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Challenges Affecting Quality Services Delivery from the Perspective of Pre-Hospital Emergency Personnel: A Qualitative Content Analysis

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Abstract

Background & Objectives: The pre-hospital emergency medical service (EMS), serving as the first line of care and treatment for patients and injured individuals, holds paramount importance in the healthcare system. Identifying the challenges and problems facing this system is crucial for its improvement. This study aimed to elucidate the challenges affecting the delivery of quality services from the perspective of pre-hospital EMS personnel in southern Iran.

Materials & Methods: This qualitative descriptive study investigated the views of pre-hospital EMS personnel (N=23) selected through purposive sampling. Data were collected via semi-structured in-depth interviews and analyzed using conventional content analysis methods as described by Graneheim and Lundman.

Results: The analysis revealed three main themes: organizational challenges (encompassing lack of human resources, equipment shortages, and structural-administrative issues), human resources challenges (including individual characteristics of personnel and staff dissatisfaction), and cultural-social challenges (comprising cultural barriers and environmental-social obstacles). These themes were further divided into seven subthemes.

Conclusion: Organizational, human resources, and socio-cultural challenges emerged as the most significant factors affecting the delivery of quality services in Iran's pre-hospital EMS system. Policy-makers and administrators can leverage these findings to develop strategies aimed at addressing the challenges impacting the delivery of quality pre-hospital emergency services.

Keywords: Emergency Medical Services, Emergency Medical Services Personnel Challenges, Qualitative Research

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Introduction

Pre-hospital emergency medical service (EMS) is fundamentally a social care system that responds to the medical needs of injured individuals or patients with acute and urgent conditions outside healthcare institutions, providing care until they reach a medical center (1). The activities of this system, as symbolized

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by the "Star of Life," encompass responding to emergency calls, dispatching personnel to the scene, providing care by skilled and trained professionals at the accident site, continuing emergency care in vehicles such as ambulances and helicopters, and transporting patients to designated treatment centers as directed by the command center (2). Consequently, pre-hospital emergency care plays a vital and invaluable role in preserving human life (3). The more accurate, appropriate, and timely these services are, the more deaths will be prevented and public trust in the system will increase (4). Therefore, it is imperative to consider these factors in any effort to develop reasonable policies that balance public needs and expectations with emerging trends (5).

Extant studies demonstrate that pre-hospital emergency workers experience considerable job stress, as they are the first responders to emergency situations ranging from serious road accidents and natural disasters to minor injuries and illnesses (6, 7). Medical emergencies create tension-inducing conditions for personnel working in this department due to various factors, including time constraints, critical patient conditions, expectations of patients' companions, the exposed nature of the work environment, fear of incompetence in saving the lives of critically ill patients, the challenge of making decisions in emergency situations, and human resource-related issues (8). Pre-hospital emergency workers face numerous challenges during a typical workday, which inevitably affect the quality of their services. This impact, in turn, poses a threat to community health and the lives of residents in the area covered by that emergency base (9).

Given the aforementioned considerations, it is crucial and valuable to plan for identifying strengths and weaknesses and improving the quality of pre-hospital emergency services as the first line of treatment for patients and injured individuals. This can be achieved by examining the challenges and problems faced by this department and finding solutions, as it constitutes an integral part of any society's healthcare system. Considering that qualitative research is conducted to directly understand the experiences and perceptions of participants, particularly for topics that have not been extensively researched (10), the present study aimed to elucidate the challenges affecting the delivery of quality services from the perspective of pre-hospital EMS personnel in southern Iran.

Materials and Methods

The present study employed a qualitative descriptive approach and was conducted from 2022 to 2023. The study population comprised employees of urban emergency centers in Shiraz, southern Iran. During the specified period, there were a total of 39 pre-hospital emergency centers across the six districts of Shiraz. Purposive sampling was utilized to select participants. Individuals from the six centers were chosen based on their specialized knowledge and information about the phenomenon, with the objective of sharing these experiences and insights. The inclusion criteria for this study encompassed being a technician or nurse working in pre-hospital emergency medical services, having a minimum of one year of pre-hospital emergency work experience, and willingness to participate in the study. In-depth interviews were conducted with 23 pre-hospital emergency personnel.

