Shammah. Int J Community Fam Med 2018, 3: 139
https://doi.org/10.15344/2456-3498/2018/139

International Journal of
Community & Family Medicine

Short Communication Open Access

Need Assessment, Planning & Management for Health Resources; A case of Makkah Trauma Center level 1 and Makkah EMS & DMC

Ahmed Ali Shammah

Department of Clinical Technology, Faculty of Applied Medical Science, EMS, Umm Al-Qura University, KSA

Abstract

Objective: The study has aimed to focus on the importance of establishing trauma centers in Makkah.

Methods: The study has incorporated quantitative research design, and gathered data from Makkah Emergency Medical Services (EMS) and Detroit Medical Center (DMC). A questionnaire was designed and distributed among the working staff; including administrators, specialists, academic professors, consultants, and others to explore their expert opinion about the significance of planning and management for health resources. The collected data was analyzed using SPSS version 20.0.

Results: 85.2% of the respondents believed that it is extremely important that an ambulance is instructed to take an injured patient to trauma center. More than 50% of the respondents stated that it is extremely important that the injured person is treated in trauma center. However, few of the respondents (0.9%) did not consider the establishment of life flight system to be important for the well-being of injured patients.

Conclusion: The study has concluded that the effectiveness of a trauma center, extensively depends on its integration with EMS system.

Publication History:

Received: December 21, 2017
Accepted: May 01, 2018
Published: May 03, 2018

Keywords:

Assessment, Makkah, Management, Planning, Trauma Center

Introduction

In Saudi Arabia, trauma is identified as a major public health issue with rising tolls of morbidity and mortality. Psychological and social pressures on families, depletion of human resources, socioeconomic stress, and pressure on healthcare facilities are rapidly increasing. A national multi-disciplinary trauma system should be developed and implemented before other intricacies of trauma to minimize this influence.

An efficient evaluation comprises of two aspects, which include social components and patients' care. Clinical and operational components are included in patient's care at rehabilitation environment and hospitals. Prevention and education programs, legislation, assessment of quality concerning the costs, and research are included in the social components. The requirement of improved trauma care is apparent as trauma was ranked as the top most mortal condition in Saudi Arabia [1, 2]. Pre-hospital care is sub-optimal countrywide with the exemption of few centers in big cities.

A study by Al-Shareef et al. [3] demonstrated that 17 hospitals in the city of Makkah were found with the availability of several supplies that are needed for the initial twenty-four hours of a disaster response, which includes N95 masks, antiviral medications, and antidotes for nerve agents. Only 36% hospitals were found with designated decontamination area. 64% of the hospitals had the ability to re-designate inpatient divisions into an intensive care units format. 50% hospitals reported certain protocol for enhancing availability of isolated rooms to prevent the airborne infection prevalence. Similarly, 72% hospitals were engaged in conducting the disaster-training workshops for the healthcare workers.

There have been many disaster incidents in Makkah city over the last years [3]. The present study reported that the hospitals in Makkah are insufficiently prepared for overcoming the future disasters. The study also contributed to demonstrate that there is a vital room for enhancement in most of the aspects of emergency operation plans in the hospitals, particularly increasing the frequency and reviewing the plan of multi-hospital drills.

The study assessed the demographical data of people, dealing with trauma care in Makkah region, and examined the experts' opinion regarding the need assessment for establishing Makkah Trauma Center level 1, Makkah Emergency Medical Services (EMS), and Detroit Medical Centre (DMC). The level 1 trauma center is the main state-of-the-art trauma care that comprises of the quality education, improvement, and research actions. The study has contributed to provide a research based scientific evidence for stakeholders in the planning and management of healthcare resources and to improve the overall emergency care and education in Makkah Region. The awareness to the professionals and the community regarding the importance of high standard and timely delivered emergency and trauma care has been delivered. A well-structured trauma registry data base for Makkah region towards the development of Saudi Arabia National Registry has been developed.

Literature Review

Over the past decades, slow progress has been noted in the development of services, concerning mental health in Saudi Arabia. However, the infrastructure facilities for inpatient started to enhance over the past years. Old rented hospitals of Saudi Arabia were replaced by the modern hospitals, and some other projects are yet to be completed in near future. The quality policies and revised psychosocial policies, approved by health authorities, have reorganized the provision of good quality mental health services among patients with psychiatric complaints. Mental health authorities have developed mental health systems in Saudi Arabia, which were relative with global enhancements in mental health [4]. A study by Almasri [5] reported that road traffic accidents are a major threat to healthcare in the Saudi region, which is also the main cause of general trauma in the region.

