Proposing a Holistic Model for Emergency Wards Management; An Iranian Experience

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Abstract

Introduction: Emergency departments (EDs) especially in the developing countries are mostly overcrowded and facing shortage of resources. The high rates of accidents and the longevity of people with chronic diseases are imposing extra burdens on the EDs in Iran. The aim of this study was to design a conceptual model for ED management at the national level tailored for Iran.

Method: This survey was conducted in a qualitative approach. The data was gathered via literature reviews, and experts' opinions. After the causes of ED overcrowding in the country, a draft model was designed and then it was finalized by the expert panel in focused group discussions.

Results: According to this model, the factors affecting the ED management can be divided into three categories: Pre-emergency, Emergency and post-emergency. There are also factors influencing each of these categories.

Discussion: Many key players that are contributing to the performance of EDs are outside the hospitals. Interactions between the components of the model would lead to controlling the overcrowding in EDs, improving the quality of services, and reducing unnecessary costs. Moreover these components are affected by macro-environmental (political, economic, social and technological) factors. Based on this model a checklist for evaluating the EDs at the national level can be designed.

Keywords: Emergency department, Models of care, Quality

Introduction

Emergency departments (EDs) around the world are grappling with many problems including overcrowding and shortage of financial and human resources [1]. These factors endanger the quality of ED performance which leads to undesirable outcomes and dissatisfaction of both patients and healthcare workers. According to the Iranian national data, approximately 2.3 million people visit ED every month which is more than 3% of the total population [2]. Emergency Medical Services (EMS) in Iran is centralized in the Ministry of Health and Medical Education (MOHME) and provincial emergency centres are affiliated to the Medical Universities in the provinces [3,4]. The ED hospital beds in the country are considerably less compared to the need, leading to rationing of services and blocked access of patients requiring admission. The need for improvement in emergency departments (EDs) with respect to the cost of care, the speed of service, crowding, and patient safety is widely accepted [5]. Moreover industrialization and urbanization would increase the demand for formalized emergency medical services and trauma services [6].

Four main reasons are believed to be responsible for the overcrowding of EDs in Iran:

1) The accident rates especially road traffic injuries (RTI) are high in the Eastern Mediterranean region countries including Iran. In Iran, injuries are the leading cause of death in people under the age of 50 [7]. The incidence rate of fatal RTIs in Iran was 31.8 per 100.000 in 2007 [8,9]. This rate in Eastern Mediterranean region is 19.9 per 100.000 versus 17 per 100.000 worldwide [10].

The most common cause of injury in patients admitted to EDs in Iran are, road

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traffic accidents (31.9%), followed by hits (25.5%) and falls (10.9%) [11].

2) Due to achievements in healthcare technologies and evidence-based practices, severe chronic diseases and malignancies are now managed better and patients survive longer [12]. In short, although people are now living longer, they are battling chronic diseases.

3) Unnecessary references of non-emergency cases which not only contributes to the overcrowding of EDs, but also leads to the distraction of health care stuff from critical and emergency patients and wasting of resources [13].

4) The ED output is the ability to move patients out of ED into inpatient bed or onto an appropriate outpatient follow-up schedule [14]. Lack of timely hospitalization, disposition, and discharge of patients from emergency wards is another problem of EDs in Iran.

In order to improve quality of a service first we must decide how quality is to be determined [15]. Therefore the functions and the performance indicators must be established. The key functions of the ED are to 1)evaluate, 2)treat and 3)discharge or admit patients in ordinary or intensive care wards (where appropriate) [16]. Currently many models and performance indicators are suggested for evaluating ED performance [17,18]. But so far limited evidence is found for most of these ED performance indicators, and a core group of evidence-based performance indicators cannot currently be recommended [19]. Moreover, almost all of the models are focused on the ED itself. But if we want to evaluate the ED at the country level, other players definitely should be considered in the game. The aim of this study is to design a conceptual model for ED performance assessment at the national level tailored for Iran.

