



Karolinska Institutet

Department of Clinical Science and Education, Södersjukhuset
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Preparedness and Safe Hospital:

Medical Response to Disasters

ACADEMIC DISSERTATION

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Abstract

Background: A disaster is a serious disruption of the functioning of a community. The number of disasters and affected people has increased during the past decades. “Hospitals safe from disasters” is emphasized by the Hyogo Framework Actions for 2005-2015. Collapsed or damaged hospitals, resource shortcomings, absence of a command system and problems with triage, treatment and transportation have been challenges during previous disasters. The current study was conducted to evaluate various aspects of the medical disaster management system.

Objective: To systematically analyze the level of preparedness and safety of hospitals with respect to the medical response.

Methods: This thesis is based on four studies. *Study I* was an educational based intervention. A reliable questionnaire was used to evaluate the efficacy of the intervention. *Study II* was a qualitative content-analysis study. *Study III* was conducted in twenty-three Iranian hospitals. A tabletop exercise was developed for each hospital. The evaluators compared the compatibility of the participants’ decisions with the job action sheets. The performance was classified into three categories: Fair, Intermediate, and High. *Study IV* was a cross-sectional study. The preparedness, as measured by the Functional Capacity, was evaluated using the Hospital Safety Index, and categorized as safe, at risk or inadequate, respectively.

Results: In *Study I*, there was lack of knowledge among medical personnel in terms of medical disaster management. The mean score on the pre-test and post-test was 67.1 ± 11.6 and 88.1 ± 6.2 , respectively ($p < 0.0001$). In *Study II*, the lack of a disaster plan in the pre-hospital medical system affected triage, treatment and transport of casualties to hospitals. Lack of resources and medical assistance teams were other barriers to pre-hospital medical services, while army and medical volunteers were the main facilitators. In *Study III*, the decision-making performance according to the HICS was at an intermediate or low level. The mean of the performance score was 85 ± 15 . The non-university hospitals had a higher performance rate than university hospitals ($P=0.04$). In *Study IV*, the mean functional capacity score was 0.77 ± 0.03 for Swedish hospitals and 0.45 ± 0.05 for Iranian hospitals ($p=0.016$). All Swedish hospitals qualified as safe and all Iranian hospitals were at risk. The national socioeconomic level was associated with the level of hospital preparedness.

Conclusion: This thesis showed that there is a lack of preparedness in some key elements of medical response to disasters in Iran. Using a national model is an effective and practical model for capacity building and increasing the participants’ knowledge of disaster medicine. To implement a comprehensive plan would not only save lives but enable an effective use of the available resources. Skilled medical volunteers and the military’s medical teams must also be included in this kind of plan. The HICS job action sheets can be used as a template for measuring the hospital response performance. The preparedness, as measured by functional capacity, is related to the socioeconomic level of a country. The challenge is therefore to enhance hospital preparedness in vulnerable countries despite a weaker economic situation. All hospitals must be prepared for a disaster.

Key words: Disaster, Hospital, Safety, Preparedness, Response, Incident Command System, Training, Functional Capacity, Pre-hospital, Triage, Treatment, Transportation, Qualitative, Exercise, Performance

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