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The relationship between the distance of hospitals on highways and the increased suffering of paramedics in emergency situations

Mamdouh Turki Eidhah Altharmani¹, Mansour Farhan Thuwayb Algethami², Yousef Saad Awadh Alnefaie³, Mesfer Dhawi Khatim Algethami⁴, Faraj Dhafer F Alshehri⁵, Yunus Ibrahim H Alzubaidi⁶, Fahad Ali Saad Algarni⁷

¹Technician-Emergency Medical Services- Saudi Red Crescent Authority, Mecca

²Technician-Emergency Medical Services- Saudi Red Crescent Authority, Mecca

³Technician-Emergency Medical Services- Saudi Red Crescent Authority, Mecca

⁴Technician-Emergency Medical Services- Saudi Red Crescent Authority, Mecca

⁵Specialist-Emergency Medical Services- Saudi Red Crescent Authority, Asir

⁶Technician-Emergency Medical Services- Saudi Red Crescent Authority, Mecca

⁷Technician-Emergency Medical Services- Saudi Red Crescent Authority, Mecca

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Abstract

The current study aimed to identify the relationship between the distance of hospitals from highways and the increased suffering of paramedics in emergency cases. The study relied on the descriptive analytical approach and relied on a sample of 200 paramedics and distributed the electronic questionnaire form to the sample electronically. The study concluded with a set of results, the most important and prominent of which is that there is a statistically significant relationship between the distance of hospitals from highways and the increased suffering of paramedics in emergency cases. Delays in reaching the hospital reduce the efficiency of medical intervention in emergencies. The current distribution of hospitals is disproportionate to the density of accidents on highways. The presence of nearby field hospitals can alleviate the suffering of paramedics and patients. Poor infrastructure around highways increases obstacles to emergency response. Implementing advanced systems for hospital distribution addresses current emergency issues.

Keywords distance, hospitals, highways, increased suffering, paramedics, emergency situations

Introduction

Health and emergency services are one of the goals of social and economic development, due to the fact that health is one of the basic rights of individuals in society. Health and medical care are the specialized diagnostic, therapeutic, rehabilitative, social and psychological services provided by various departments, including medical examinations, ambulance and emergency services. Their importance begins with ambulance and paramedics, as the paramedic is the first person to deal with the patient or injured person, and therefore the more his work is perfected, the more he contributes to reducing the aggravation of the injury. The role of the paramedic is defined within the limits of helping the injured or patient and providing first aid to him and waiting for specialized medical assistance upon his arrival at the hospital 2,1

Government efforts in ambulance and emergency services include focusing on enhancing efficiency within the country at all levels of the health system. This is done through development goals that target the capabilities to develop ambulance systems, reduce risks, and how to manage national health risks, with support in coordination and response to emergencies by working with rapid action teams to achieve the highest quality standards in ambulance services by improving quality and professionalism in dealing with emergency medical response systems, as well as by

maintaining the principles and foundations related to obtaining safe care, achieving equality in access to services, and adopting ethical medical care. Accordingly, emergency medical response is a set of procedures and first aid provided to cases of illness or acute injury that pose a direct threat to the individual's life or vital functions. This response requires speed, making quick decisions, and providing the necessary medical care at the scene of the accident or while transporting the patient to the hospital. Emergency medical response includes several main components, namely providing first aid, which is a set of procedures that anyone can take to provide assistance to the injured before the arrival of the specialized medical team, transporting the injured to the nearest medical center equipped to receive emergency cases, and providing the necessary medical treatment to the injured at the scene of the accident before transporting them. To the hospital and coordinate with hospitals to prepare them to receive emergency cases and provide the necessary care for patients, as well as community awareness by spreading awareness of the importance of first aid and how to deal with emergency cases 3,5

The importance of emergency medical response is that it contributes to saving lives, as a rapid and effective response contributes to saving the lives of many people who suffer from serious injuries or sudden illnesses. It also contributes to reducing expected complications, as delays in providing medical care can worsen the patient's health condition and increase the risk of serious complications. Emergency medical response works to alleviate the pain and suffering of the patient and improve his quality of life. Emergency medical procedures also help maintain the functions of vital organs in the body, such as the heart and brain. Emergency medical services in general contribute to enhancing social cohesion and providing support to communities affected by disasters and crises 8,10

