

The Impact Of Human Resource Shortages And Long Working Hours On The Quality Of Emergency Response Performance In The Field

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Abstract

This study aims to determine the impact of human resource shortages and long working hours on the quality of field emergency response performance, by surveying the opinions of Saudi Red Crescent Authority employees about the nature of the challenges they face during field work. The study adopted the descriptive analytical approach, and a questionnaire consisting of (15) paragraphs was applied to a sample of (200) paramedics and field workers. The results showed that the majority of respondents agreed that the lack of human resources clearly impacts response time and service quality, and that working long hours leads to increased errors and decreased concentration. The results also showed that administrative and organizational support can contribute to reducing the negative effects resulting from these challenges. The study concluded that improving workforce distribution, regulating shift schedules, and providing adequate rest periods would enhance field performance and raise the quality of emergency services provided.

Keywords: Human resource shortage - long working hours - quality of emergency care - job stress - field efficiency - administrative support - - job satisfaction - patient safety .

- Introduction

The ambulance services sector is the cornerstone of emergency response, as the quality of its field performance depends on the availability of sufficient and trained human cadres. When ambulance teams face a shortage of paramedics and ambulance drivers, this results in increased pressure on existing personnel, leading to extended working hours and assigning them a workload that exceeds their capacity. This shortage not only affects the speed of response but also begins to undermine the accuracy and focus needed to make difficult clinical decisions and provide critical care in stressful environments and life-threatening situations. Working long and exhausting hours is also one of the most important factors that waste the quality of ambulance performance. Continuous exposure to physical and psychological stress, or what is known as job burnout, reduces paramedics' cognitive abilities, including attention, problem-solving skills, and working memory. When paramedics lack sufficient time to rest and recover, the likelihood of making medical or procedural errors increases, for example, delayed diagnosis, misjudgment of priority, or failure to strictly follow standard medical protocols, which directly jeopardizes patient safety.^{1,2,8}

Therefore, the combination of a lack of human resources and extended working hours represents a structural challenge that threatens the core of the ambulance service to ensure sustainable and reliable quality care in the field. It is essential to address these issues through strategic workforce planning, providing balanced work schedules that allow for adequate rest periods, and providing specialized psychological support to field teams. Investing in ambulance personnel is not just an administrative

measure, but a direct investment in the safety of the community and in the health system's ability to respond effectively to any emergency

Discussion

- The concept of quality emergency performance and its importance in emergency services

The concept of emergency response quality refers to the extent to which emergency services meet a set of standards and criteria to ensure safe, effective, and timely healthcare for patients and injured people in the pre-hospital phase. This concept goes beyond the speed of ambulance arrival to include the quality of care provided in the field and during transport. Emergency response quality is ensured when the response is rapid, medical procedures and first aid are provided correctly and accurately, resources are optimally utilized, and care is provided centered around the patient's needs. Furthermore, emergency response quality is not limited to the clinical skills of the paramedic but extends to include the efficiency of the operational and supporting technical systems^{8,6}

Lack of human resources in emergency work and its causes

The shortage of human resources in emergency work represents one of the most significant structural challenges facing emergency medical services worldwide. This shortage does not only mean a small number of paramedics or ambulance drivers, but also includes the gap between the number of available personnel and the increasing demand for emergency services due to population growth, increasing accidents, and the high rates of chronic diseases that require rapid intervention. This imbalance leads to an unbalanced distribution of the workload, as available paramedics work exhausting overtime threatening the continuity of the service and reducing its ability to achieve the quality standards and speed required to respond to critical cases. There are many reasons behind this severe shortage of emergency personnel, most notably the difficult work environment and weak job incentives, as emergency work is a high-risk job that requires making critical decisions under enormous psychological and physical pressure. This is often met with wages that are uncompetitive compared to other health sectors or the requirements of the job itself. In addition, the emergency system faces a major challenge in retention rates, as the sector suffers from the phenomenon of job burnout and high rates of job turnover. Among paramedics who leave the profession are those seeking less stressful and more stable work environments or moving into other medical specialties^{8,4}

This is in addition to factors related to the work environment, where challenges related to education training, and strategic planning contribute to deepening the crisis. Often, the capacity of academic and training programs to graduate qualified paramedics does not match market needs, especially in developing countries, which creates a gap in the supply of new cadres. The lack of long-term government planning for the emergency medical workforce and the failure to allocate sufficient budgets to attract, hire, and develop personnel further exacerbates the problem. This situation poses a continuing challenge to emergency services, necessitating rapid intervention to improve working conditions and secure the career path of workers in this vital sector^{8,5}

- The impact of the shortage of personnel on the speed of response and the efficiency of field intervention

