

Core Competencies required of Health care Providers During Mass Casualty Incidents (MCIs) in Saudi Arabia: Implications for Hajj

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المهارات اللازمة للممارسين الصحيين للاستجابة الفعالة للكوارث في المملكة العربية السعودية، تطبيقات لموسم الحج

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ملخص البحث (Abstract):

المهارات اللازمة للممارسين الصحيين للاستجابة الفعالة للكوارث في المملكة العربية السعودية: تطبيقات لموسم الحج المقدمة أكثر من مليوني حاج مسلم يجتمعون سنويا لأداء الحج سنويا في المشاعر المقدسة. في السنوات الماضية كان هناك عدة عوامل لها تأثير على سلامة وصحة الحجاج مثل السيول والحرائق والتدافع. وبما ان جميع الممارسين يلعبون دور هام جدا في التخطيط والاستجابة الفعالة لكل حالات الطوارئ والكوارث إضافة الى النقص الشديد في البراهين والأدلة لإثبات قائمة المهارات اللازمة للممارسين الصحيين في الاستجابة للكوارث لا قدر الله أثناء الحج يستدعي من الباحثين تحديد أهم المهارات اللازمة لهم وذلك من خلال تحليل الدراسات السابقة والتي سلطت الضوء على الإصابات خلال التجمعات الكبيرة مثل الحج والكوارث المتعلقة بالمجال الصحي الهدف تحديد المهارات اللازمة للممارسين الصحيين في الاستجابة للكوارث من اجل تطبيقها على الممارسين الصحيين المشاركين في موسم الحج لخدمة الحجاج. المنهج تحليل الدراسات السابقة التي عملت في المملكة العربية السعودية في مجالات الكوارث واستجابة الفرق الصحية في المملكة العربية السعودية النتائج اثبت التحليل بأن تركيز الدراسات السابقة يختلف من حيث طبيعة ومنهج البحث. كما كان هناك عدة دراسات ركزت على استجابة الفرق الصحية للكوارث والإصابات الناتجة عن التجمعات الكبيرة مثل الحج. على سبيل المثال: دراسة واحدة ركزت على تقييم خطط الكوارث في مستشفيات مكة المكرمة. بينما ٣ دراسات ركزت على تمريض الكوارث وعدة دراسات ركزت على صحة الحجاج اثناء الحشود في المشاعر المقدسة. بناء على التحليل تم استخراج قائمة من أهم المهارات اللازمة لكل ممارس مشارك في الحج والتي تشمل التخطيط والتحضير والاستجابة للكوارث. إضافة الى ذلك هذا التحليل سلط الضوء على أهم المعوقات التي تعيق الممارسين الصحيين من الاستجابة الفعالة للكوارث والتي تشمل نقص التعليم في هذا المجال ونقص التدريب ونقص شديد في الأبحاث الملخص من المهم توفر المهارات اللازمة لكل الممارسين الصحيين المشاركين في الحج مع ضرورة التركيز على التعليم والتدريب وزيادة الأبحاث في هذا المجال وذلك من أجل رفع درجة تأهب الممارسين الصحيين والاستجابة لجميع انواع الكوارث.

Background

More than 2 million Muslims gather in one space in the city of Makkah in Saudi Arabia every year. In the past, many factors, such as flooding, fire, and human stampedes, have affected the lives and wellbeing of pilgrims. Healthcare providers play a critical role in planning and responding to mass casualty incidents (MCIs) and disasters. The lack of evidence of the abilities of

healthcare providers to respond to MCIs during Hajj makes it necessary to examine the most important core competencies required of healthcare providers during Hajj by analyzing existing evidence related to MCIs and disasters in Saudi Arabia .

Aim

This scoping review aims to summarize the core competencies required of healthcare providers during MCIs in Saudi Arabia .

Methodology

This scoping review includes all studies published in Saudi Arabia investigating issues related to disasters and MCIs in the country.