Therefore, emergency medical response is an essential component of any health system, and it contributes significantly to maintaining the health and safety of individuals and communities 4,1

Material

The ambulance process from the accident site to the hospital includes a set of sequential and important steps that aim to transport the injured person safely and quickly from the accident site to the nearest medical center to receive the necessary treatment. These stages include several steps, namely, reporting the accident by calling the emergency number, which is the first step. Calling the emergency number designated for emergencies and providing basic information, as the caller must provide clear and accurate information about the accident site, the type of injury, the number of injured and the approximate condition of each of them. The second stage is the rapid movement of the ambulance, as the nearest available ambulance to the accident site is identified and directed quickly, as the ambulance teams seek to reach the accident site as quickly as possible, as every minute is important in emergency situations. The third stage is the initial assessment of the injured person by assessing the general condition. Upon arrival of the ambulance team, they quickly assess the injured person's condition to determine first aid priorities and control bleeding where Any severe bleeding is controlled by applying direct pressure to the wound or using bandages and assessing consciousness and vital functions. By assessing the level of consciousness of the injured person, heart rate, breathing and blood pressure, the fourth stage is providing first aid where First aid is provided appropriate to the injured person's condition, such as performing cardiopulmonary resuscitation in the event of cardiac arrest, stabilizing fractures, or relieving pain. Some medications may also be used in cases that require it. Such as painkillers or medications that help stabilize blood pressure, and the fifth stage is transfer to the hospital where the injured person is fixed on the ambulance stretcher in a safe manner in a way that ensures that the injuries do not worsen, and then the injured person is transferred to the nearest hospital equipped to receive emergency cases 1,9,14

The ambulance team submits a detailed medical report on the injured person's condition to the hospital staff, and then the injured person undergoes a comprehensive medical evaluation in the emergency department to determine the accurate diagnosis and develop an appropriate treatment plan. During these stages, there are a group of factors that affect the effectiveness of the ambulance process, including speed. Response Where it is Every minute counts in an emergency. Therefore, the response must be rapid, and the speed of reporting emergencies contributes to the timely arrival of ambulance teams, as well as the efficiency of the ambulance team where The ambulance team must be well trained and equipped with the latest equipment. The level of professional training and experience of the paramedics directly affects the quality of first aid provided to the injured person, as well as coordination between the relevant authorities. There must be effective coordination between ambulance teams, police, fire departments and hospitals To facilitate the process of reaching the accident site, it is necessary to take into account that there is close cooperation between ambulance teams and hospitals to facilitate the process of transporting the injured and providing the necessary medical care, as well as the availability of appropriate infrastructure that helps facilitate the arrival of

ambulances to the accident site. Difficult weather conditions such as rain, snow and fog also affect the speed of arrival of ambulance teams to the accident site. Accordingly, to improve the performance of ambulance services, it is necessary to take into account working on developing the infrastructure, training cadres, providing the necessary equipment, enhancing cooperation and coordination between the various concerned parties, and educating the community about the importance of first aid 12,13,1

role Hospitals in presentation Services Emergency

Hospitals play a vital role in providing emergency services, as hospital emergency departments are the first to deal with medical cases that require urgent intervention, whether they result from accidents, sudden illnesses, or medical conditions that require immediate medical care. These departments quickly assess the patient's condition and provide the necessary medical care. Diagnosis and treatment are carried out. Emergency medical cases are diagnosed in emergency departments and appropriate treatment is determined quickly and effectively. This may require various medical examinations such as x-rays and tests, as in emergency cases that require surgical intervention. Hospitals provide surgeons and all the necessary facilities to perform surgery as quickly as possible. Hospitals also provide intensive care units that care for critical patients and provide them with specialized medical care around the clock. Hospitals work closely with other emergency services such as ambulances and police to provide the best care for patients. They also contribute to educating and training medical personnel to deal with emergency cases, which contributes to improving the quality of services provided. Hospitals conduct research and studies to develop new methods for treating emergency medical cases and improving the quality of care provided 1,8