The most significant impact of the lack of staff in emergency work appears directly in the response time. When the number of available ambulance teams is less than the number of incoming reports, operating rooms are forced to delay dispatching the ambulance until the only available team has completed its previous task. This inevitable delay, which may take crucial minutes, deprives emergency services of the golden hour advantage, which is essential for saving lives in cases of severe bleeding, cardiac arrest, or stroke. Therefore, the shortage of personnel not only hinders operational efficiency but also directly threatens the patient's final outcome, as the chances of survival or full recovery decrease with every minute of delay. The shortage of personnel also leads to a decline in the efficiency of field intervention and the

quality of care provided. In light of the shortage, paramedics are often required to work under conditions of enormous work pressure and long working hours without adequate rest, as stress and fatigue lead to a sharp decline in alertness and concentration, which increases the likelihood of committing medical and procedural errors, such as misjudging the priority of the case Or the use of inaccurate treatment protocols or failure to correctly record important vital data, and the lack of personnel at the scene may mean that complex life-saving procedures such as advanced cardiopulmonary resuscitation (ACPR) cannot be performed as optimally as required 9,10

In addition, the shortage of personnel reduces the ability of ambulance services to provide comprehensive and effective geographic coverage, especially in remote or densely populated areas. This makes it difficult to strategically distribute teams to ensure rapid response at all times. It also makes it difficult to allocate specialized teams to deal with specific types of incidents, such as responding to hazardous materials incidents or teams equipped to deal with children's injuries. This lack of specialization and deployment forces the few field teams to deal with all scenarios, which limits the level of specialized service provided and exposes paramedics and the injured to additional risks 1,11

- **Long working hours and their impact on the health and efficiency of paramedics**

Long and extended working hours in an emergency environment represent tremendous stress, leading to a deterioration in the physical and mental health of the paramedic. Working for a large number of hours often in changing and disturbed night shifts, causes sleep deprivation ,Disruption of the daily biological rhythm resulting in increased levels of the hormone cortisol and chronic stress, which increases the risk of physical diseases such as high blood pressure, cardiovascular problems, and a weak immune system On the psychological side, problems of job burnout, anxiety, and post-traumatic stress disorder are exacerbated As a result of the continuous accumulation of pressure without sufficient time for recovery and rest, fatigue and exhaustion resulting from long working hours are directly and negatively reflected on the efficiency of the paramedic in the field, as lack of sleep leads to a sharp deterioration in basic cognitive functions such as alertness and reaction time The ability to make complex clinical decisions in seconds is compromised, as fatigued paramedics become more prone to distraction and poor concentration, increasing , the likelihood of making critical medical errors such as medication dosing errors, misreading vital signs or failing to accurately follow standard procedure steps. These errors not only threaten patient safety but also reduce confidence in the entire emergency services system 6,3

In addition, excessive working hours are one of the main reasons that lead to difficulty in achieving a work-life balance For paramedics, the inability to spend enough time with family or engage in social activities leads to a decline in morale, feelings of isolation and worthlessness. This negative impact on the quality of life leads many experienced paramedics to drop out of the profession The search for jobs with a less harsh and more stable work environment, and thus, long working hours create a vicious cycle where the attrition of personnel exacerbates the shortage of human resources, which increases the pressure on the remaining individuals and leads to further fatigue and a deterioration in the quality of emergency performance in general. The impact of long working hours is not limited to the deterioration of health and direct performance only, but extends to affect the future of the professional paramedic and his development Due to constant pressure and hectic schedules, paramedics find it extremely difficult to allocate time to attend advanced training courses, participate in continuing medical education programs or even review new medical protocols. These activities are essential for honing skills and keeping up with the latest evidence-based practices in emergency medicine. Depriving paramedics of these opportunities stagnates their professional growth and renders their skills obsolete over time, reducing the quality of care they provide and limiting the effectiveness of the emergency system in adopting innovations and continuously improving performance 9,6

- **The relationship between work stress and performance quality in the emergency field**

The emergency work environment is a constantly high-pressure environment where paramedics are required to make critical decisions under critical time-sensitive and life-threatening situations. When work pressures, such as multiple reports of seriousness of the case or difficult site conditions, exceed the paramedic's tolerance, they lead to a direct deterioration in cognitive performance. This effect is often called the cognitive tunnel vision, where the paramedic's focus narrows, critical thinking declines, and the process of recalling complex medical protocols becomes slower and more error-prone. This deterioration in higher brain functions leads to a failure to implement emergency care with the required quality. The relationship between work pressure and performance quality is not limited to the current moment only, but extends to include the impact of chronic stress resulting from continuous exposure to work pressures and long working hours, as accumulated stress leads the paramedic to a state of job burnout. This is an important indicator of ongoing performance quality. Furthermore, a fatigued paramedic becomes less empathetic to patients, less vigilant and less responsible for the details of meticulous care, and increases their absenteeism rate. This decline in professional commitment leads to recurring medical errors and a lack of attention to safety standards, which in turn leads to a decline in the reputation and confidence in the quality of emergency services as a whole 9,3