Findings

The focuses of these studies varied in terms of purpose and methodology. Several studies were found that focused on disasters and MCI responses in Saudi Arabia during Hajj. One focused on evaluating the disaster plans of Makkah hospitals, three focused on disaster management for nursing, and two others investigated healthcare responses during Hajj mass gatherings. The extracted core competencies of healthcare providers are presented in this paper, and they involve all phases of disaster management: planning for, preparing for, responding to, and recovering from disasters. This review highlights the barriers preventing healthcare providers from responding appropriately to disasters. A lack of education, training, and research is one such barrier.

Conclusion

This scoping review indicates that all healthcare providers who respond to a MCI must be equipped with essential knowledge, skills, and attitudes. Further, these aspects must be required of all healthcare providers willing to work during Hajj. More education, training, and research will enhance their degree of preparedness.

Introduction

Makkah is the capital holy city of the Kingdom of Saudi Arabia (KSA) and it is located in the west between Taif and Jeddah cities. During Hajj, the Ministry of Health (MOH) plays a significant role in ensuring that the health and safety of pilgrims remain at an optimal level during the seasons of Hajj (Alotaibi et al., 2017). Every year, the MOH increases their efforts to be ready to serve more than 3 million pilgrims by preventing diseases, providing treatment, and maintaining safety (Alaska, Aldawas, Algerian, Memish, & Suner, 2017). For instance, public health sector at the MOH ensures that all pilgrims meet all health requirements before they come to Saudi Arabia by sending letters to all countries that send pilgrims for Hajj via the World Health Organization or via activating the health-monitoring centers at the entry points of the pilgrims. Furthermore, the public health sector ensures there are an adequate number of insolation rooms with full facilities and medical equipment (moh.gov, 2016), as well as the activation of vaccination campaigns and distribution of pamphlets and instructions to pilgrims during Hajj. In addition to public health services, the MOH provides a high level of patient care and treatment through: (1) more than 25 hospitals in Arafat, Mina, Makkah City, and Madinah Munawara, with more than 5,000 beds: 500 beds for intensive care and 550 beds for Emergency care; (2) more than 100 primary health centers in Arafat, Mozdalifa, Mina, Makkah City, and Madinah Munawara; and (3) more than three emergency centers (moh.gov, 2016).

In addition, the MOH has a major plan and goals to be achieved by 2030 for the purpose of improving and continuing the provision of high-quality health services. More specifically, one of the major goals for the MOH is to improve the quality of health services in both diagnosis and treatment via increasing the scope of training for all healthcare providers, particularly during Hajj, as the MOH plays a significant role in it. Furthermore, one of the major goals of the MOH is to increase the level of preparedness of the healthcare system and of healthcare providers to respond effectively to hazards and all types of emergencies and disasters, which is applicable to Hajj, as it is a major mass gathering in the Middle East (National

Transformation Program, 2018). Holy places have been affected several times by various types of disasters, such as epidemics, fires, stampedes, and floods due to heavy rains (Alamri, 2010). For example, around 700 pilgrims in October 2015 died (Fadhlullah, 2016) due to a crush and stampede.

During Hajj, more than 800 doctors and nurses in rare medical specialties from Saudi Arabia or from outside the country increase the performance of the health facilities located in these holy places. Therefore, all healthcare providers must be ready and equipped with essential skills to ensure they are ready to provide a good quality of healthcare during that time and, more specifically, during emergencies and disaster situations. Despite the fact that some studies investigated the level of disaster preparedness and core competencies of healthcare providers in the country, the problem is that research on mass gatherings during Hajj is highly limited. Thus, this scoping review aims to summarize the core competencies required of healthcare providers during mass casualty incidents (MCIs) in Saudi Arabia for implications for Hajj and to highlight the major barriers related to this topic.