***Corresponding Author:** Dr. Ahmed Ali Shammah, Department of clinical technology, Faculty of applied medical science, EMS, Umm Al-Qura University, Makkah, KSA;Email: ahghamdi2@yahoo.com

Citation: Shammah AA (2018) Need Assessment, Planning & Management for Health Resources; A case of Makkah Trauma Center level 1 and Makkah EMS & DMC. Int J Community Fam Med 3: 139. https://doi.org/10.15344/2456-3498/2018/139

Hajj trauma disasters have also been reported to increase in the recent decades. A number of Muslims, who faced traumatic events, has also turned out to be increasing in the recent years. The Hajj management requires standard protocols, concerning health services. Few studies relating to Hajj mentioned that novel reforms are required to develop smooth process of religious event [6]. Hoseinpourfard et al. [7] conducted a study with a tactic to the Islamic values for Hajj trauma centres authorization, based on the appropriate system. Travelers to Makkah experienced different environmental hazards both through the unique microbiological settings and physical environment created during the Hajj period. More focus and attention towards the Islamic values in Hajj trauma centers may promote the satisfaction of the patients and quality.

A cross-sectional study conducted by Bakhsh et al. [8] has collected the data from two medical centers of Makkah city, Saudi Arabia. All the medicines were found in both healthcare centers. Mild cases were observed to be treated and discharged; while, serious cases required more management to be transferred to hospitals in Makkah. The study targeted to evaluate the disease patterns presented to Arab healthcare centers and assess the number of appointed cases to other hospitals. The data collected contributed considerably to future development to make the best possible medical facilities available in the medical centers and other hospitals according to different disease patterns.

The patients' falls rate was in between 1.4-17.9 per 1000 cases in different hospitals, depending on the patient's characteristics and health provision services [9]. Falls refer to the unconsciousness, faced by the patient due to weakness or other health related issue. The resultant consequences may reach 30% with severe conditions like bleeding, fractures or death ranging from 4% to 6% [10]. These events have raised healthcare cost directly, which resulted in a huge burden on the surgical and other health providing services. Furthermore, patients may succumb to emotional and physical trauma, and hospitals might face legitimate issues. The incidence of falls varied among several hospitals and raised with the occupancy rate and number of bed capacity, especially during Hajj season [10].

There is a need to enhance trauma care centers in Saudi Arabia. Statistically, the foremost reason of mortality is trauma in Saudi Arabia. Road traffic accidents are accounted for 80% to 85% of these traumas. The number of deaths since 1986 has been found increasing. The rehabilitation services have also been found deficient, except few centers in Saudi Arabia. Transportation, communication, prevention, training, hospital care and education require more emphasis.

Several researches [11-13] and reports [14, 15] have presented that implementation of trauma systems can fundamentally decrease the rate of mortality and morbidity along with the cost. For these purposes, the implementation and development of trauma care systems in Saudi Arabia have been believed necessary to enhance and improve the trauma care and associated outcomes. There is a requirement from sectors and institutions to collaborate with each other and discuss the feasibility of implementing and developing an effective and efficient system. There are some important components of trauma system, which includes recognition of risk factors leading to injury. Public information and education are commenced through origination of trauma advisory committee, after establishing the requirement of improving trauma care. Research in the trauma care system has derived the system process and offered the base for performance improvement and system's development. Research data from the entire system component must be made available and reliable to all the researchers. Trauma is an alarming public health issue in Saudi Arabia with rising rates of morbidity and mortality. The depletion and socioeconomic pressure of human resources, the psychological and emotional pressures on families and strains on the healthcare facilities on families are also rising. In order to minimize the influence, a nation multidisciplinary trauma system is required to be developed and executed before it is late to manage more complications of trauma in upcoming period.