Accordingly, there are some challenges facing hospitals in providing emergency services, including overcrowding as emergency departments in many hospitals suffer from severe overcrowding, which leads to delays in providing care to patients. Some hospitals may also suffer from a shortage of financial and human resources, which affects the quality of services provided. Hospitals are also exposed to the risk of the spread of infectious diseases. This requires taking strict precautionary measures. To overcome these challenges and improve emergency services in hospitals, it is necessary to allocate sufficient budgets to equip emergency departments with modern medical devices and provide qualified personnel to work in them, and develop comprehensive emergency plans to deal with various scenarios and continuous training by providing continuous training programs for medical personnel on the latest technologies and procedures and enhancing cooperation with other emergency services and health institutions and increasing community awareness by educating the community about the importance of contacting emergency services in medical emergencies 9,5

Accordingly, hospitals play a pivotal role in saving lives and providing medical care to patients in emergency situations, but they face many challenges for hospitals operating in this field, and require joint efforts by governments, health institutions and society to improve the quality of emergency services 8,9

Abilities Hospitals Nearby from Roads Fast in administration Cases Critical-

Hospitals near highways are the first place to deal with medical emergencies resulting from traffic accidents and others. These hospitals have developed significantly to be able to deal with these cases with high efficiency. Among the capabilities that distinguish these hospitals are: Specialized emergency departments: These hospitals have emergency teams trained to deal with various types of injuries resulting from accidents. Such as shocks and burns, and other multiple injuries. These departments are also equipped with the latest medical devices such as CT scans, MRIs and anesthesia machines. Which allows for the diagnosis and treatment of critical cases quickly and accurately and they also have operating rooms equipped with the latest technologies to perform emergency surgeries. These hospitals are characterized by rapid response, as they follow clear emergency protocols to ensure a rapid response to critical medical cases, and coordination is ongoing with ambulance services to facilitate the transfer of the injured to the hospital in the shortest possible time. These hospitals also have an effective system to transfer patients who need specialized care to other departments within the hospital or to other hospitals. These hospitals are characterized by high capacity, as these hospitals are characterized by their ability to accommodate a large number of injured people at one time, especially in cases of disasters and mass accidents. These hospitals have crisis management, so they have emergency plans to deal with crises and disasters, including providing the necessary medical supplies and human cadres. These hospitals work in cooperation with the police and fire department to facilitate rescue operations and accident investigations, and cooperate with civil society organizations to provide psychological support to the injured and their families. The importance of these hospitals is due to Nearby from Roads Fast in administration Cases

. Critical It plays a vital role in saving the lives of those injured in traffic accidents and other medical emergencies. Rapid response and effective treatment help reduce complications resulting from injuries. These hospitals contribute to improving the quality of life of those injured by providing them with the necessary medical care. However, they face some challenges, namely, pressure on resources, as these hospitals may be exposed to great pressure on resources in the event of major accidents. Some hospitals may face a shortage of medical personnel trained to deal with critical medical cases. Equipping and operating these hospitals also requires high costs, but hospitals near highways are an essential element in any effective health care system and play a vital role in maintaining the safety and health of society 10,8, 12

Challenges that facing Paramedics in Incidents Roads Fast-

face many challenges while working in highway accidents, which require them to have high skills and the ability to deal with pressure. One of the most important of these challenges is the difficulty of reaching the accident site due to the heavy traffic on highways, which may delay the arrival of ambulance teams to the accident site, which negatively affects the chances of survival of the injured, as well as bad weather conditions such as rain, snow and fog, which can hinder the movement of ambulance teams and delay their arrival. Some areas on highways may be difficult to reach especially in the case of accidents that occur in remote areas. Paramedics are also exposed to the risk of colliding with other vehicles while working at the accident site, especially in the absence of sufficient safety barriers. There may also be hazardous materials at the accident site such as fuel or chemicals. This poses a risk to the safety of paramedics, and paramedics may also be subjected to violence by some people at the accident site. Among the challenges they are also exposed to is that injuries resulting from highway accidents are often severe and multiple which requires rapid and specialized medical intervention. There may be serious internal injuries whose symptoms do not appear clearly at first, which requires careful assessment by paramedics. The injured may suffer from psychological shock as a result of the accident, which requires careful and professional treatment of them. The number of available ambulance teams may be less than the number of accidents, which leads to a delay in providing first aid to the injured. Some ambulance teams may lack the necessary equipment to deal with all types of injuries. This is in addition to the psychological pressure that paramedics are exposed to, as dealing with emergency and severe medical cases repeatedly may lead to great psychological pressure on paramedics. Paramedics may witness the death of people at the accident site, which affects their psychological health 10,2,1