Data collection was carried out through semi-structured questions during in-depth interviews. Each interview session lasted between 30 and 90 minutes, with an average duration of 60 minutes. Following participant selection, the researcher explained the work process to them in a preliminary meeting. During this initial meeting, informed consent was obtained for participation in the research and permission to record audio. Additionally, participants' phone numbers were collected to inform them prior to the interview day. The interview questions were formulated

as a guide for conducting semi-structured interviews with open-ended questions, and the order of questioning was flexible. Interviews began with questions such as, "Please tell me about your actions and experiences in dealing with pre-hospital emergency patients" and "What challenges affect the delivery of quality services in pre-hospital EMS?" Probing questions like "Could you please elaborate?" and "Can you provide an example in this case?" were used to elicit further information.

All interviews were recorded, and immediately after each session concluded, they were transcribed verbatim. Field notes were also taken to capture participants' emotions, such as laughter, facial expressions, silence, and non-verbal communication. The interviews continued until data saturation was achieved and categories began to repeat. At the end of each interview session, the researcher reviewed a summary of the recorded material with the interviewee, making modifications or adjustments if necessary. In this study, data saturation was reached after 21 interviews, with two additional interviews conducted to ensure no new data emerged.

Data analysis

Data were analyzed using Granheim and Lundman's method, which consists of five steps:

1. Transcription of the recorded interviews; 2. Careful examination of the transcripts to identify both external and internal elements of the discourse, allowing the researcher to immerse themselves in the data and gain a thorough understanding of the participants' perspectives; 3. Re-reading of the transcripts to identify meaning units, which were extracted as sentences or paragraphs from the interview statements and texts; 4. Generation of initial or open codes from the meaning units. This process involved reading each interview text multiple times, extracting key sentences, and recording them as codes. Related codes were then grouped into subcategories based on similarity; 5. Merging of subcategories to create the final themes (11).

Rigor

To ensure the validity and reliability of the data, Guba and Lincoln's method, which is equivalent to validity and reliability in quantitative studies, was employed**.** This approach utilizes the four principles of credibility, transferability, dependability, and confirmability to evaluate the data**.** To ensure credibility**,** various strategies were implemented**,** such as prolonged engagement with participants, data review by experts and colleagues, text review by participants, and interviews with participants representing maximum diversity in terms of demographic characteristics. To enhance transferability, the findings were presented to individuals outside the participant group for comparison with their own experiences**.** To establish dependability and confirmability, the researcher set aside personal views and thoughts, striving to provide a comprehensive description of the research process and maintain thorough documentation. This approach facilitates the verification of the research trajectory by other researchers and enables the solicitation of their opinions (12).

Results

In this study, 23 participants were interviewed. The participants ranged in age from 26 to 50 years, with a minimum of three years of work experience in pre-hospital emergency care. Additional demographic characteristics of the participants are presented in Table 1.

From the data analysis, three main themes and seven subthemes were extracted, as presented in Table 2.

Organizational Challenges

This theme comprises three categories: lack of human resources, lack of equipment, and administrative-structural challenges. In Iran, the pre-hospital emergency system operates in each province under the auspices of the University of Medical Sciences and Health Services, and is overseen by the vice president of treatment.

Table 1. Individual characteristics of the participants

Participants	Age (year)	Educational level	Work experience in (years)
P1	42	Bachelor's degree in nursing	18
P2	39	Bachelor's degree in nursing	9
P3	44	Bachelor's degree in Emergency Medicine	15
P4	47	Bachelor's degree in Emergency Medicine	17
P5	31	Bachelor's degree in Emergency Medicine	7
P6	38	Bachelor's degree in Emergency Medicine	9
P7	46	Bachelor's degree in nursing	19
P8	49	Bachelor's degree in nursing	16
P9	29	Bachelor's degree in Emergency Medicine	3
910	38	Bachelor's degree in Emergency Medicine	10
P11	50	Bachelor's degree in Emergency Medicine	21
P12	30	Bachelor's degree in Emergency Medicine	7
P13	26	Bachelor's degree in nursing	3
P14	49	Master's degree in nursing	22
P15	37	Bachelor's degree in Emergency Medicine	13
P16	35	Bachelor's degree in Emergency Medicine	11
P17	41	Master's degree in nursing	14
P18	49	Bachelor's degree in Emergency Medicine	19
P19	31	Bachelor's degree in Emergency Medicine	8
P20	36	Bachelor's degree in Emergency Medicine	11
P21	45	Bachelor's degree in Emergency Medicine	17
P22	36	Bachelor's degree in Emergency Medicine	11
P23	29	Bachelor's degree in Emergency Medicine	5

