The Impact of Communication Between Paramedics and Nurses on the Speed of Medical Response in Emergency Situations

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Abstract. Aim: The current research aimed to measure the impact of communication between paramedics and nurses on the speed of medical response in emergency situations. The study was applied to a sample of 357 individuals working in the emergency departments in Taif city. The study concluded with the following findings: The results showed that good communication between paramedics and nurses had a direct positive impact on the speed of medical response in emergency situations. Teams with effective communication were better able to provide rapid and accurate treatment in critical situations. Effective coordination between paramedics and nurses has been shown to help reduce medical errors and increase the efficiency of care delivery. Teams that used integrated communication systems (such as wireless devices or digital apps) were more efficient in carrying out necessary medical steps quickly.

The study recommended The researcher recommends developing training programs for paramedics and nurses that focus on improving interpersonal communication skills in emergency teams. These programs could include training on active listening, crisis management, and giving clear instructions under pressure. It is essential to establish clear mechanisms for coordination between paramedics and nurses in emergency rooms or during transportation to hospitals. These

mechanisms should include a clear sequence of medical steps and direct communication methods.

Keywords: Impact of Communication, Paramedics, Nurses, Medical Response, Emergency Situations.

1 BACKGROUND

Although emergency and ambulance services are mainly considered a secondary health care task because they require many capabilities and support services available only in hospitals, due to the ease of access to health centers and because they are the first line of contact with health services, health centers receive a significant number of emergency cases of various degrees, and provide care for minor and moderate cases with appropriate procedures. Therefore, the Primary Health Care Emergency Services Development Program me (PHCESDP) is an important program me to improve the level of handling of emergency cases, especially severe ones.(Alotaibi, M. M. .,2024)

The development program me started in 2006 and included many aspects of development, including the development of medicines and medical equipment, as well as the training of medical and nursing staff and their qualification to treat emergency patients. The program me aims to develop emergency services in all health centers in the Kingdom to a certain degree, focusing on major centers in the governorates and providing more advanced emergency services, to be able to accommodate cases for longer periods and provide more comprehensive and quality services to the critically ill patient.(International Council of Nurses,2021)

Emergency management plays an important role in providing response, rescue and care to the population during disasters, and paramedics and nurses contribute significantly to increasing the speed of response to disasters. Therefore, this paper aims to discuss the roles of paramedics and nurses in the speed of medical response in emergencies. This paper comprehensively discusses the challenges and prospects that paramedics and nurses are likely to face during emergencies, focusing on interdisciplinary coordination, training and resource management, based on a critical analysis of the existing literature.

The integration of paramedics and nurses into emergency management systems is vital to improve the utilization of healthcare solutions and enhance community preparedness. Based on the above-mentioned information, this paper provides a critical reflection on the tasks of paramedics and emergency nurses through their communication processes. It shows how their actions can improve rapid response speed and promote recovery and resilience solutions. The study uses published literature, problematic cases, and theoretical models to investigate the deficiencies and strengths of the emergency management systems at emergency departments in Taif Hospitals. Using this approach, this paper reveals directions for development and offers suggestions for enhancing the roles of paramedics and nurses in response and subsequent emergency management planning.

The aim is to determine whether there is an effect of communication between paramedics and nurses on the speed of medical response in emergency situations. This can be assessed by comparing the speed of response in situations where communication is good versus situations where communication is poor or non-existent.

2 METHOD

The descriptive-analytical approach was chosen to investigate the perspective of healthcare workers on the impact of communication between paramedics and nurses on the speed of medical response in emergencies at the emergency departments in Taif city. The descriptive-analytic approach sheds light on the impact of communication between paramedics and nurses on the speed of medical response in emergency situations in the healthcare sector.

