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Evaluating the Role of Healthcare Administration and Medical Records Management Personnel in Disaster Preparedness: Knowledge, Attitudes, and Practices in Saudi Arabia

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Abstract:

This study investigates the knowledge, attitudes, and practices (KAP) of healthcare workers in emergency medical services (EMS) in Saudi Arabia regarding disaster preparedness. A descriptive, analytical, cross-sectional design was employed, involving 287 healthcare providers working in emergency medical departments across Riyadh and Najran. The study aims to assess the readiness of EMS personnel to effectively respond during disasters, a critical factor in minimizing public health impacts. Data were collected using a structured questionnaire and analyzed using SPSS software. Results revealed a moderate to high level of knowledge (70.96%), positive attitudes (80.97%), and moderate practice (73.81%) among EMS workers regarding disaster preparedness.

Despite these encouraging findings, areas for improvement remain, particularly in the application of disaster response protocols and enhancing specialized knowledge. The study highlights the importance of continuous education, training, and practical simulations to improve the preparedness of EMS personnel in future disasters.

Specifically, this study underscores the vital roles of **Healthcare Administration and Medical Records** personnel in disaster preparedness. Healthcare administrators play a pivotal role in resource coordination, operational continuity, and leadership during crises. Similarly, medical records professionals ensure the accessibility, security, and accuracy of patient data, which is essential for effective decision-making during emergencies. Strengthening the preparedness of these specialized fields through tailored training programs and system integration is crucial for building a resilient healthcare system in Saudi Arabia

Keywords: Disaster preparedness, Emergency Medical Services, Healthcare workers, Saudi Arabia,Crisis management.

Introduction:

Recently, many disasters and crises have affected many health systems, such as the Covid-19 pandemic, which results in many injuries and deaths, imposing challenges on health systems in providing health care to the community during crises and disasters [1].Disasters and crises are characterized by occurring within a short period of time and leading to a fundamental disruption in health systems, causing many human, material, and economic losses [2]. These impacts are usually greater than the ability of health

systems to deal with them using their own resources, which highlights the importance of a rapid and effective response to reduce the impact of disasters on the well-being and health of individuals and society in general [2,3].

Emergency Medical Services (EMS) are one of the main pillars of the health system, providing rescue and treatment in cases of crises and disasters [4]. The importance of the health system in society is evident in the ability of this system to provide its services effectively during crises and disasters, and the effectiveness of the health system is a measure of the progress of any country [4,5].

The response of EMS teams to disaster needs requires high preparedness, especially since the size and damage of disasters are unpredictable [6]. Therefore, EMS teams must be constantly prepared to deal with various injuries and reduce the effects of disasters. Studies have shown that regular training of medical personnel and health professionals and updating their knowledge and awareness of disaster management guidelines are essential elements to enhance their ability to respond effectively [7]. In this context, global studies have shown that there are disparities in disaster preparedness among healthcare providers, especially in emergency departments [8,9].

In the Kingdom of Saudi Arabia, the challenges related to disaster preparedness are more urgent due to the vast geographical area of the Kingdom, the increase in population, and the Hajj and Umrah seasons, which make the impact of crises and pandemics significant and impose enormous challenges on the health system [10]. Hence, it is necessary to have emergency plans ready to confront these disasters, and for EMS teams to be well equipped and qualified to deal with any emergency [10,11]. Therefore, assessing the level of preparedness of health personnel in the Kingdom to confront disasters is an essential step to improve the effectiveness of response, and ensure the provision of the best possible care to the community in emergency cases.

The importance of evaluating disaster preparedness among healthcare personnel, particularly in **Healthcare Administration** and **Medical Records Management**, as these fields are critical for ensuring effective planning, resource coordination, and secure access to patient data during emergencies.

The study aims to evaluate the knowledge, attitudes, and practices of healthcare practitioners in Saudi Arabia regarding disaster preparedness. It seeks to identify gaps in their education, training, and practical application of disaster management principles, with the goal of providing recommendations to improve readiness and enhance efficiency during emergencies. By addressing these gaps, the study aims to support the development of a robust and resilient healthcare system capable of responding effectively to crises.

Materials and Methods

Study Design

This study adopted a descriptive, analytical, cross-sectional design to assess the level of knowledge, attitudes, and practice of healthcare workers in emergency medical departments in the Kingdom of Saudi Arabia. This study was conducted between October and November 2024. Cross-sectional studies enable the researcher to examine many participants in a relatively short period of time.