Method

This survey was conducted in a qualitative approach. The data were acquired by gathering stakeholders' opinions in focused group discussion.

The team that participated in the designing of the model consisted of a technical steering committee. Intentional sampling method was used to recruit the committee members. They were selected from different institutions and were the specialists in public health, health care management and emergency medicine. The following criteria were used to recruit them: 1) Researcher or faculty member of universities 2) Authored related articles or books 3) Having more than 3 years of experience in this domain 4) interested to participate in the study.

The study was conducted in two phases:

In the first phase, a review of the literature was conducted to find the existing relevant models and articles. By reviewing the documents, a draft model for ED performance assessment was designed by the technical steering committee. Since this model was meant for the national level, the external environment was considered in designing the model.

In the second phase, stakeholders were addressed according to their power and influences using a stakeholder analysis. The draft of model then was reviewed and critiqued by them in focused group discussions. A total of three group discussions

Type of stakeholder	Those whom we addressed
Executives inside MOHME	Head of the center of evaluation and accreditation of hospitals Head of the Iranian Nursing Office Representative of university hospitals matrons and Hedayat Staff Head of the Iranian Association of Hospital Administration Representative of the Iranian Medical Council Representative of the Iranian Nurses Association Representative of the Health Policy Secretariat Representative of the Tariff and the Insurance Policy Secretariat Representatives of the Iranian Health Network Development Center Representatives of the universities Board of Directors Vice-Ministries Council of the MOHME Heads Of Hospitals and Emergency Departments 31 senior directors of Provincial Emergency Centers
Executives outside MOHME	Representative of Social Security Organization Direct Treatment Office Representative of Police Health Administration Representative of Municipality Health Administration Head of the Health Administration Armed Forces General Staff
Experts	Professors of Tehran and Iran Universities of Medical Sciences Board representing the specialty of Emergency Medicine Representative of the Iranian Association of Emergency Medicine

MOHME: Ministry of Health and Medical Education

Table 1: Main Stakeholders participated in the focused group discussions.

were held about 50 participants took part in each session (Table 1). In each session questions were raised by the technical steering committee team who also acted as moderators. Discussions were recorded manually. Major points raised and emphasized by participants also were noted for detailed analysis. In the first session, the factors that attribute to the overcrowding of EDs in the country were discussed and ranked according to their priority. These prioritized factors then categorized in the second session. Finally a consensus was reached by the stakeholders and the model was finalized in the third session.

Results

According to the documents reviewed, the factors affecting the ED management can be divided into three categories: pre-emergency (input), emergency (process) and post-emergency (output). These provided the framework for our results and discussion (Figure 1). This model also consists of the major factors that affect each of these categories.

The pre-emergency factors are the factors that cause/prevent the people to visit the emergency wards. These are the most important and cost-effective factors. For example if the Primary Healthcare (PHC) fails to manage a diabetic patient, he/she would probably visit the emergency with a diabetic ketoacidosis. The aims of the emergency factors are managing the patients by making a precise and quick decision for each patient that is currently in the emergency ward. Thus they all about the coordination between units within the hospital. The post-emergency factors contribute to discharging the patient from