Methods

Data has been gathered from Makkah Emergency Medical Services (EMS) and Detroit Medical Center (DMC). A questionnaire was structured, based on the required information, concerning the healthcare facilities in case of emergency situation in Makkah Trauma center level 1 and Makkah EMS and DMC. The questions regarding the assessment, planning and management for health resources were included in the questionnaire. It was then distributed among the working staff, including administrators, specialists, academic professors, consultants and others to explore their expert opinion about the significance of planning and management for health resources. The study included 101 participants, who responded to the questions. The participants living in Makkah and outside the Makkah region as well were recruited in the study. Further, the participants having specialty in any of the medical services like critical care, nursing, and general surgery and pediatric surgery and other were included in the study. SPSS version 20 has been utilized for analyzing the collected data.

Results and Discussion

The results are based on the responses of healthcare professionals, who signify the need of assessment in planning and management for health resources. Majority of the participants (85.2%) believed that it is extremely important that an ambulance is instructed to take an injured patient to a trauma center, and it is extremely important that the injured persons are treated in trauma center. Surprisingly, 0.9% of the participants rejected the statement that appropriate treatment of an injured person is necessary in trauma center (Table 1).

Regarding the establishment of Makkah trauma center and its development within easy reach was stated as extremely important by approximately 75% of the respondents. However, 2.8% of the respondents believed that the development of Makkah trauma center for providing care to injured people is not at all important (Table 2). Moreover, 70.4% of the participants were willing to help in the establishment of Makkah EMS and Disaster Management College. On the other hand, 0.9% of the participants did not consider the establishment of life flight system to be important for the well-being of injured patients (Table 3).

More than half of the respondents (68.5%) stated that establishment of a linked system between Ems pre-hospital is extremely important. The similar percentage of people also believed that a medical director should supervise EMS care of seriously injured patients on regular basis. It was surprising that 3.7% of the respondents believed that establishment of a medical director's supervision for all EMS care of seriously injured is not important (Table 4).

If you or family member had a serious life-threatening injury, how important would it be to be that an ambulance be instructed to take you to a trauma center able to handle your specific injury, even if it is not the closest hospital?							Total
		Extremely Important	Very Important	Somewhat Important	Not very Important	Not at all Important	
If you or family member had a serious life-threatening injury, how important would it be to be treated in a trauma center?	Extremely Important	78	13	0	0	1	92
		95.1%	81.2%	0.0%	0.0%	20.0%	85.2%
	Very Important	3	3	2	0	0	8
		3.7%	18.8%	50.0%	0.0%	0.0%	7.4%
	Somewhat Important	0	0	2	0	0	2
		0.0%	0.0%	50.0%	0.0%	0.0%	1.9%
	Not very Important	0	0	0	1	0	1
		0.0%	0.0%	0.0%	100.0%	0.0%	0.9%
	Not at all Important	1	0	0	0	4	5
		1.2%	0.0%	0.0%	0.0%	80.0%	4.6%
Total		82	16	4	1	5	108
		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square test			
	Value	df	Sig
Pearson Chi-Square	245.692	16	.000
Likelihood Ratio	64.738	16	.000
Linear-by-Linear Association	60.168	1	.000
N of Valid Cases	108		

Table 1: Categorical analysis between importance of an ambulance and treatment of injured person in a trauma center.

How much would you be willing to participate in the establishment of the Makkah trauma center to provide care to you and your family if you were seriously injured?							Total
		Extremely Important	Very Important	Somewhat Important	Not very Important	Not at all Important	
Is having a trauma center within easy reach of where you live more important, equally important, or less importantthat having a public mall library?	Extremely Important	71	9	1	0	0	81
		89.9%	50.0%	20.0%	0.0%	0.0%	75.0%
	Very Important	8	8	2	1	0	19
		10.1%	44.4%	40.0%	50.0%	0.0%	17.6%
	Somewhat Important	0	1	1	0	1	3
		0.0%	5.6%	20.0%	0.0%	25.0%	2.8%
	Not very Important	0	0	1	1	0	2
		0.0%	0.0%	20.0%	50.0%	0.0%	1.9%
	Not at all Important	0	0	0	0	3	3
		0.0%	0.0%	0.0%	0.0%	75.0%	2.8%
Total		79	18	5	2	4	108
		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests			
	Value	df	Sig
Pearson Chi-Square	152.552[a]	16	.000
Likelihood Ratio	67.968	16	.000
Linear-by-Linear Association	71.882	1	.000
N of Valid Cases	108		

Table 2: Categorical analysis of importance of establishment of Makkah trauma center and presence of trauma center within easy reach.