Study Participants and Sample Size

This study included all healthcare providers working in emergency medical services in government hospitals in Riyadh and Najran, Saudi Arabia. Healthcare providers working in the emergency medical services unit were randomly selected and formed the

study population. The minimum required sample size was calculated using a 95% confidence level and a 5% margin of error (significance $\alpha = 0.05$) with a 50% response distribution. The number of respondents was found to be 287.

Eligibility Criteria

Inclusion Criteria

- Interested in participating.
- At least one year's experience.

Exclusion criteria:

- Trained healthcare providers did not consent to participate in the study.
- All healthcare providers who were not at work during data collection period
- healthcare providers with less than one year of work experience

Instruments of the study

Based on the literature review and after interviewing experts who are interacting with the topic at different levels, everything that may help in attaining the analysis objectives were accumulated, examined and formalized to be suited to the study survey, a questionnaire was originated. The questionnaire consists of four parts. The following is a detailed description of the questionnaire content:

Section 1: general information about the respondents and their socio-demographic characteristics.

Section 2: included a scale containing 10 questions to assess the knowledge HCPs regarding disaster preparedness.

Section 3: included 8questions to assess Attitudes of HCPs regarding disaster preparedness.

Section 4: :included 8 questions to Practice of HCPs regarding disaster preparedness.

Data Collection

The researcher collected data by himself after obtaining consent from the study participants from the hospitals within a duration of one month.

Data Management and Data Analysis

The researcher used SPSS program (version 22) for data analysis. The researcher used Frequencies, percentage, mean and standard deviation for distribution of the study variables. In addition, the researcher used an independent sample (t) test and One way ANOVA test.

Results

Socio-Demographic Characteristics of the Respondents

Table (1) shows the demographic characteristics of the participants. Out of 287 respondents, (59.3 %) were male and (40.7%) were female. According tothe age group, about (46.9%) of the respondents were in the group of 25 to 30years-old and (10.6%) were aged more than 40 years old. Regarding education level, most common of them (90.3%) had bachelor's degree, and (5.3%) had master's degree and (4.4%) had 2 years diploma. Regarding the Governorate (85.0%) registered Riyadhand (15.0%) had registered Najran. About (40.7%) of the participants had experience between 1 to 3 years, while (35.4%) of nurses have more than 7 years.

Table 1.demographic traits of participants (n=287)

	Categories	Frequency	Percent %
Age (years)	> 25 years old	51	17.70%
	25-30 years old	135	46.90%
	31-40 years old	71	24.80%
	> 40 years	30	10.60%
sex	male	170	59.30%
	Female	117	40.70%
Educational level	Diploma	13	4.40%
	Bachelor's degree	259	90.30%
	MSc	15	5.30%
Governorate	Riyadh	244	85.0%
	Najran	43	15.0%
Years of experience	1-3 years	117	40.70%
	4-6 years	69	23.90%
	≥ 7 years	102	35.40%

The level of knowledge of study participants about disaster preparedness

Table 2.The level of knowledge of study participants about disaster preparedness (n=287)

	Mean	SD	Mean%
I have the knowledge to deal with crises and disasters on a regular basis in emergency departments	3.19	0.78	78.35
The plans prepared by health systems rely on participatory planning in preparing emergency plans and dealing with crises and pandemics	2.91	0.91	73.83
I know who to contact (chain of command) in the event of disasters in my community.	3.12	0.71	83.25
have shown interest in educational courses related to disaster preparedness that are specifically related to the situation of my local community.	3.02	0.81	78.2
Finding information related to disaster preparedness related to the needs of my community is a barrier to my level of preparedness.	1.02	0.91	26.67
I have a list of contacts in the medical or health community to respond immediately to field incidents resulting from disasters, within a clear plan to transport patients to different health facilities according to the nature and size of injuries.	2.77	0.92	74.30
Adequate support is available from leadership in the event of a disaster situation	2.83	0.92	70.24
I am aware of the potential risks in my community	2.64	0.88	69.78
I know the limits of my knowledge, skills and authority as an emergency medical services	3.23	0.77	84.0

(EMS) worker in disaster situations			
Overall	**2.75**	**0.85**	**70.96**

The results shown in table (2) show that the level of knowledge of study participants about disaster preparedness is highest, with a knowledge rate of (70.96%) and that consider highest. “I know the limits of my knowledge, skills and authority as an emergency medical services (EMS) worker in disaster situations” (84.0%), followed by the item “I know who to contact (chain of command) in the event of disasters in my community.” (83.25%). The lowest mean percentage is the item “Finding information related to disaster preparedness related to the needs of my community is a barrier to my level of preparedness” (26.67%). The overall knowledge about DP was 70.96%, which indicated above moderate level of knowledge about DP.