Figure 1: The conceptual framework for emergency wards management.
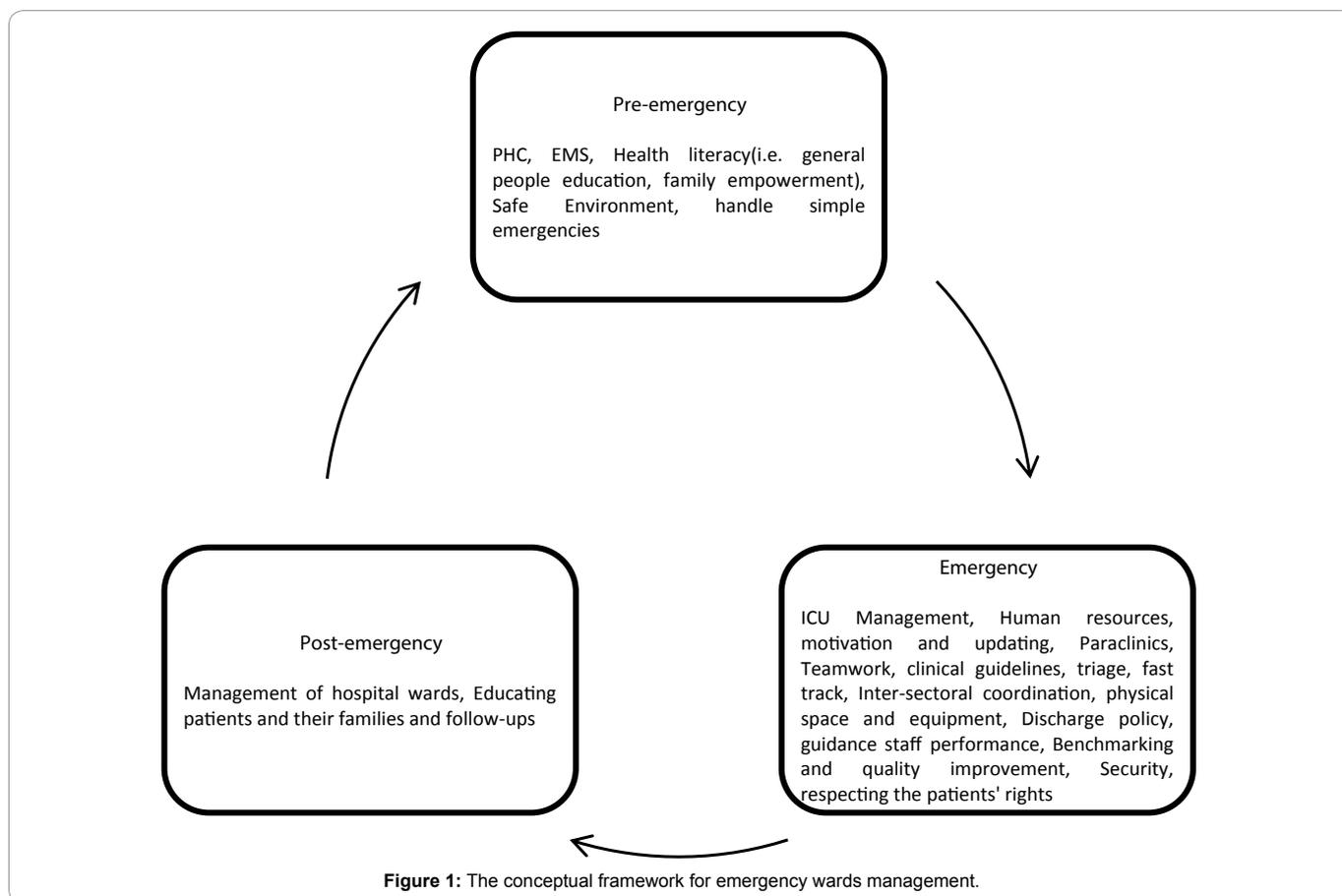
the emergency ward (usually to the 'ordinary' wards) and also preventing them from visiting the emergency wards for the same reason again. Therefore, patient education and follow-up play a major role in this category.

These three categories could be used for evaluating the performance of emergency wards in the country.

Discussion

By improving the emergency department performance, patients benefit from improved flow and continuity of care, are generally satisfied and have shorter waiting time and length of stay [20,21]. The suggested interventions to improve the ED performance can be categorized according to the conceptual model. It is clear that "Prevention is better than cure" therefore more attention should be paid on Pre-emergency interventions.