There is also the lack of a specific protocol, the shortcomings in medical referrals with regard to classifying emergency accident victims, the shortcomings in skills related to ambulance and emergency services, the lack of interaction and communication from paramedics, as well as the lack of competencies and skills to deal with emergency cases in crowded traffic areas, and the lack of compliance with professional standards in ambulance and emergency services

To overcome these challenges, the concerned authorities must take several measures, including increasing the number of ambulance teams and equipping them with the latest equipment, training paramedics to deal with various types of accidents and injuries, providing psychological support to paramedics, and raising community awareness of the importance of first aid 8

after Hospitals And its impact on time Response-

is one of the most important factors affecting response time in medical emergencies. Every second counts in such cases. Delay in accessing appropriate medical care can have serious consequences on the life of the injured person. The relationship between the distance of hospitals and response time is that the greater the distance between the accident site and the hospital, the longer the time required for the ambulance team to reach the injured person and transport him to the hospital. The injured person's health condition may deteriorate significantly during the transfer period, especially in critical cases such as heart attacks and strokes, as a result of the long distance and lack of rapid response. The length of the transfer period is associated with an increased risk of death, especially in cases that require immediate medical intervention. Among the factors affecting the response time are the condition of the roads and traffic, as they play an important role in the speed of the ambulance's arrival at the accident site. The efficiency of the ambulance teams and their equipment greatly affects the speed of response. The distribution of hospitals in the area also affects the average distance that ambulance teams must travel to reach emergency cases. Difficult weather conditions such as rain, snow and fog affect the speed of arrival of ambulance teams. Among the effects of the lack of rapid response is an increase in the death rate where delayed medical care increases mortality and permanent disabilities. Cases that are delayed in treatment may require higher medical costs due to complications that may

occur. Delayed treatment may also lead to a deterioration in the quality of life of those affected . To overcome these effects, more hospitals should be established, especially in remote areas, as this helps reduce the distances that ambulance teams must travel. Improving the condition of roads and creating alternative roads helps facilitate the movement of ambulances. It is necessary to equip ambulance teams with the latest equipment and train them to deal with various emergency situations and use geographic information systems to determine the nearest hospital to the injured person and direct ambulance teams to him 14,10

Therefore, reducing response time in medical emergencies is a fundamental goal of any healthcare system . Through the combined efforts of various stakeholders, this goal can be achieved and the chances of survival of the injured can be improved

the pressure Psychological And physical on Paramedics during Dealing with Cases Emergency-

The work of paramedics represents a great challenge on both the psychological and physical levels due to the nature of the work that requires dealing with emergency and painful cases on an ongoing basis . This work exposes paramedics to a wide range of pressures that may affect their psychological and physical health and their personal .lives . Among the psychological pressures that paramedics are exposed to is the feeling of responsibility Paramedics feel a great responsibility for the lives of patients, which increases their psychological pressure. Paramedics are also exposed to seeing the suffering of others on a daily basis, which may lead to psychological trauma . Paramedics may feel afraid of failing to save a patient's life, which increases their stress and anxiety. Paramedics may also suffer from psychological disorders such as depression, anxiety, and post-traumatic stress disorder . Among the physical pressures that paramedics are exposed to is physical exhaustion, as paramedics work long hours in difficult conditions, which . leads to physical exhaustion. Paramedics are at risk of injury during their work, especially in accident cases Paramedics may be exposed to some occupational diseases as a result of exposure to chemicals and radiation. Among the factors that lead to an exacerbation of pressure on paramedics is the lack of resources, as the lack of resources such as equipment and medical personnel may lead to increased pressure on paramedics and daily routines, as dealing with emergency cases on a daily basis may drain the energy of paramedics . Also, not providing psychological and social support to paramedics may increase their suffering 2,4