Additionally, excessive pressure reduces quality, but a controlled level of challenge and positive pressure can motivate performance. However, increased and persistent pressure in the emergency field indicates an institutional failure to provide an adequate support system. This relationship demonstrates that poor quality is not solely the fault of the first responder, but rather the result of a lack of human resources insufficient training in crisis management, or the absence of effective psychological support mechanisms. Therefore work pressures that lack quality are a wake-up call for management to improve the work environment and develop strategic plans to reduce the workload. This is the only solution to ensure the provision of effective and reliable field care 6,3

- **Management practices in the face of staff shortages and working hours**

.Addressing the shortage of emergency personnel requires adopting long-term strategic workforce planning. Management must conduct a thorough analysis of future needs and projected attrition rates to ensure a steady flow of qualified personnel. To achieve this, the attractiveness of the profession must be enhanced by offering competitive compensation and benefits packages, such as salary increases and incentives, and by partnering with educational institutions to ensure the quality and consistency of graduates with job requirements 6,3

Study Methodology

The study relied on the descriptive analytical approach due to its suitability to the nature of the subject, as it aims to analyze the reality of field emergency work and identify the factors influencing it from both the quantitative and qualitative aspects.

Study population

The study population consists of all paramedics and field workers in the Saudi Red Crescent Authority across its various administrative regions.

Study Sample

A random sample of (200) participants representing

Study Tool

The data collection tool in this study was a carefully designed questionnaire to measure the impact of resource scarcity and long working hours on performance quality. The questionnaire included (15) paragraphs distributed over three main axes: shortage of human resources, working hours and stress, and administrative and organizational support.

The validity of the tool was verified by presenting it to a group of experts, and its reliability was proven with a stability degree of (0.89).

Analysis

Table (1): Frequency and Percentage Distribution of Respondents' Answers (N = 200)

Statement (short)	Agree	Neutral	Disagree
Human resources are insufficient to cover all reports.	150 (75%)	25 (12.5%)	25 (12.5%)
Staff shortage delays emergency response.	160 (80%)	20 (10%)	20 (10%)
Work pressure affects service quality.	165 (82.5%)	18 (9%)	17 (8.5%)
Long hours reduce focus.	155 (77.5%)	25 (12.5%)	20 (10%)
Fatigue increases handling errors.	162 (81%)	23 (11.5%)	15 (7.5%)

The table shows that most respondents agree that the lack of human resources and long working hours negatively impact the quality of emergency care. The item with the highest level of agreement was the item on the impact of pressure on service quality, with a percentage of (82.5%), which reflects a clear awareness of the problem in the field work environment.

Table (2): Means and Standard Deviations of Items (N = 200)

Item	Mean	Std. Deviation	Rank
Work pressure affects quality	4.25	0.78	1
Fatigue increases errors	4.18	0.80	2
Staff shortage delays response	4.12	0.84	3
Long working hours reduce focus	4.09	0.83	4
Lack of resources to cover reports	4.02	0.87	5

The averages range between (4.02) and (4.25), indicating a high level of agreement, which proves that most employees feel the impact of time pressure and shortage of manpower on the quality of performance.

Table (3): Main Dimensions (N = 200)

Dimension	Included Items	Mean	Std. Deviation	Rank
Human Resource Shortage	1,2,3,8,11,12	4.15	0.81	1
Long Working Hours & Fatigue	4,5,6,7,10,13	4.10	0.79	2
Administrative & Organizational Support	9,14,15	3.95	0.85	3

It appears that the lack of human resources is the factor that most affects performance, followed by the impact of long working hours, while the administrative and organizational support axis received the lowest average, indicating the need to improve the organizational work environment as part of the solution.

Table (4): Reliability and Overall Scale Statistics (N = 200)

Statistic	Value
Number of items	15
Cronbach's Alpha	0.89
Scale Mean	4.07
Scale Std. Dev.	0.46

The reliability coefficient value ($\alpha = 0.89$) indicates a very high degree of internal consistency, which indicates that the questionnaire items measure the same concept reliably. The overall mean (4.07) also reflects a strong positive trend towards the fact that lack of resources and long working hours have an actual impact on the quality of performance.