Methodology

This scoping review includes all studies published in Saudi Arabia investigating issues related to disasters and MCIs in the country. An extensive search was conducted in the following electronic databases using the electronic Saudi Digital Library: (1) ScienceDirect, (2) ProQuest, (3) BMJ best practice and clinical skills, (4) ERIC, and (5) Scopus. The keywords used in the search were as follows: Mass Causality Incidents; Hajj; Saudi Arabia; Disaster; Competencies; Response; Healthcare providers; Knowledge and skills; and Barriers. The selection criteria included the following: (1) the article should aim to identify core competencies, including knowledge, skills, attitude, preparedness, barriers, or disaster plans; (2) the study must be conducted in Saudi Arabia; (3) the study must involve specialty healthcare providers as participants; (4) the study must be published in a peer review journal; and (5) the study must be published in Arabic or English. After the articles were selected for review, the criterion for extracting information was as follows: (1) extract knowledge; skills and attitudes (2) extract factors. Finally, the findings summarized and discussed.

Findings

The focus of these reviewed studies varied in terms of purpose and methodology. Several studies were found that focused on disasters and MCI responses in Saudi Arabia during Hajj. One focused on evaluating the disaster plans of Makkah hospitals, three focused on disaster nursing, and two others investigated healthcare responses during Hajj mass gatherings. The extracted core competencies of healthcare providers are presented in this paper, and they involve all phases of disaster management: planning for, preparing for, responding to, and recovering from disasters. This review highlights the barriers preventing healthcare providers from responding appropriately to disasters. A lack of education, training, and research is one such barrier. The methodologies of these studies are similar: Five studies were descriptive with a quantitative design, while only one study was conducted with a rigorous methodology using factor analysis methods. Furthermore, this review revealed that the scope of the studies focused mainly on nursing and medicine, while the other specialties, such as paramedics, were not considered. In terms of core competencies, there are many skills, attitudes, and knowledge levels that all healthcare providers must have to respond to a disaster, and these include protocols and standards of preparedness, awareness of the disaster plan, knowledge of their roles, and the ability to activate the disaster plan and to participate in conducting a disaster plan. Many factors or barriers might affect the responses of healthcare providers to a MCI, more specifically, a lack of formal education and training. The key findings are presented in table 1.

Table 1 core competencies and barriers of disaster response in Saudi Arabia

Author	Aim	Method	Findings	Factors
(Shalhoub, Khan, & Alaska, 2017)	Examine in-depth and describe hospital disaster preparedness	Cross-sectional survey in Riyadh. 13 private hospitals with a capacity of more than 100 beds	Not all hospitals cover internal and external disaster in their plans.	Preparedness, including training, education, and conducting drill exercises Planning for staff workers Facilities management Dealing with extremal hospitals and other agencies
(Alzahrani & Kyratsis, 2017)	Preparedness for MCI during Hajj	Cross-sectional online survey 106 emergency nurses participated in the study	The findings of this study indicate that nurses have a low preparedness level for MCIs and they are not fully aware of their roles.	Awareness and knowledge of disaster management Disaster education and training Previous experiences
(Al-Shareef et al., 2017)	To assess the hospital disaster plan in Makkah	Survey N = 14 hospitals	This study explored the importance of: Reviewing the disaster plan regularly Conducting disaster plan drill exercises every two years Ability to increase the hospital capacity during disaster Preparedness for infection control Educate and train healthcare providers about the current hospital disaster plan	Writing a hospital disaster plan Reviewing the hospital disaster plan An effective disaster plan must include surge capacity and infection control Education and training Conducting disaster drills based on the hospital disaster plan
(Nofal, Alfayyad, Khan, Al Aseri, & Abu-Shaheen, 2018)	The study aims to investigate nurses' preparedness for emergencies and disasters.	Cross-sectional study N = 36 physicians and N = 153 Emergency nurses)	Patients believed that healthcare providers need training Healthcare providers scored low in disaster management knowledge	Knowledge about disaster management Conducting a disaster drill Disaster-related training or simulation experience Disaster management training in curriculum Role awareness and skills
(Al Thobaity, Plummer, Innes, & Copnell, 2015)	To evaluate the level of nurses' knowledge in Saudi Arabia regarding disaster preparedness	Quantitative survey N = 600	Nurses have inadequate preparedness Nurses are willing to learn more about disaster management	Knowledge about disaster preparedness Lack of formal education in nursing curriculum Resources about disaster management (access to literature, textbooks) Training and drills
(Al Thobaity, Williams, & Plummer, 2016)	The aim of this study was to explore the core competencies of disaster nursing, including roles and barriers	PCA With sample size = 158	The findings of this study indicated that there are many competencies nurse in disaster management should be trained for. Additionally; there are some vital barrier that could affect the development of the disciplines such as: Lack of formal educational Ineffective training Lack of evaluation instruments Lack of support Lack of expert staff Restricting roles in disaster management Lack of research studies	Educational resources Training opportunities Evaluation instruments Health organization support Training programs in the workplace Expert staff Roles in disaster management Research studies
(Ibrahim, 2014)	To evaluate nurses' competencies in disaster management	Cross-sectional descriptive study N = 252 Nurses	Lack of disaster preparedness in terms of knowledge and attitudes	Disaster preparedness courses not included in the curricula Need to integrate education and training in disaster preparedness