Table 2. Themes and subthemes extracted from content analysis

Themes	Subthemes
Organizational challenges	• Lack of human resources • Lack of equipment • structural-administrative challenge
Human resources challenges	• Individual characteristics of personnel • Dissatisfaction of personnel
Cultural-social challenges	• Cultural challenges • Environmental-social challenges

Lack of Human Resources

The majority of participants across various emergency centers highlighted the shortage of skilled and trained personnel in the pre-hospital emergency system. According to most interviewees, one of the primary reasons for this deficiency is the lack of qualified workers in ambulances. Specifically, the absence or underutilization of dedicated drivers in ambulances, coupled with the substitution of nurses or technicians in driving roles, creates significant challenges during service provision.

"The emergency department urgently needs to recruit additional manpower. We are severely understaffed, which places immense pressure on existing personnel. The high volume of missions assigned to each staff member leads to fatigue, reduced work efficiency, and ultimately, a decline in the quality of care provided." (Participant 5)

Another contributor stated: "As the number of missions increases, personnel fatigue intensifies.

The shortage of drivers forces medical staff to assume driving responsibilities, resulting in increased fatigue and stress. This, in turn, leads to absenteeism, disrupts operations, and diminishes the quality and completeness of services. Unfortunately, this cycle perpetuates itself." (Participant 9)

Lack of Equipment

The majority of participants cited the inadequacy of equipment and facilities at their bases as a significant ongoing issue.

One staff member remarked: "Some emergency medical bases are housed in makeshift structures. These metal shanties offer little protection against the elements, becoming unbearably cold in winter and excessively hot in summer. The lack of gas utilities in these structures exacerbates our discomfort, particularly during winter months. We often resort to using electric heaters, which presents its own set of challenges. For instance, when we're called out on a mission, we face a dilemma: either switch off the heater and return to a frigid environment, or leave it on and risk potential fire hazards." (Participant 11)

Another Staff Member Said: "The emergency medical bases are extremely cramped. In this confined space, we have colleagues preparing food, and the heat and odors from cooking permeate the entire area. The total space barely exceeds 30 square meters, lacking separate dining areas, recreational spaces, or proper rest facilities—it's all an illusion. We're reduced to eating on our beds. Moreover, the absence of sports facilities prevents us from engaging in physical activities during off-hours or after missions, which could potentially alleviate work-related stress and enhance our longevity in this profession. In essence, we face significant welfare challenges." (Participant 7)

Administrative-structural challenges

The majority of participants identified their primary concerns as stemming from the emergency department's lack of autonomy as an independent organization and the absence of clear oversight and accountability.

One participant explained: "Our fundamental issue is our lack of independence. Currently, we're housed within the fire department, which creates constant uncertainty. If we had our own dedicated space, we wouldn't face the perpetual threat of eviction. This additional stress compounds the inherent pressures of our work, which already involves high-stakes situations such as accident scenes and medical emergencies. The possibility of being told to relocate at any moment not only disrupts our operations but also undermines our sense of importance and respect. It imposes undue stress on personnel, fostering feelings of insecurity, displacement, and loss of professional identity." (Participant 15)

Other issues highlighted by personnel included the lack of organizational hierarchy, limited hiring opportunities, and a pervasive sense of job insecurity. These concerns were compounded by unclear job descriptions and the absence of a structured personnel ranking system.

A contributor noted: "The scarcity of organizational ranks and the low probability of securing permanent positions engender widespread job insecurity. Consequently, many of us exit the system after just a few years of service. This high turnover is both detrimental to the organization and stress-inducing for the staff." (Participant 20)

Human resources challenges

The challenges related to human resources encompassed two main areas: personnel dissatisfaction and individual characteristics of the staff.