How much do you think the importance and urgency to establish a life flight system (using the helicopter in EMS)?							Total
		Extremely Important	Very Important	Somewhat Important	Not very Important	Not at all Important	
How much would you be willing to participate in the establishment of the Makkah EMS and disaster management college?	Extremely Important	64	9	3	0	0	76
		83.1%	42.9%	60.0%	0.0%	0.0%	70.4%
	Very Important	11	11	1	0	0	23
		14.3%	52.4%	20.0%	0.0%	0.0%	21.3%
	Somewhat Important	2	1	1	0	0	4
		2.6%	4.8%	20.0%	0.0%	0.0%	3.7%
	Not very Important	0	0	0	1	0	1
		0.0%	0.0%	0.0%	100.0%	0.0%	0.9%
	Not at all Important	0	0	0	0	4	4
		0.0%	0.0%	0.0%	0.0%	100.0%	3.7%
Total		77	21	5	1	4	108
		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Chi-Square Tests							
					Value	df	Sig
Pearson Chi-Square					235.094[a]	16	.000
Likelihood Ratio					60.504	16	.000
Linear-by-Linear Association					62.837	1	.000
N of Valid Cases					108		

Table 3: Categorical analysis between the importance of establishment of life flight system and establishment of Makkah EMS and disaster Management College.

How much do you think the importance and urgency to establish a linked working system between EMS pre-hospital on call, medical director on call and on call team?							Total
		Extremely Important	Very Important	Somewhat Important	Not very Important	Not at all Important	
How much do you think the importance and urgency to establish a medical director's supervision for all EMS care of seriously injured patients all the time (24/7)?	Extremely Important	70	4	0	0	0	74
		76.1%	44.4%	0.0%	0.0%	0.0%	68.5%
	Very Important	18	5	0	1	0	24
		19.6%	55.6%	0.0%	50.0%	0.0%	22.2%
	Somewhat Important	3	0	1	0	0	4
		3.3%	0.0%	100.0%	0.0%	0.0%	3.7%
	Not very Important	1	0	0	1	0	2
		1.1%	0.0%	0.0%	50.0%	0.0%	1.9%
	Not at all Important	0	0	0	0	4	4
		0.0%	0.0%	0.0%	0.0%	100.0%	3.7%
Total		92	9	1	2	4	108
		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Chi-Square Tests							
					Value	df	Sig
Pearson Chi-Square					168.153a	16	.000
Likelihood Ratio					55.126	16	.000
Linear-by-Linear Association					62.237	1	.000
N of Valid Cases					108		

Table 4: Categorical analysis between the importance of establishment of linked working system and establishment of a medical director's supervision for EMS care.

The population growth in Saudi Arabia has increased the socio-economic burden, emotional and psychological stress on families, and strained the healthcare facilities [1]. The development and implementation of trauma center is necessary to minimize the negative impact of accidents and injuries [2]. A trauma center holds all the facilities and is capable to care for the injured people. A trauma center includes various essential components that include pre-hospital care, system administration, trauma prevention, rehabilitation, trauma care education, trauma care education, hospital care, and trauma care evaluation1. In Saudi Arabia, trauma has been ranked as the most serious public health condition in terms of mortality rate [2]. However, the road traffic accidents account for 80-85% of the traumas.

A study conducted by Al-Naami et al. [1] revealed that Saudi Arabia possesses suboptimal pre-hospital care services and deficient rehabilitation services. Another study described the significant goals, which are associated with the success of trauma center. These goals ensure the decrease in incidence and severity of trauma, and offer equitable and optimal care for the patients, suffering from trauma [16]. It also prevents unnecessary disabilities and deaths as a result of trauma.

The trauma care system needs to implement the performance and quality improvements for the insurance of certain designated facilities, which are appropriate to meet the requirements of injured individuals. Research is essential for trauma care system as it originates the system and develops a basis for the performance improvement and system development [16]. The investment of human resources engages the retention and recruitment of capable trauma care staffs within all trauma system components [1]. Specific training requirements and education ought to be explained through the administrative procedures and policies on regional and national requirements of the system. Such needs are generally attained in collaboration with the international academic universities and institutions.

Diverse trauma programs that discourse almost all features of the trauma management for nurses, physicians, and other staff members are accessible nationally and internationally [17]. The identification of risk factors, which lead to injury, needs assessment through data collection and research that is highlighted as a major component of trauma center. However, the awareness of trauma care needs to be initiated through different prevention programs and the establishment of trauma advisory community [1]. The management of patients in designated trauma care facilities, rehabilitation, and interfacility transfer is referred to as definitive care.