Discussion

More than 2 million Muslims gather in one space in Makkah every year. In the past, many factors, such as flooding, fire, and human stampedes, have affected the lives and wellbeing of pilgrims. Healthcare providers play a critical role in planning and responding to MCIs and disasters. The lack of evidence of the abilities of healthcare providers to respond to MCIs during Hajj makes it necessary to examine the most important core competencies required of healthcare providers during Hajj by analyzing existing evidence related to MCIs and disasters in Saudi Arabia. This review indicated that all healthcare providers in Saudi Arabia or those who have active roles and duties in the hospitals and health centers must have essential knowledge. However, studies conducted in Saudi Arabia among healthcare workers have identified the competences required of healthcare workers to perform an active role in disaster management. These competencies mainly focused on healthcare workers' preparedness for disaster management and included knowledge, training, and attitudes.

In Saudi Arabia, the gap in knowledge regarding disaster management has been revealed among healthcare workers equally. Al Thobaity et al.'s (2015) study focused on nurses' perceptions of their knowledge of disaster management, and they highlighted the need for formal education among nurses. Education required to equip healthcare workers for disaster management in Saudi Arabia is deficient (Al Thobaity et al., 2014; Nofal et al., 2018; Alzahrani & Kyratsis, 2016; Shalhoub, Khan, & Alaska, 2017). Thus, preparation for disaster management can take the form of formal education, as provided in the curriculum at medical or applied health colleges, or informal education, as provided in continued education programs in healthcare facilities. The role of education is significant in preparing healthcare workers, as it will increase their level of awareness and orientation about what is required to master in disastrous situations. For instance, the literature in Saudi Arabia indicates that healthcare providers must be aware of disaster plans, protocols, and policies and procedures related to disaster management. However, this must be supported by information sources, such as access to databases, relevant literature, textbooks, and other forms of education materials. However, while most healthcare providers who work during Hajj come from Saudi hospitals, it is highly essential to train them by providing essential knowledge via education courses, such as short courses that cover all competency domains and all areas of disaster management.

Concerning training, healthcare workers in Saudi Arabia lacked the required training, which is an important element for staff preparation in disaster management. Training in hospital settings is simply applied in the form of mock drills or simulations of disastrous situations, where healthcare workers have hands-on experience in managing the disaster-related consequences. Although healthcare facilities ensure that they have written disaster management plans, they direct little attention to disaster management plans that focus on training. This is because there is a rare possibility of a disaster happening at the only mass gathering event in Saudi Arabia, which occurs every 12 months, but there is a high chance that disasters will happen during that event. Continued training sessions are highly required for healthcare workers, as the essence of disaster management plans is preparedness at all times, and this is applicable to healthcare providers who provide health services and care to pilgrims during Hajj.