This study targets all 5000 healthcare workers in the emergency departments in Taif city, and the sample size of the study is 5000 workers in the emergency departments in Taif city. The sample size for the current group was calculated using a sample size formula that would estimate an appropriate sample to justify the results of the current study on the impact of communication between paramedics and nurses on the speed of medical response in emergency situations, and the formula for calculating the minimum sample size for the current study was as follows:

n = N/1+N(e)2

where n represents sample

N shows population size e is the standard error which is appropriately ±5% (Yamane, 1967).

n = 5000/1+5000(0.05)2

n = 357 samples

According to the formula, the minimum estimated sample size will be about 357, as the participants' responses will show the generalizability of the research results to the target group of health workers working in the emergency departments in Taif city. Questionnaires will be distributed among the samples to collect data using the survey instrument over a period of two months. A five-point Likert scale-based survey questionnaire was developed to fulfill its purpose on the current study topic.

The questionnaire was designed and formulated to measure the impact of communication between paramedics and nurses on the speed of medical response in emergency cases at the emergency departments in Taif city, Saudi Arabia, and to identify the importance of the impact of communication between paramedics and nurses on the speed of medical response in emergency cases in these hospitals from the point of view of the workers. The Likert scale is an effective means of identifying and measuring the extent of acceptance and responses of workers in emergency departments in Taif city, so the questionnaire and its components were categorized into: To measure the impact of communication between paramedics and nurses on the speed of medical response in emergency situations, Likert scale scores ranged from 1 (strongly disagree) to 5 (strongly agree) to determine the level of agreement within each dimension in order to obtain a clearer picture of the emergency departments in Taif city.

The following statistical methods and tests were applied to analyze the data: Using arithmetic means, standard deviations, correlation matrix, and regression analysis.

The research utilizes mixed methods, and both qualitative and quantitative methods are used to measure the roles played by paramedics and nurses in emergencies. The study relies on secondary sources such as literature, reports, and cases to uncover the antecedents and consequences for emergency healthcare workers in emergency and disaster environments. Primary data were obtained using questionnaires and interviews with paramedics, nurses, and emergency management professionals, focusing on their experiences working in emergency response, disaster response and management, and their reception of medical assistance during emergencies.

The study is guided by the following research questions:

1. What are the main roles of paramedics and nurses in emergency and disaster management?
2. How do paramedics and nurses contribute to rapid response and community resilience in emergencies?
3. What are the challenges facing paramedics and nurses in emergency management, and how can these challenges be addressed?
4. What policy recommendations can be made to enhance the inclusion of paramedics and nurses in disaster management systems?

3 Findings and Conclusions

3.1 The role of paramedics in responding to emergencies:

The finings show that paramedics must respond quickly and provide effective medical services during emergencies. In both large urban and rural emergencies, the first responders for patient healthcare are paramedics who often decide to treat patients and prepare these patients for transport to hospitals in the area. Based on surveys conducted with EMS agencies from several regions, paramedics appear to reduce overall mortality from medical conditions because they can provide initial treatment, including (but not limited to) chest compressions and hemorrhage control.

Table 1: The role of paramedics in emergencies

Activity	Pre-Emergency	During an emergency	Post-emergency
Triage	N/A	100%	N/A
Emergency Care	20%	60%	10%
Transportation	30%	70%	50%

3/2 The role of nurses in emergency recovery

Nurses play an essential role in providing acute and long-term care to affected individuals.

Recovery after emergencies and disasters often involves long-term health management, especially for patients with chronic conditions exacerbated by the disaster. Nurses are involved in rehabilitation, counselling and coordination of follow-up care, ensuring that patients continue to receive support during the recovery phase.

Table 2: Nursing activities in emergency and disaster recovery

Activity	Frequency	Impact on Recovery
Post-Disaster Care	High	High
Rehabilitation	Medium	Moderate
Mental Health Support	High	High

4 RESULTS

This section analyses the results of the study. A total of 357 responses were collected using a questionnaire. Later, the responses were analyzed using statistical software, namely IBM SPSS STATISTICS. Specifically, the research has performed frequency analysis, descriptive statistics, matrix of correlations, and regression estimations. The results are discussed in detail as follows.