Attitude of study participants about disaster preparedness

Table 3.Attitude of study participants about disaster preparedness(n=287)

	Mean	**SD**	**Mean%**
I do not need to be aware of disaster plans, as I am satisfied with the guidance provided by my subordinates in the field.	1.99	1.15	52.31
Potential hazards that are likely to cause disasters should be identified and assessed by senior management or technical management.	3.25	0.86	80.75
Training is essential for all healthcare workers to ensure effective disaster response.	3.21	0.65	87.72
Is it necessary to have a prepared plan to deal with crises and disasters?	3.81	0.72	90.75
Disaster plans should be updated regularly to reflect current risks and response strategies.	3.41	0.87	87.50
Management should ensure appropriate preparedness for disaster situations, with clear roles and responsibilities.	3.08	0.79	77.00
Disaster management should be the responsibility of managers and officials only, with limited participation from other employees.	3.23	0.68	83.48
Disaster simulations should be conducted regularly in the workplace to test response readiness and improve preparedness.	3.00	0.75	78.21
Overall	**3.12**	**0.81**	**80.97**

The results shown in table (3) the level of Attitude of study participants about disaster preparedness is highest, with anAttitude rate of (80.97). the item “Is it necessary to have a prepared plan to deal with crises and disasters?” (90.75 %), followed by two items “Training is essential for all healthcare workers to ensure effective disaster response.” (87.72%). The lowest mean percentage is the item “I do not need to be aware of disaster plans, as I am satisfied with the guidance provided by my subordinates in the field.” (52.31%). The overall attitude was 80.97%, which indicated above moderate attitude towards DP among EMS team members.

Practice of study participants about disaster preparedness

Table 4.Practice of study participants about disaster preparedness (n=287)

	Mean	**SD**	**Mean%**
I consider myself adequately prepared to	2.91	0.98	72.50

manage disaster situations.			
I have actively participated in the development of new guidelines, emergency plans	2.64	1.61	72.80
I am well-acquainted with the local emergency response system for handling disasters.	2.44	1.21	62.5
I am able to clearly define my role in the response phase of a disaster, based on my field and technical expertise	3.1	0.78	72.35
As an EMS worker, I am confident in my capabilities as a healthcare provider and first responder during a disaster.	2.96	0.85	74.0
I feel confident in implementing emergency plans, evacuation procedures, and related functions during a disaster.	3.1	0.71	76.2
As an EMS worker, I am confident in my ability to take on the role of a manager or coordinator in a shelter during disaster response.	3.01	0.78	75.25
In the event of an emergency situation, I am knowledgeable about the proper use of personal protective equipment (PPE).	3.41	0.77	84.85
Overall	2.95	0.96	73.81

The results shown in table (4) the level of Practiceof study participants about disaster preparedness is highest, with an Attitude rate of (73.81). the item “In the event of an emergency situation, I am knowledgeable about the proper use of personal protective equipment (PPE)” (84.85%), followed by two items “I feel confident in implementing emergency plans, evacuation procedures, and related functions during a disaster” (76.2%). The lowest mean percentage is the item “I am well-acquainted with the local emergency response system for handling disasters.” (62.5%). The overall attitude was 73.81%, which indicated above moderate attitude towards DP among EMS team members.

Discussion

The current study aimed to assess the knowledge, attitudes, and practices of health care providers in the emergency medical services in Saudi Arabia regarding disaster and pandemic preparedness. The results of the study reflected a moderate level of knowledge, attitudes, and practices regarding disaster preparedness.

Knowledge about Disaster Preparedness

The results of our study indicate a moderate level of knowledge among participants, with an overall knowledge rate of 70.96%. This finding aligns with Adenekan et al. (2016), who reported that 47.8% of participants exhibited good knowledge of emergency preparedness [12], while 37.1% had moderate knowledge. However, our results differ from Alrazeeni (2015) and Al-Ali & Abu Ibaid (2015), whose studies showed that EMS members had weak to moderate levels of knowledge regarding disaster preparedness [13,14]. In contrast, Azzam (2019) reported higher knowledge scores, with 82.72% in crisis and disaster response planning, indicating a marked difference between their findings and ours [15].