One of the effects of paramedics being exposed to psychological and physical pressure is the deterioration of performance, as pressure may lead to a deterioration in the performance of paramedics, which affects the quality of care provided to patients . Paramedics may suffer from physical and psychological health problems such as high blood pressure, heart disease and depression , and work problems may affect the family and social life of paramedics 7,6

Therefore, psychological and physical stress is a real problem facing paramedics all over the world , where health institutions and concerned parties must make more efforts to provide the necessary support to paramedics and maintain their psychological and physical health in order to ensure the provision of the best possible care to patients The ambulance profession is a humanitarian profession , but it requires providing adequate support to paramedics . to maintain their psychological and physical health and provide them with the necessary skills to deal with the pressures 3,4

identification Response Medical Emergency And its importance

Health and emergency services are one of the goals of social and economic development, due to the fact that health ,is one of the basic rights of individuals in society. Health and medical care are the specialized diagnostic, therapeutic ,rehabilitative, social and psychological services provided by various departments, including medical examinations ambulance and emergency services. Their importance begins with ambulance and paramedics, as the paramedic is the first person to deal with the patient or injured person, and therefore the more his work is perfected, the more he contributes to reducing the aggravation of the injury. The role of the paramedic is defined within the limits of helping the injured or patient and providing first aid to him and waiting for specialized medical assistance upon his arrival at .the hospital 5,12

Methods

The current study relies on the descriptive analytical approach with the aim of identifying the relationship between the distance of hospitals from highways and the increased suffering of paramedics in emergency cases. The study

relied on the descriptive analytical approach and relied on a sample of 200 paramedics and distributed the electronic questionnaire form to the sample electronically.

Results

Table. 1.0 The mean, Standard deviation and relative

The item	The mean	Standard deviation	relative
1. The proximity of highways increases response times for emergency situations.	2,7	0.685	74%
2. The long distance to hospitals negatively impacts patients' survival chances.	2,5	0.789	%58
3. The lack of nearby hospitals increases the psychological and physical stress on paramedics.	2,6	0.856	78%
4. Long distances often cause strain on ambulances and their equipment.	2,1	0.789	%90
5. The proximity of hospitals to highways improves the quality of medical services.	2.0	0.968	%85
6. Delays in reaching the hospital reduce the efficiency of medical intervention in emergencies.	2.9	0.896	%69
7. The current distribution of hospitals is disproportionate to the density of accidents on highways.	2.4	0.784	96%
8. The presence of nearby field hospitals can alleviate the suffering of paramedics and patients.	2.4	0.784	84%
9. Poor infrastructure around highways increases obstacles to emergency response.	2.6	0.698	88%
10. Implementing advanced systems for hospital distribution addresses current emergency issues.	2.7	0.875	98%

The table shows that there is a relationship between the items of the form and each other, which shows that the proximity. The proximity of highways increases response times for emergency situations. The long distance to hospitals negatively impacts patients' survival chances. The lack of nearby hospitals increases the psychological and physical stress on paramedics. Long distances often cause strain on ambulances and their equipment.

Discussion

is one of the most important factors affecting response time in medical emergencies. Every second counts in such .cases. Delay in accessing appropriate medical care can have serious consequences on the life of the injured person The relationship between the distance of hospitals and response time is that the greater the distance between the accident site and the hospital, the longer the time required for the ambulance team to reach the injured person and transport him to the hospital. The injured person's health condition may deteriorate significantly during the transfer period, especially in critical cases such as heart attacks and strokes, as a result of the long distance and lack of rapid response. The length of the transfer period is associated with an increased risk of death, especially in cases that require immediate medical intervention. Among the factors affecting the response time are the condition of the roads and

traffic, as they play an important role in the speed of the ambulance's arrival at the accident site. The efficiency of the ambulance teams and their equipment greatly affects the speed of response. The distribution of hospitals in the area also affects the average distance that ambulance teams must travel to reach emergency cases. Difficult weather conditions such as rain, snow and fog affect the speed of arrival of ambulance teams. Among the effects of the lack of rapid response is an increase in the death rate where delayed medical care increases mortality and permanent disabilities. Cases that are delayed in treatment may require higher medical costs due to complications that may occur. Delayed treatment may also lead to a deterioration in the quality of life of those affected. To overcome these effects, more hospitals should be established, especially in remote areas, as this helps reduce the distances that ambulance teams must travel. Improving the condition of roads and creating alternative roads helps facilitate the movement of ambulances. It is necessary to equip ambulance teams with the latest equipment and train them to deal with various emergency situations and use geographic information systems to determine the nearest hospital to the injured person and direct ambulance teams to him.