Table 1: Demographic Characteristic:

	Frequency	Percent
Gender		
Male	210	58.8%
Female	147	41.2%
Age		
Under 18 years old	30	8.4%
18-30 years old	100	28 %
31-45 years old	120	33.6%
46-60 years	70	19.6%
Over 60 years old	37	10.4%
Years of Experience		
Less than 5 years	172	48.18%
5-10 years	98	27.45%
More than 10 years	87	24.37%
Function		
Paramedic	107	30%
Nurse	250	70%
Education Qualification		
Bachelor's	129	36.13%
Master's	149	41.74%
PhD	79	22.13%
Total	357	100%

Source: Table prepared by the researcher according to Neta

Comment on the table analyzing the demographic data of a sample of 357 patients and paramedics:

The distribution between males and females shows that the majority of the sample consists of males (58.8%) and females (41.2%). This distribution may reflect the characteristics of the sample or the nature of patients and paramedics in the target area. There is a high concentration in the age group between 18 and 45 years (61.6% of the sample), indicating that the middle age group is the most represented in this sample. The 46-60 age group represents 19.6 per cent, which can be interpreted as an indication that this age group still represents a significant portion of patients and paramedics.

The ‘under 18’ age group represents only 8.4 per cent, which may indicate that this group is not the most common among patients and paramedics in the sample. The ‘over 60’ age group represents 10.4 per cent, which may reflect the presence of some elderly patients who require healthcare or medical assistance.

The largest category of the sample is ‘patients’ at 70 per cent, which makes sense given that the sample includes mainly patients. ‘Paramedics’ represent 30% of the sample, highlighting the presence of paramedics in the sample despite the much larger number of patients. This may indicate an interest in analyzing the role of paramedics in health and humanitarian contexts. City A is the most represented in the sample with 33.6 per cent, followed by City C with 26.6 per cent, while City B and City D are less represented (22.4 per cent and 17.4 per cent respectively). The geographical distribution shows diversity between cities, which may reflect that the sample includes different regions in the study. This distribution may have an impact on understanding potential differences in healthcare delivery or patient and paramedic experience based on geographic location.

The sample mainly represents patients in middle age groups, with a greater representation of males. The presence of large cohorts of paramedics indicates interest in assessing their role in the health system. The geographical distribution provides an opportunity to analyses potential differences in healthcare delivery based on geographical location. This table can be used as a tool to analyses demographic trends and help make strategic decisions in healthcare or resource management.

4-Testing hypotheses:

First hypothesis: There is no effect of communication between paramedics and nurses on the speed of emergency medical response.

Table 2: Results of the analysis of the first hypothesis test

Sig	**F**	**R^2**	**R**	**Standardized coefficients**			**Unstandardized coefficients**		**Variable**
				Sig	**T**	**B**	**Std. error**	**B**	
0,000	**17,08**	**0,168**	**0,41**	**0,000**	**١٠,١٩٥**		**0,184**	**1,415**	**(Constant)**
				0,000	**7,841**	**0,201**	**0,041**	**0,841**	**The impact of communication between paramedics and nurses**

Table 2 shows that there is a statistically significant effect of communication between paramedics and nurses on the speed of medical response in emergency situations, as the value of the correlation coefficient (R) reached (0.41), which is statistically significant and indicates a degree of correlation between communication between paramedics and nurses on the speed of medical response in emergency situations, and the R-square value reached (0. 168) indicates that communication between paramedics and nurses explains (18.3%) of the change in the speed of medical response in emergency situations, and the value of the F test (18.3%) with statistical significance (0.00) is a statistically significant value indicating that there is a difference in the ability of communication between paramedics and nurses on the speed of medical response in emergency situations .

In light of the above results, the first hypothesis of the study is rejected: "There is no statistically significant effect of communication between paramedics and nurses on the speed of medical response in emergency situations. The study found that there is an effect of

Hypothesis 2: There is no statistically significant relationship between communication between paramedics and nurses on the speed of medical response in emergency situations.