Conclusion

Trauma is considered as a major public health problem among the people of Saudi Arabia, which has drastically increased the rate of mortality and morbidity. It has led to the increase in depletion of human resources, psychological stress, socioeconomic burden, and strain of the healthcare facilities. Therefore, this study has concluded that the negative impact of accidents can be minimized through the development of trauma center before it is too late to manage the complexities of trauma in future. However, the establishment of an appropriate and accurate trauma patient data base is important for future planning. The effectiveness of a trauma center extensively depends on its integration with EMS system.

Acknowledgment

The author is very thankful to all the associated personnel in any reference that contributed in/for the purpose of this research.

Competing Interests

The author declare no competing interests.

References

1. Al-Naami M, Arafah M, Al-Ibrahim F (2010) Trauma care systems in Saudi Arabia: an agenda for action. Annals of Saudi medicine 30: 50-58.
2. Ansari S, Akhdar F, Mandoorah M, Moutaery K (2000) Causes and effects of road traffic accidents in Saudi Arabia. Public health 114: 37-39.
3. Al-Shareef AS, Alsulimani LK, Bojan HM, Masri TM, Grimes JO, et al. (2017) Evaluation of Hospitals' Disaster Preparedness Plans in the Holy City of Makkah (Mecca): A Cross-Sectional Observation Study. Prehospital and disaster medicine 32: 33-45.
4. Al-Habeeb A, Helmi B, Qureshi N (2016) Mental and Social Health Atlas: An update, Ministry of Health, Saudi Arabia, 2015. International Neuropsychiatric Disease Journal 6: 1-20.
5. Almasri M (2013) Severity and causality of maxillofacial trauma in the Southern region of Saudi Arabia. The Saudi dental journal 25: 107-110.
6. Salamati P, Rahimi-Movaghar V (2016) Hajj stampede in Mina, 2015: need for intervention. Archives of trauma research 5: 36308.
7. Hoseinpourfard M, Ghanei M, Tofighi S, Ayoubian A, Izadi M (2016) The Emergence of Hajj Stampedes: Lessons for Draw Near in the Islamic Values in Hajj Trauma Centers Accreditation. Trauma Monthly.
8. Bakhsh AR, Sindy AI, Baljoon MJ, Dhafar KO, Gazzaz ZJ, et al. (2015) Diseases pattern among patients attending Holy Mosque (Haram) Medical Centers during Hajj 1434 (2013). Saudi medical journal 36: 962-966.
9. Schwendimann R, Bühler H, De Geest S, Milisen K (2006) Falls and consequent injuries in hospitalized patients: effects of an interdisciplinary falls prevention program. BMC Health Services Research 6:69.
10. Flimban MA, Abduljabar DF, Dhafar KO, Deiab BA, Gazzaz ZJ, et al. (2016) Analysis of patient falls among hospitalised patients in Makkah region. JPMA. The Journal of the Pakistan Medical Association 66: 994-998.
11. Celso B, Tepas J, Langland-Orban B, Pracht E, Papa L, et al. (2006) A systematic review and meta-analysis comparing outcome of severely injured patients treated in trauma centers following the establishment of trauma systems. Journal of Trauma and Acute Care Surgery 60: 371-378.
12. Chiara O, Cimbanassi S, Pitidis A, Vesconi S (2006) Preventable trauma deaths: from panel review to population based-studies. World Journal of Emergency Surgery 1: 12.
13. Juillard CJ, Mock C, Goosen J, Joshipura M, Civil I, et al. (2009) Establishing the evidence base for trauma quality improvement: a collaborative WHO-IATSIC review. World journal of surgery 33: 1075-1086.
14. US Department of Health and Human Services (2011) Health resources and services administration. Critical Care Workforce Report. Requested by Senate Report.
15. Peden M, Scurfield R, Sleet D, Mohan D, Hyder AA, et al. (2004) World report on road traffic injury prevention.
16. Health Resources and Services Administration, U.S Department of Health and Human Services Program Support Center (2006) MD: Model Trauma System Planning and Evaluation.
17. Mock C (2004) Guidelines for essential trauma care. World Health Organization.