Dissatisfaction of the personnel

The majority of participants expressed dissatisfaction with their roles in the pre-hospital emergency system. They attributed this discontent to factors such as job burnout, high stress levels, perceived discrimination, and a lack of support from superiors. Furthermore,

most interviewees highlighted the inadequate attention paid to their welfare, compensation, and benefits, including overtime pay and performance bonuses. This neglect, they argued, leads to widespread dissatisfaction and demotivation among staff.

One participant stated: **"**Confronting the harrowing scenes of accidents, responding to assaults, and attending to critically ill patients is emotionally taxing. Daily exposure to death, illness, and bloodshed takes a significant toll on one's mental state and can lead to frustration. I believe there's a pressing need to reassess the compensation structure for emergency personnel. The emergency services warrant special consideration; the challenging nature of our work should be acknowledged, and efforts should be made to ensure staff satisfaction. After all, our job directly impacts people's lives**."** (Participant 14)

Several participants highlighted issues such as job insecurity, violence against personnel, and insufficient psychological support. A pre-hospital emergency staff member explained: "Another significant concern is the liability placed on ambulance drivers in the event of accidents during missions. Even when rushing to save lives, if an accident occurs and the driver is deemed at fault, they're required to cover a portion of the damages. Is this truly justifiable? We face a constant dilemma: arriving late could endanger patients' lives, necessitating swift travel, yet we simultaneously bear the stress of potential financial repercussions for any damages incurred. Given our modest salaries, the prospect of out-of-pocket payments for vehicular damages adds an undue burden to an already stressful job." (Participant 12)

Another staff member remarked: **"**It is crucial to create an environment where personnel can begin their shifts with a calm mindset, focusing solely on saving patients' lives rather than being preoccupied with work-related concerns. Paramount to this is addressing the issue of compensation and benefits. When staff perceive inequities, such as lower salaries compared to hospital emergency personnel or discrepancies in holiday pay rates, it inevitably leads to frustration and demotivation. These concerns can potentially interfere with our ability to effectively interact with patients and their companions at the scene, ultimately compromising the quality of our work**."** (Participant 10)

The majority of participants viewed the disparity in working hours between themselves and hospital nurses, coupled with the exclusion from productivity law benefits, as a form of discrimination in compensation.

One pre-hospital emergency staff member stated: **"**A significant issue is the discrepancy in salaries and benefits between us and hospital staff. Despite our longer shifts and extended working hours, we receive fewer benefits and lower overall compensation compared to our hospital-based counterparts**."** (Participant 18)

Individual Characteristics of the Personnel

Most participants emphasized the necessity of physical, mental, and psychological preparedness as essential qualifications for this profession. One staff member elaborated: **"**Anyone aspiring to work in emergency services must possess exceptional mental fortitude. We frequently encounter distressing scenes, such as suicides or severe vehicular accidents with gruesome injuries. As human beings, we cannot help but be profoundly affected by these experiences. Regrettably, we have witnessed numerous instances where colleagues, under the weight of these psychological pressures, have succumbed to substance abuse or alcoholism. At times, we inadvertently transfer this mental strain to our families**."** (Participant 6)

Another contributor emphasized: **"**Emergency personnel must maintain robust physical fitness to manage the demands of the job, such as moving heavy casualties in challenging conditions. For instance, when an injured person is trapped under debris or a vehicle, physical readiness is crucial

for effective rescue operations. In my opinion, this aspect should be a key consideration in the volunteer selection and recruitment process." (Participant 21)

Cultural-Social Challenges

This theme encompasses two subcategories: cultural challenges and environmental-social challenges. The majority of participants identified societal attitudes and cultural norms as significant obstacles to effective pre-hospital emergency medical service (EMS) delivery. They highlighted issues such as prank calls, inappropriate behavior and disrespect towards emergency personnel, and unnecessary calls stemming from a lack of understanding about the role of pre-hospital emergency services. Additionally, they noted a prevalent misconception among the public that views pre-hospital emergency services primarily as a means of patient transportation to medical facilities, rather than as a critical first-response medical service.

Cultural Challenge

The data revealed that the inability to provide accurate medical history, misunderstanding of EMS usage, and lack of cooperation with EMS personnel are among the primary cultural challenges facing pre-hospital emergency services.