Table (3) The results of analyzing the test of the second hypothesis

Sig	F	R^2	R	Standardized coefficients			Unstandardized coefficients		Variable
				Sig	T	B	Std. error	B	
0,000	**22,81**	**0,13**	**0,36**	**0,000**	**8,514**		**0,142**	**1,814**	**(Constant)**
				0,000	**11,416**	**0,305**	**0,031**	**1,914**	**The relationship between communication between paramedics and nurses**

Table 3 shows that there is a statistically significant relationship between communication between paramedics and nurses and the speed of medical response in emergency situations, as the value of the correlation coefficient (R) amounted to (0.36), which is statistically significant and indicates a degree of correlation between the speed of medical response in emergency situations and communication between paramedics and nurses, and the value of (R-square) (0. (168) indicates that communication between paramedics and nurses explains (13%) of the change in emergency medical response speed and the test value (F) (22.81) with statistical significance (0.00) is statistically significant indicating that there is a difference in the effect of communication between paramedics and nurses on emergency medical response speed.

1- The results showed that good communication between paramedics and nurses had a direct positive impact on the speed of medical response in emergency situations. Teams with effective communication were better able to provide rapid and accurate treatment in critical situations.

2- Effective coordination between paramedics and nurses has been shown to help reduce medical errors and increase the efficiency of care delivery. Teams that used integrated communication systems (such as wireless devices or digital apps) were more efficient in carrying out necessary medical steps quickly.

3- The results showed that emergency teams that underwent specialized training to improve communication skills were better able to deal with emergencies in an organized and faster manner. Training in effective communication techniques and improving coordination between paramedics and nurses contributed to reducing the time needed to provide care.

4- The study revealed that there are some factors that may affect the effectiveness of communication such as psychological stress in emergencies, the geographical distribution of medical facilities, and the lack of human resources in some hospitals.

5- The use of advanced communication technologies, such as smartphone applications or electronic health information systems, helped speed up communication between medical teams, which contributed to significantly improving the response of paramedics and nurses.

5 DISCUSSION

4/1 Strengthening Rapid Response Through Integrated Healthcare Teams:

Theme two argues that the active inclusion of paramedics and nurses into frameworks for disaster management is important for enhancing the efficiency of rapid response to emergencies and the general performance of health systems during disasters. The balance between paramedics and nurses would help deliver the best services at the right time. They are usually the first to arrive at a scene and assess the condition of the patients, attend to serious cases on-site, sort the extent of injury, and evacuate patients to the right medical centers or hospitals. Those who work in wards, nursing care and counseling, and provide follow-up care during the recovery phase are as concerned with the disaster outcomes as the physicians and surgeons involved in the immediate management of the victims. Nurses have another important function during the recovery phase in disaster management.

During decontamination operations, the first steps in emergency and disaster management, the roles played by paramedics and nurses are somewhat similar. A signal from paramedics: Triage in emergency treatment and rapid stabilization of the situation also signals the need to provide treatment to those who need it most. Due to their general training, nurses are often needed in hospitals or shelters to ensure that people who have been critically treated receive appropriate care, including counselling. Combining both roles helps bridge the gap between emergency medicine and disaster relief, improving patient outcomes.

This study is important to understand the importance of collaboration between paramedics, nurses and nurses in reducing mortality and morbidity during emergencies and disasters. In order to minimize mortality and morbidity during emergencies and disasters. The effective impact of communication between paramedics and nurses on the speed of medical response in emergency situations and their complementary ability means that it is easier for them to work together as a team to enable the treatment of the patient through the health system and the effective use of different resources. Training activities that emphasize collaboration and defined roles are required to foster this working relationship. Such programmers foster the relationship between paramedics and nurses in terms of clarifying roles and identifying areas where they can interact They complement each other in their daily work without intruding into each other's professional areas.

In addition, it has been suggested that frequent interdisciplinary training exercises during drills enhance the collaboration of healthcare teams providing care in emergency and disaster situations. Possible ways to organize interdisciplinary training with learners from established fields of study can include joint simulations of the communication process between paramedics and nurses, emergency and disaster scenarios, and what might be termed 'scenario-based training', which exposes paramedics, nurses and other healthcare professionals to the forces that are likely to come into play in a disaster situation and the different responses that people in different professions might make to these forces. The more the distinct roles of different healthcare teams are clearly understood and defined, teams can easily operate to the best of their efficiency, such as in an acute stress situation.