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Accordingly, hospitals play a pivotal role in saving lives and providing medical care to patients in emergency situations, but they face many challenges for hospitals operating in this field, and require joint efforts by governments, health institutions and society to improve the quality of emergency services.

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To overcome these challenges, the concerned authorities must take several measures, including increasing the number of ambulance teams and equipping them with the latest equipment, training paramedics to deal with various types of accidents and injuries, providing psychological support to paramedics, and raising community awareness of the importance of first aid.

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Therefore, psychological and physical stress is a real problem facing paramedics all over the world , where health institutions and concerned parties must make more efforts to provide the necessary support to paramedics and maintain their psychological and physical health in order to ensure the provision of the best possible care to patients The ambulance profession is a humanitarian profession , but it requires providing adequate support to paramedics . to maintain their psychological and physical health and provide them with the necessary skills to deal with the . pressures they are exposed to

Conclusion

Technology is an important factor in improving the efficiency of emergency services and reducing response time to medical emergencies and accidents. One of the main roles that technology plays is the use of the geographic positioning system(GPS), as these systems help to accurately determine the location of the accident, allowing ambulance teams to reach the place as quickly as possible. These systems also provide accurate directions to ambulance drivers to avoid traffic congestion and reach their destination in the fastest way . Advanced communication systems, as these systems allow direct communication between the patient and also transfer the patient's medical data such as heart rate and blood pressure to the hospital in advance, allowing doctors to prepare to receive the patient and . provide appropriate care and the emergency center, which allows important information to be transferred quickly The use of smart applications, as these applications allow citizens to report accidents easily and quickly and accurately locate them. Through them, the movement of ambulance teams can be tracked in real time, which helps in better management of resources. Artificial intelligence can also be used to analyze the patient's medical data and provide a preliminary diagnosis, which helps in making treatment decisions quickly. Artificial intelligence also contributes to . analyzing previous medical data to anticipate potential accidents and take the necessary preventive measures Augmented reality and virtual reality can be used to train paramedics to deal with various cases. Emergency services in a safe virtual environment and some medical procedures can be performed remotely using augmented reality . technology. Which saves time and life in some cases

, Therefore, we conclude that the importance of using technology in emergency services is to reduce response time as it reaches the patient as quickly as possible and provides more accurate and effective medical care . It also helps in managing resources more efficiently . Reducing response time can reduce medical costs in the long term through the use of technology. It also works to increase public awareness by educating the community about the importance of first aid and how to use smart applications to report accidents . Accordingly, technology plays a vital role in improving ,the efficiency of emergency services and reducing response time. With the continued development of technology . more innovations can be expected that will contribute to saving more lives

References:

1. Yimer, S. A., Booij, B. B., Tobert, G., Hebbeler, A., Oloo, P., Brangel, P., ... & Kristiansen, P. A. (2024). Rapid diagnostic test: a critical need for outbreak preparedness and response for high priority pathogens. *BMJ Global Health*, 9(4), e014386.
2. Lammie, S. L., Habib, M., Bugli, D., Worrell, M. C., Talley, L., Neatherlin, J. C., ... & Watson, C. (2024). Characteristics of Global Rapid Response Team Deployers and Deployment, United States, 2019-2022. *Public Health Reports®*, 00333549241269529.
3. Steinfeldt, J., Wild, B., Buergel, T., Pietzner, M., Upmeyer zu Belzen, J., Vauvelle, A., ... & Eils, R. (2024). RETRACTED ARTICLE: Medical history predicts phenome-wide disease onset and enables the rapid response to emerging health threats. *Nature Communications*, 15(1), 4257.
4. Choo, W., Chong, P. H., Yeo, Z. Z., Lan, M., Fen, X., Sin, J., & Eng, T. J. (2024). P-8 Implementation of a rapid response team in home palliative care to reduce interruptions in home visits by home care nurses.
5. O'Hara, R., Sampson, F. C., Long, J., Coster, J., & Pilbery, R. (2024). What influences ambulance clinician decisions to pre-alert emergency departments: a qualitative exploration of pre-alert practice in UK ambulance services and emergency departments. *Emergency Medicine Journal*.
6. Langford, L., Pearce, J., & Lenson, S. (2024). Paramedic student and preceptor experiences of a clinical facilitator model during ambulance clinical placements: A qualitative study. *Focus on Health Professional Education: A Multi-Professional Journal*, 25(2), 1-19.
7. Ravandi, F., Fathi Heli Abadi, A., Heidari, A., Khalilzadeh, M., & Pamucar, D. (2024). A bi-objective model for location, dispatch and relocation of ambulances with a revision of dispatch policies. *Kybernetes*.
8. Yan, Y. H., Leou, R. C., & Ko, C. C. (2024). A Model for Electrifying Fire Ambulance Service Stations Considering Practical Service Data and Charging Strategies. *Energies*, 17(6), 1445.
9. Jánošíková, L., Jankovič, P., Kvet, M., & Zajacová, F. (2021). Coverage versus response time objectives in ambulance location. *International Journal of Health Geographics*, 20, 1-16.
10. Brady, L., Gilson, L., George, A., Vries, S. D., & Hartley, S. (2024). A community-based ambulance model: lessons for emergency medical services and everyday health systems resilience from South Africa. *Health policy and planning*, 39(9), 956-969.
11. Eiklid, S., & Kallekleiv, T. Å. (2024). *Optimizing Emergency Medical Service Compliance in Norway: A Simulation-Based Study* (Master's thesis, NTNU).
12. Hayes, T. (2024). *A constructivist grounded theory exploring why UK paramedics are leaving ambulance services to work clinically elsewhere in the NHS* (Doctoral dissertation, Anglia Ruskin Research Online (ARRO)).
13. Hayes, T. (2024). *A constructivist grounded theory exploring why UK paramedics are leaving ambulance services to work clinically elsewhere in the NHS* (Doctoral dissertation, Anglia Ruskin Research Online (ARRO)).
14. Long, J., Sampson, F. C., Coster, J., O'Hara, R., Bell, F., & Goodacre, S. (2024). How do emergency departments respond to ambulance pre-alert calls? A qualitative exploration of the management of pre-alerts in UK emergency departments. *Emergency Medicine Journal*.
15. Sirenko, M., Comes, T., & Verbraeck, A. (2024). The rhythm of risk: Exploring spatio-temporal patterns of urban vulnerability with ambulance calls data. *Environment and Planning B: Urban Analytics and City Science*, 23998083241272095.

The form

This form aims to study the impact of the distance of hospitals from highways on the performance of emergency responders. Please select the answer that accurately reflects your opinion/experience. All data will be treated with complete confidentiality

1. The proximity of highways increases response times for emergency situations.
 - Agree
 - Neutral
 - Disagree
2. The long distance to hospitals negatively impacts patients' survival chances.
 - Agree

- Neutral
 - Disagree
3. The lack of nearby hospitals increases the psychological and physical stress on paramedics.
- Agree
 - Neutral
 - Disagree
4. Long distances often cause strain on ambulances and their equipment.
- Agree
 - Neutral
 - Disagree
5. The proximity of hospitals to highways improves the quality of medical services.
- Agree
 - Neutral
 - Disagree
6. Delays in reaching the hospital reduce the efficiency of medical intervention in emergencies.
- Agree
 - Neutral
 - Disagree
7. The current distribution of hospitals is disproportionate to the density of accidents on highways.
- Agree
 - Neutral
 - Disagree
8. The presence of nearby field hospitals can alleviate the suffering of paramedics and patients.
- Agree
 - Neutral
 - Disagree
9. Poor infrastructure around highways increases obstacles to emergency response.
- Agree
 - Neutral
 - Disagree
10. Implementing advanced systems for hospital distribution addresses current emergency issues.
- Agree
 - Neutral
 - Disagree