One staff member elaborated: "A significant issue we face is the public's misplaced expectations. People often call emergency services for minor incidents, expecting an ambulance response for trivial matters. For instance, we've been summoned for a small kitchen knife scratch that barely warranted a band-aid. Conversely, we encounter cases where individuals with serious conditions, such as heart problems, are moved without professional assistance, potentially jeopardizing their lives. There's a clear need for public education on appropriate emergency service utilization." (Participant 19)

Environmental-Social Challenge

Participants identified public ignorance about EMS, traffic congestion, route-related issues, and unrealistic expectations as key challenges facing pre-hospital emergency services.

One interviewee stated: "A persistent problem we've almost grown accustomed to is traffic congestion. It frequently causes delays in our arrival at accident scenes, resulting in the loss of crucial 'golden time' for effective intervention." (Participant 8)

Another participant added: "Perhaps our most significant challenge is crowd management at accident scenes, both before and during casualty treatment. We often encounter crowds of onlookers, many simply attempting to film the incident. Public interference is substantial; we receive unsolicited advice ranging from bandaging techniques to patient positioning. This interference significantly impedes our work pace and efficiency. Additionally, when we require assistance, such as moving a heavy patient onto a stretcher, cooperation levels vary. In urban settings, bystanders are generally more willing to help, even with bloodied patients. However, in rural areas, especially with potentially infectious cases, cooperation is notably less forthcoming. The culture of assistance tends to be more prevalent in less affluent urban areas." (Participant 1)

A third participant observed: "At accident scenes, it seems everyone becomes an instant expert—legal, judicial, forensic, and traffic specialists all offering unsolicited opinions. This unnecessary interference obstructs our primary mission of saving lives. Crowd control is a major issue; even passing vehicles often stop to observe, exacerbating traffic congestion. This creates additional pressure and stress for our team, disrupting our ability to work effectively." (Participant 2)

Another staff member highlighted infrastructure concerns: "A common complaint from patients relates to the excessive shaking experienced during ambulance transport. This issue stems partly from road surface irregularities

and partly from the vehicle design. The elevated chassis of our ambulances contributes to increased movement. Even our personnel, who are accustomed to these conditions, find it challenging and risk injury. The primary cause, however, is the poor condition of road surfaces, which are often extremely uneven." (Participant 13)

Discussion

The present study was conducted with the objective of elucidating the challenges affecting the delivery of quality services from the perspective of pre-hospital EMS personnel in southern Iran.

In this study, one of the challenges related to human resources was the physical and mental preparation of the personnel. The nature of medical emergencies, including the critical condition of patients, time constraints, exposure to open work environments, companions' expectations, fear of ineffectiveness in saving patients' lives, decision-making power in critical situations (13), and the need to transport patients on stretchers (particularly heavy patients) requires high physical and mental preparation within this system.

Personnel dissatisfaction due to job burnout, discrimination, and lack of support from higher authorities in the organization were among the human resource-related challenges. Occupational stressors (such as high workload), environmental factors (unfavorable base conditions), management (ambiguous and unclear job descriptions), and relationships with colleagues were the factors that caused job dissatisfaction among EMS employees, according to the research participants. In their research, Cimino and Braun found that lack of reward and high workload were the most important factors causing job stress, which negatively affects patient care delivery (14). The findings of Mohammadi et al.'s study showed that working in road stations, the insufficient number of ambulances in urban stations, the inadequate structure of stations (often makeshift and unsuitable for rest), and the lack of certain comfort facilities in the stations were among the most common external factors contributing to dissatisfaction among emergency workers (15). Furthermore, the exclusion of EMS employees from the productivity law, coupled with the difference in working hours compared to nurses and other healthcare workers, particularly those in hospitals, were identified as discriminations that exist between them and other healthcare personnel, according to the research participants. The interviewees pointed out that since pre-hospital emergency services do not generate direct income for the government and instead incur costs, there is discrimination between them and other medical workers in terms of compensation for hard work and holiday allowances. The study by Eftekhari et al. showed that the quality of pre-hospital emergency care can be increased by reorganizing the employment structure, work environment, and approving appropriate protective laws (16).