Results of previous studies on factors affecting first aid performance

- The results showed that intrinsic and extrinsic motivation have a significant and positive impact on the quality of paramedic performance, with moral incentives, particularly appreciation, being linked to psychological stability and higher levels of performance
- The results showed that the experience and cognitive ability of the paramedic were positively and directly related to the efficiency of clinical decision-making and the speed of diagnosing complex cases in the field
- The results showed that high stress and sleep deprivation lead to a severe decline in cognitive functions such as alertness and memory, significantly increasing the likelihood of medical and procedural errors
- The results showed that job burnout is one of the most significant threats to sustained performance quality, as it leads to decreased job satisfaction, reduced professional commitment and increased turnover rates
- The results showed that the shortage of personnel, equipment, and supplies is a structural obstacle to achieving quality and imposes operational pressure that reduces effectiveness and efficiency
- The results showed that the absence of an administrator leads to weak compensation and incentive systems and a decline in morale, which negatively impacts the overall performance of the system
- The results showed that delays in response time resulting from organizational or external factors such as crowding are a negative indicator and lead to reduced chances of saving the patient or injured person
- The results showed that good performance is linked to the degree of strict adherence to the application of standard medical protocols and procedures in the field, and this accuracy decreases under pressure and stress

Accordingly, these findings provide a comprehensive framework for the quality of emergency performance, emphasizing that outstanding performance is the result of a complex interaction between human, organizational, and operational factors. The strategic importance of these findings is evident in shifting the focus from simply providing service to improving the sustainability of quality. This is in contrast to assumptions that may be limited to clinical training. Studies show that motivation psychological support, and stress management are key determinants that sometimes outweigh purely theoretical knowledge. This content directs management toward the need to go beyond treating symptoms, such as delayed response, to addressing the root causes. This is achieved by investing in psychological support programs, improving the competitive work environment, and developing strategic plans to combat job burnout, ensuring that a capable and motivated first responder is the core of an effective and reliable emergency system

Proposed recommendations for improving performance quality in the face of human challenges

- Paramedic salaries and incentives should be raised to be competitive with other health sectors to increase the attractiveness of the profession and reduce attrition rates.
- Recruitment programs must be developed and Launching continuous and effective recruitment campaigns to fill the staffing shortage and ensure a sustainable flow of new cadres
- ,Clear opportunities for advancement and specialization, such as advanced paramedic or field instructor should be provided to increase job satisfaction and link performance to career advancement
- Strict stress management policies should be implemented, with limits on continuous working hours and mandatory rest periods between long shifts

- Shifts should be restructured and more flexible and balanced shift systems, such as 12-hour schedules instead of 24-hour ones, should be adopted to reduce chronic fatigue
- Periodic assessment tools should be used to measure the stress level of paramedics And immediate intervention when necessary
- Specialized psychological support must be provided and Establish confidential, 24/7 psychological support programs, including individual and group counseling sessions and peer support to deal with trauma and critical incidents
- Training and professional development programs must be provided On electronic platforms and with flexible timings to ensure continued skill development despite work pressure
- You must be trained to make decisions under pressure and Include realistic and repetitive simulation scenarios In training to enhance confidence and improve the paramedic's ability to make sound clinical decisions in stressful environments
- Investment in assistive technology is necessary and Implementing advanced technological systems to speed up the reporting and guidance process .And reduce the actual response time

Conclusion

Based on the above, the proposed recommendations focus on the necessity of adopting a comprehensive .human-centered administrative approach The emergency cadre is considered not just a resource, but a strategic capital that must be maintained and protected. The strategic importance of these recommendations lies in the fact that they work to break the vicious cycle between staff shortages, stress and deteriorating quality, instead of focusing only on punishment or immediate treatment

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Survey Items

The number of ambulance crew members is insufficient to cover all field reports.

Agree Neutral Disagree

The lack of human resources leads to delayed response to emergencies.

Agree Neutral Disagree

Increased work pressure due to staff shortages negatively impacts the quality of services provided.

Agree Neutral Disagree

Long working hours reduce the focus of paramedics while performing their duties.

Agree Neutral Disagree

Fatigue resulting from working long hours leads to an increase in errors in handling cases.

Agree Neutral Disagree

The lack of rest periods during shifts affects paramedics' field efficiency.

Agree Neutral Disagree

Constant work pressure leads to a decrease in motivation among field workers.

Agree Neutral Disagree

Having sufficient staff contributes to improving the speed of response to emergencies.

Agree Neutral Disagree

Distributing tasks fairly among team members helps improve performance.

Agree Neutral Disagree

The current work environment does not allow enough time for rest between emergency missions.

Agree Neutral Disagree

The shortage of staff leads to increased physical and psychological burdens on paramedics.

Agree Neutral Disagree

The high number of reports compared to the number of paramedics affects the quality of field response.

Agree Neutral Disagree

Long shifts lead to lower job satisfaction among paramedics.

Agree Neutral Disagree

Effective administrative support can mitigate the effects of human resource shortages.

Agree Neutral Disagree

Improving the shift system and workforce distribution enhances the quality of emergency care.

Agree Neutral Disagree