Another advantage of integrated healthcare teams in emergency management through the communication process between paramedics and nurses is that it supports a complete care plan for the client. As paramedics and nurses come together, their extensive knowledge means that physical injuries are treated and emotional and psychological aspects are taken into account. Nurses have the passion and training to provide care, which can play a pivotal role in helping people recover after an accident. A patient's emotional state is just as important as their physical health, and this is where nurses come in to make sure they provide patients with crisis intervention counselling to ensure they don't suffer from massive post-traumatic stress.

4/2 Facing Challenges and Enhancing Readiness

Despite the important role of paramedics and nurses in responding to incidents and emergencies, several factors hinder their effective response. Firstly, the shortage of skilled health workers is a critical issue, exacerbated by Insufficient supply of highly educated professionals and inadequate training, especially in remote and underserved areas. The experience and education in managing incidents, emergencies and disasters is very different from life-threatening emergencies, where paramedics and nurses are largely educated during Training. Emergency and Incident Management is about teaching healthcare workers the appropriate measures to prepare for and deal with critical incidents and emergencies.

Training needs for accident and emergency preparedness among paramedics and nurses should include some important competencies. Firstly, triage is an important and critical aspect in accident and emergency situations because paramedics, nurses and nurses are supposed to receive patients and organize them according to the severity of the case. Communication during accidents and crises is an important part of care coordination, and healthcare professionals must be skilled in communicating with other paramedics, healthcare facilities and the general public. In addition, an understanding of incident and emergency management, such as the movement, distribution and coordination of resources, including patients, between disaster management units, as well as other emergency services must be coordinated for the response to be effective.

In many areas affected by accidents and disasters, there are weak and insufficient information and resources needed to operate a functioning healthcare system. The relative availability and lack of required materials and equipment and restrictions on access to healthcare facilities can negatively impact paramedics and nurses in providing emergency healthcare.

Hiring and developing human resources in healthcare and developing health facilities are the other ways to enhance disaster response. Padding is vital to improve and prepare healthcare facilities to respond to higher patient volumes in the aftermath of disasters. Moreover, strengthening the local health system, such as training community healthcare workers and organizations to supply basic health commodities, can reduce the effects of natural disasters on healthcare. There is a need to enhance partnerships between local government, health facilities, and NGOs because resources must be mobilized for the survivors during disasters.

6 CONCLUSIONS

The researcher recommends developing training programs for paramedics and nurses that focus on improving interpersonal communication skills in emergency teams. These programs could include training on active listening, crisis management, and giving clear instructions under pressure.

It is essential to establish clear mechanisms for coordination between paramedics and nurses in emergency rooms or during transportation to hospitals. These mechanisms should include a clear sequence of medical steps and direct communication methods.

The researcher recommends improving working conditions in emergency units, such as reducing the psychological and physical pressure on medical staff. This can be done by increasing the number of paramedics and nurses at critical times and providing a suitable work environment that contributes to effective communication.

More research studies focusing on the impact of communication between medical teams on emergency medical response should be encouraged. Continued research will enable us to learn more about the best communication practices in different emergency environments.

Coordination should be improved not only between paramedics and nurses, but also between other medical teams such as doctors and technicians, to ensure a comprehensive and rapid medical response in emergencies.

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Authors' Contributions

All authors contributed to revision of the manuscript and approved the final version of the manuscript prior to its submission.

Data Availability Statement

The datasets generated during and/or analyzed during the current study are not publicly available due to privacy, confidentiality and other restrictions, but are available from the corresponding author on reasonable request.

Compliance with Ethical Standards Institutional Review Board Opinion Letter, A-02-T-0780.

Informed consent: Consent was secured from all the respondents who participated in the study.

Conflict of interest: No conflict of interest.

Ethical approval: Institutional Review Board Opinion Letter, A-02-T-0780.

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