Inadequate support for personnel, insufficient job security, violence against personnel, and lack of psychological support were mentioned as reasons for dissatisfaction among personnel. According to the results of this study, the contractual employment of personnel, continuous transfer of employees between different bases, and out-of-pocket payments for employees involved in ambulance accidents are examples of lack of job security among EMS employees. The results of Afshari et al.'s study also showed that job insecurity is high among nurses (17).

Afshari et al. also found in their study that low remuneration and wages cause job dissatisfaction and a negative view of one's professional role (18). The present study's results indicate that violence against staff from patients and their companions, coupled with the lack of a clear support and legal system, were other challenges that the staff faced. The results of a study conducted on violence against emergency medical workers showed that most of the violence and misbehavior was

committed by the patient's companions, and the most common cause of violence and misbehavior was companions' and patients' complaints about delays in arriving at the scene of the accident (19). Kaplan et al. believe that factors such as heavy workload, ambiguity in employees' roles and duties, lack of job security, weak support from managers, few opportunities for career advancement, and a sense of lack of progress lead to burnout among emergency personnel (20).

The results of this study revealed that structural challenges, including the non-independence of the pre-hospital emergency department, the multiplicity of command, insufficient organizational ranks, and the absence of clear rules and regulations, were among the structural challenges identified. These findings align with the study conducted by Kaplan et al. One of the reasons for the success of many countries in providing quality pre-hospital emergency services is the presence of an independent organization under whose supervision all service providers, whether private, governmental, or voluntary, operate (20).

The study also identified challenges related to equipment (such as a shortage of medical supplies and worn-out ambulances), an inability to coordinate centrally, and challenges within the emergency medical bases (such as the use of metal sheds as emergency medical base buildings, limited space, and **a** lack of health and welfare facilities). According to the findings of this study, a significant challenge is the lack of equipment, as well as the wear and tear of ambulances and the improper arrangement of facilities, which hinders the provision of quality care services. These results are consistent with the study conducted by Safi-Keykaleh et al. (21).

Additional challenges include insufficient awareness and knowledge about EMS services, traffic issues (including street congestion and private drivers not yielding to ambulances), problems related to road conditions (such as uneven structures of city alleys and streets), unrealistic expectations from people (expecting miracles from employees), patients' and companions' inability to provide medical history, and the lack of a culture of cooperation and proper use of EMS services among the public. These factors lead to calls to pre-hospital emergency medical services for non-emergency missions such as headaches and superficial skin scratches, as well as telephone harassment. These challenges necessitate extensive public education and awareness campaigns to ensure the correct utilization of these important services. In accordance with this study, several other studies have identified insufficient public awareness and weak cooperation and participation from other organizations, such as the police and traffic authorities**,** as challenges facing pre-hospital emergency services (22-24).

Limitation

This study was conducted in the pre-hospital emergency department in Shiraz, one of the major cities in Iran, and its results cannot be generalized to other countries and regions. It is therefore suggested that similar studies be conducted in other parts of the country and around the world.

Conclusion

Personnel dissatisfaction, structural challenges, manpower shortages, lack of equipment and facilities, and socio-cultural challenges were among the most important issues facing pre-hospital EMS in Iran. Organizational independence, the creation of sufficient organizational ranks, improvements to administrative rules and regulations, increased attention to welfare and support facilities for personnel, and enhanced cooperation and participation from other organizations such as radio and television, and traffic authorities can effectively reduce existing challenges and improve pre-hospital emergency services

at the community level. Policy-makers and administrators can use the present study's findings to develop strategies for addressing the challenges affecting the delivery of quality services in pre-hospital EMS.

List of abbreviations

EMS: emergency medical service

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Conflicts of Interest

The authors declare that they have no competing interests

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Ethical Considrations

All participants provided written informed consent prior to participating in the study. They were assured of their anonymity and the confidentiality of their information. Moreover, the study was approved by the Institutional Research Ethics Committee of Shiraz University of Medical Sciences, Shiraz, Iran (IR.SUMS.REC.1402.144). All methods were performed in accordance with the relevant guidelines and regulations, and all research methods adhered to the ethical guidelines outlined in the Declaration of Helsinki.

Code of Ethices

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