Due to high rates of road traffic incidents, one of the major causes of referring to EDs in Iran is traumas. Approximately 90% of global injury-related deaths occur in the developing countries [22,23]. It is also predicted that road traffic mortality (RTM) would increase (by 83% from 2000 to 2020) in the developing countries like Iran, unless preventive efforts are undertaken [24]. As injuries could be prevented, safety measures play a critical role as one of the pre-emergency key players.

Moreover, it is shown that the majority of trauma deaths in the developing countries occur in the pre-hospital setting [25,26]. Traffic related mortality and morbidity in Iran could be reduced if the needs in terms of RTIs were taken into consideration when distributing pre-hospital trauma care facilities between the provinces and empowering the primary health care (PHC) [27]. During the past decade, many High Income Countries (HICs), but very few LMICs, have significantly reduced deaths and disabilities caused by injuries, particularly RTIs, mainly by improving the organization of trauma care [28]. The approved interventions for post-crash actions included: (1) a public education campaign in first aid, the role of the emergency services, cooperation of the public at the crash site, and (2) target-group training for professional drivers, police officers and volunteers who arrive at the crash scene [29]. In addition, Fast-Track systems are useful models of care for dealing with a large number of lower acuity patients presenting with minor injuries or illnesses [30-32]. Finally, it is suggested that researchers in this area should engage in cost-benefit analysis in order to produce credible research for ED performance analysis.

Conclusion

This study showed that many key players that are contributing to the performance of EDs are outside the hospitals and even maybe outside the jurisdiction of the ministry of health. This should be kept in mind when evaluating the performance of EDs at the national level.

Ethical Considerations

Ethical issues (Including plagiarism, Informed Consent,

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misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

Acknowledgements

References

1. FitzGerald G, Ashby R. National Health and Hospital Network for Australia's future: implications for emergency medicine. *Emerg Med Australas.* 2010;22(5):384-390.

2. Hashemi B, Baratloo A, Rahmati F, Forouzanfar MM, Motamedi M, Safari S. Emergency department performance indexes before and after establishment of emergency medicine. *Emerg (Tehran).* 2013;1(1):20-23.

3. Haghparast-Bidgoli H, Hasselberg M, Khankeh H, Khorasani-Zavareh D, Johansson E. Barriers and facilitators to provide effective pre-hospital trauma care for road traffic injury victims in Iran: a grounded theory approach. *BMC Emergency Medicine.* 2010;10(1):1.

4. Zargar M, Kalantar Motamedi SM, Karbakhsh M, et al. Trauma care system in Iran. *Chin J Traumatol.* 2011;14(3):131-136.

5. Smits M, Groenewegen PP, Timmermans DR, van der Wal G, Wagner C. The nature and causes of unintended events reported at ten emergency departments. *BMC Emergency Medicine.* 2009;9:16.

6. Mathers CD, Loncar D. Projections of global mortality and burden of disease from 2002 to 2030. *PLos Med.* 2006;3(11):e442.

7. Tarighi P, Tabibi SJ, Motevalian SA, et al. Designing a model for trauma system management using public health approach: the case of Iran. *Acta Med Iran.* 2012;50(1):9-17.

8. Soori H, Royanian M, Zali A, Movahedinejad A. Road traffic injuries in Iran: the role of interventions implemented by traffic police. *Traffic Inj Prev.* 2009;10(4):375-378.

9. Bhalla K, Shahraz S, Naghavi M, Bartels D, Murray C. Road traffic injuries in Iran, Harvard University Initiative for Global Health. 2008.

10. Organization WH. Global status report on road safety 2015. Geneva: World Health Organization. 2015.

11. Rasouli M, Saadat S, Haddadi M, Gooya M, Afsari M, Rahimi-Movaghar V. Epidemiology of injuries and poisonings in emergency departments in Iran. *Public Health.* 2011;125(10):727-733.

12. Weisz G, Olszynko-Gryn J. The theory of epidemiologic transition: the origins of a citation classic. *J Hist Med Allied Sci.* 2010;65(3):287-326.

