mechanisms can facilitate mental health promotion, enhance occupational resilience, and improve service quality in the prehospital emergency care system.

Conclusion

The findings of this study indicate that prehospital emergency medical technicians' work experience is influenced by four core dimensions: psychological and emotional strain, professional and organizational challenges, interpersonal communication, and coping strategies. Psychological pressure arising from continuous exposure to critical missions, organizational limitations, and resource shortages places technicians at risk of occupational burnout and may compromise the quality of the emergency services. Simultaneously, effective communication skills and the use of individual- and team-based coping strategies can mitigate psychological stress and enhance occupational resilience.

Based on these findings, it is essential to provide psychological support, improve working conditions, offer continuous training, and strengthen teamwork among prehospital emergency care technicians. Such measures not only promote mental well-being and job

satisfaction but also have the potential to enhance emergency care quality and patient safety.

Authorship contribution statement

BM and SY conceptualized and designed the study. BM and FA conducted validation, analysis, and investigation. RA managed resources, data curation, and visualization. BM drafted the manuscript, while SY, FA, and RA reviewed and edited it. SY supervised and administered the project.

Ethical Consideration

All ethical principles were observed throughout the research process. The study was approved by the Ethics Committee of Lorestan University of Medical Sciences (Ethics code: IR.LUMS.REC.1399.156) (Contract number: 1344).

Declaration of Competing Interest

The authors have no conflict of interests related to this article

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Data Availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Declaration of Generative AI

The authors declare that they have not used any type of generative artificial intelligence for the writing of this manuscript, nor for the creation of tables, or their corresponding captions.

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