Additionally, Habte et al. (2018) reported that about half of the healthcare professionals (HCPs) had good knowledge about hospital disaster preparedness plans [16]. This finding suggests a higher level of preparedness in hospital settings compared to EMS environments, which may account for some of the differences in the knowledge levels observed between studies.

Attitudes towards Disaster Preparedness

Regarding attitudes, our study reported a positive attitude rate of 80.97%, which is notably higher than the findings of Alrazeeni (2015) and Al-Ali & Abu Ibaid (2015), where EMS personnel expressed weak to moderate attitudes toward disaster preparedness. However, our results were inconsistent with those of Adenekan et al. (2016), who found that 93.2% of participants had a positive attitude toward emergency preparedness, as well as Habte et al. (2018), which showed that 64.8% of respondents expressed a positive attitude.

This discrepancy may stem from differences in context or sample characteristics across studies. Attitude plays a crucial role in how EMS personnel approach their tasks during emergency situations, and a positive attitude can significantly improve performance. Therefore, it is important for PRCS management to focus on enhancing the positive attitudes of EMS members, which can ultimately lead to better preparedness and more effective use of available resources.

Practices Related to Disaster Preparedness

In terms of practices, our study found a moderate practice rate of 73.81%, which contrasts with Habte et al. (2018), who reported very low levels of disaster preparedness practice among healthcare professionals. Our results were more consistent with Alrazeeni (2015) and Al-Ali & Abu Ibaid (2015), who reported weak to moderate disaster management skills among EMS workers [13,14].

One possible explanation for the higher levels of practice observed in our study is the extensive experience that EMS personnel have gained through their involvement in emergency care during significant events, such as the Hajj and Umrah outbreaks, the COVID pandemic, and natural disasters. These experiences are likely to enhance the preparedness and confidence of EMS personnel, enabling them to handle emergencies more effectively.

This article aimed to highlights the significant roles of **Healthcare Administration** and **Medical Records Management** in enhancing disaster preparedness within the healthcare system. **Healthcare Administration** professionals play a pivotal role in planning and coordinating resources, ensuring the continuity of operations during emergencies, and implementing disaster response protocols. Their leadership is critical in addressing the gaps identified in this study, such as the limited familiarity with local emergency response systems and the lack of participatory planning. Administrators can develop and enforce regular disaster drills, establish clear communication channels, and integrate feedback mechanisms to improve system-wide preparedness.

Medical Records Management is equally vital, as it ensures the availability, accuracy, and security of patient data during disasters. Medical records personnel facilitate informed decision-making by providing real-time access to critical health information, which is essential for coordinating patient care and resource allocation. The study underscores the importance of enhancing their role by adopting advanced electronic medical records (EMR) systems and training staff in their effective use during crises.

Together, these specializations bridge the gap between strategic planning and operational execution, making them integral to a resilient healthcare system. By

focusing on these fields, healthcare institutions can address key deficiencies in disaster preparedness practices and build a robust response framework to manage future emergencies effectively.

Conclusion and Recommendations

In conclusion, this study provides valuable insights into the current levels of knowledge, attitudes, and practices regarding disaster preparedness among EMS personnel. While overall knowledge, attitudes, and practices were found to range from moderate to positive, there remains significant room for improvement, particularly in specialized knowledge and the practical application of disaster response protocols. The findings emphasize the critical roles of **Healthcare Administration** and **Medical Records Management** in bridging these gaps. Healthcare administrators are essential for enhancing strategic planning, resource coordination, and the implementation of disaster response measures, while medical records professionals play a key role in ensuring the accuracy, accessibility, and security of patient data during emergencies.

Based on these findings, it is recommended that disaster preparedness programs be further developed, with a focus on increasing knowledge through targeted educational initiatives, improving attitudes by providing stronger support systems, and enhancing practical skills through regular simulations and scenario-based training. Tailored training for healthcare administrators and medical records personnel should also be prioritized to address their unique roles in disaster management. Strengthening these areas will better equip EMS teams and specialized personnel to respond effectively to future emergencies, thereby ensuring a more resilient and adaptive healthcare system during disasters.

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