13. Baratloo A, Maleki M. Iranian emergency department overcrowding. *Journal of Emergency Practice and Trauma.* 2015;1(2):39.

14. Asplin BR, Magid DJ, Rhodes KV, Solberg LI, Lurie N, Camargo CA Jr. A conceptual model of emergency department crowding. *Ann Emerg Med.* 2003;42(2):173-180.

15. Donabedian A. The quality of care: how can it be assessed? *JAMA.* 1988;260(12):1743-1748.

16. Wylie K, Crilly J, Toloo GS, Bell AJ. Review article: emergency department models of care in the context of care quality and cost: a systematic review. *Emergency Medicine Australasia.* 2015;27(2):95-101.

17. Casalino E, Choquet C, Bernard J, et al. Predictive variables of an emergency department quality and performance indicator: a 1-year prospective, observational, cohort study evaluating hospital and emergency census variables and emergency department time interval measurements. *Emerg Med J.* 2013;30(8):638-645.

18. Sorup CM, Jacobsen P, Forberg JL. Evaluation of emergency department performance–a systematic review on recommended performance and quality-in-care measures. *Scand J Trauma Resusc Emerg Med.* 2013;21:62.

19. Madsen M, Kiuru S, Castren M, Kurland L. The level of evidence for emergency department performance indicators: systematic review. *Eur J Emerg Med.* 2015;22(5):298-305.

20. Cooper MA, Lindsay GM, Kinn S, Swann IJ. Evaluating emergency nurse practitioner services: a randomized controlled trial. *J Adv Nurs.* 2002;40(6):721-730.

21. Carter AJ, Chochinov AH. A systematic review of the impact of nurse practitioners on cost, quality of care, satisfaction and wait times in the emergency department. *CJEM.* 2007;9(4):286-295.

22. Norman R, Matzopoulos R, Groenewald P, Bradshaw D. The high burden of injuries in South Africa. *Bulletin of the World Health Organization.* 2007;85(9):695-702.

23. Organization WH. Injuries and Violence: The Facts. Geneva: World Health Organization. 2011.

24. Peden M, Scurfield R, Sleet D, et al. World report on road traffic injury prevention. World Health Organization, Geneva. 2004.

25. Mock C, Arreola-Risa C, Quansah R. Strengthening care for injured persons in less developed countries: a case study of Ghana and Mexico. *Inj Control Saf Promot.* 2003;10(1-2):45-51.

26. Montazeri A. Road-traffic-related mortality in Iran: a descriptive study. *Public Health.* 2004;118(2):110-113.

27. Bidgoli HH, Bogg L, Hasselberg M. Pre-hospital trauma care resources for road traffic injuries in a middle-income country-A province based study on need and access in Iran. *Injury.* 2011;42(9):879-884.

28. Mock C. Strengthening care for the injured: success stories and lessons learned from around the world: World Health Organization. 2010.

29. Khorasani-Zavareh D, Khankeh H, Mohammadi R, Laflamme L, Bikmoradi A, Haglund B. Post-crash Management of road traffic injury victims in Iran. Stakeholders' views on current barriers and potential facilitators. *BMC Emergency Medicine.* 2012;18(Suppl 1):209-210.

30. Fry M, Fong J, Asha S, Arendts G. A 12-month evaluation of the impact of Transitional Emergency Nurse Practitioners in one metropolitan Emergency Department. *Australas Emerg Nurs J.* 2011;14(1):4-8.

31. Dinh M, Walker A, Parameswaran A, Enright N. Evaluating the quality of care delivered by an emergency department fast track unit with both nurse practitioners and doctors. *Australas Emerg Nurs J.* 2012;15(4):188-194.

32. Considine J, Lucas E, Martin R, Stergiou HE, Kropman M, Chiu H. Rapid intervention and treatment zone: redesigning nursing services to meet increasing emergency department demand. *Int J Nurs Pract.* 2012;18(1):60-67.