The attitudes of healthcare workers in disaster management are important. Insufficient preparation, knowledge, and training among these staff to battle real disaster situations leads to a lack of understanding of their real role during

disastrous situations (Nofal et al., 2018). Particularly during Hajj, all healthcare providers must understand what they do in the MCIs, and this can be enhanced by education and training.

Limitation

Despite the fact that this scoping review has a rigorous methodology, the available studies were focused on few specialties, such as physicians and nurses, while others, such as paramedics, have been given less attention.

Conclusion

This scoping review showed that healthcare providers in Saudi Arabia, specifically during Hajj, need more education and training in disaster management to ensure they have the capabilities to respond to any disaster or emergency during Hajj. The other competencies in addition to disaster preparedness include planning and responding effectively to a disaster and conducting disaster drills and exercises.

References

- Al Thobaity, A., Plummer, V., Innes, K., & Copnell, B. (2015). Perceptions of knowledge of disaster management among military and civilian nurses in Saudi Arabia. *Australasian Emergency Nursing Journal*, 18(3), 156–164.
- Al Thobaity, A., Williams, B., & Plummer, V. (2016). A new scale for disaster nursing core competencies: development and psychometric testing. *Australasian Emergency Nursing Journal*, 19(1), 11–19.
- Al-Shareef, A. S., Alsulimani, L. K., Bojan, H. M., Masri, T. M., Grimes, J. O., Molloy, M. S., & Ciottono, G. R. (2017). Evaluation of hospitals' disaster preparedness plans in the holy city of Makkah: a cross-sectional observation study. *Prehospital and disaster medicine*, 32(1), 33–45.
- Alamri, Y. A. (2010). *Emergency management in Saudi Arabia: Past, present and future*. University of Christchurch Report, New Zealand, 21.
- Alaska, Y. A., Aldawas, A. D., Algerian, N. A., Memish, Z. A., & Suner, S. (2017). The impact of crowd control measures on the occurrence of stampedes during mass gatherings: The Hajj experience. *Travel Medicine and Infectious Disease*, 15, 67–7
doi:<https://doi.org/10.1016/j.tmaid.2016.09.002>
- Alotaibi, B. M., Yezli, S., Bin Saeed, A.-A. A., Turkestani, A., Alawam, A. H., & Bieh, K. L. (2017). Strengthening health security at the Hajj mass gatherings: Characteristics of the infectious diseases surveillance systems operational during the 2015 Hajj. *Journal of Travel Medicine*, 24(3), taw087.
- Alzahrani, F., & Kyratsis, Y. (2017). Emergency nurse disaster preparedness during mass gatherings: a cross-sectional survey of emergency nurses' perceptions in hospitals in Mecca, Saudi Arabia. *BMJ Open*, 7(4), e013563.
- Fadhlullah, S., & Ismail, W. (2016). A statistical approach in designing an RF-based human crowd density estimation system. *International Journal of Distributed Sensor Networks*, 2016. Retrieved from <http://dx.doi.org/10.1155/2016/8351017>.
- Ibrahim, F. A. A. (2014). Nurses' knowledge, attitudes, practices and familiarity regarding disaster and emergency preparedness—Saudi Arabia. *American Journal of Nursing Science*, 3(2), 18–25.
- moh.gov. (2016). Ministry MediaCenter Publications.
- National Transformation Program. (2018). Exclusive plan for national transformation programme. Retrieved from <file:///Users/aalthobaity/Downloads/NTP%20Arabic%20Public%20Document%202810.pdf>.
- Nofal, A., Alfayyad, I., Khan, A., Al Aseri, Z., & Abu-Shaheen, A. (2018). Knowledge, attitudes, and practices of emergency department staff towards disaster and emergency preparedness at tertiary healthcare hospital in central Saudi Arabia. *Saudi Medical Journal*, 39(11), 1123–1129.
- Shalhoub, A. A. B., Khan, A. A., & Alaska, Y. A. (2017). Evaluation of disaster preparedness for mass casualty incidents in private hospitals in Central Saudi Arabia. *Saudi Medical Journal*, 38(3).