



IMPACT OF DISASTERS ON DISASTER MEDICINE EDUCATION

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ABSTRACT

Introduction: Disaster medicine is a novel but rapidly evolving medical specialty. It aims for evidence based practices as they are essential for contemporary medicine. Every calamity provides input for development. Researchers in the field study these events for the purpose of amending theory and practice to reflect new challenges. The better the understanding of the shortfalls reported is, the greater will the worth for disaster medical response to the upcoming events be.

Purpose: The objective of the study is to demonstrate the connection between disasters and commencement and evolution in disaster medicine education and to highlight the significance of lessons learned for practice improvement.

Materials and methods: By means of the descriptive method, lessons learned from disaster medical support to some of the most significant catastrophic events in recent years are presented. Comparative and deductive analyses are performed in order to assess the influence of disasters on the evolution of disaster medical support education and training.

Results: Analysis of the most consequential disasters proves that the affected countries have implemented disaster medical support planning, organization, and management changes. These changes in policy and practice lead to amendments and advances in disaster medical tuition.

Conclusion: As a conclusion, disaster medicine education reliance on the best practices approved throughout the disaster relief operations is noted. Every gained experience and lesson learned have to be implemented into the lectures and seminars, thus transforming real life achievements into knowledge and wisdom.

Keywords: Disaster Medicine, Education, Disaster Medical Support, Disasters,

INTRODUCTION

Disaster medicine is a novel and but rapidly evolving medical specialties. It originates from military medicine with the purpose to provide care for civilian wartime casualties, especially chemical and nuclear victims, but quickly expands and encompasses the medical support in case of all spectrum natural and man-made disasters. In the last decades, a constant trend towards an increase in frequency and significance of these events has been registered. This arises from contemporary political and industrial processes disrupt-

ing social and ecological equilibrium. As a result, there is permanent growth of the population at risk of being affected by damaging factors. Enhancing the resilience of the most vulnerable societies requires better preparedness of all responsible institutions, including healthcare. An increasing number of countries implement elective or compulsory disaster medicine education in medical schools to prepare their students for the specific challenges of disaster medical support.

As with other medical specialties, disaster medicine development aims for evidence based procedures. Every calamity provides input for development. Researchers in the field study these events for the purpose of amending theory and practice to reflect new challenges. The better the understanding of the shortfalls reported is, the greater will the worth for disaster medical response to the upcoming events be.

PURPOSE

The aim of the study is to demonstrate the connection between disasters and commencement and evolution in disaster medicine education and to highlight the significance of lessons learned for practice improvement.

MATERIALS AND METHODS

By means of the descriptive method, lessons learned from disaster medical support to some of the most significant catastrophic events in recent years are presented. Comparative and deductive analyses are performed in order to assess the influence of disasters on the evolution of disaster medical support education and training.

RESULTS AND DISCUSSION

The origin of disaster medicine could be traced back to the early 19th century. During Napoleonic wars, the concept of triaging casualties, providing care for the wounded on the battlefield, as well as utilizing ambulances for evacuation laid the foundation for mass casualties management. After World War II, when nuclear attacks affected the civilian population, it became apparent that civilian physicians needed to be prepared to treat of casualties of weapons of mass destruction. [1] Interest in specialized education and training on disaster medicine for civilian physicians increased even more after the terrorist attack on the North Tower of the World Trade Center in New York in 1993. But it was not until September 11, 2001 attacks on the World Trade

Center and the Pentagon, when the need for disaster medicine became obvious. This event had the largest impact on an international scale, triggering the development and implementation of disaster medicine educational programs in medical schools worldwide. Soon after that, in 2003, the medical community embraced the need for a new specialty. Disaster medicine curriculum became the point of intense scientific research, demonstrated by the increased body of knowledge on the subject in indexed peer reviewed journals. [2]

The scientific community is well aware that climate change causes a wide number of natural disasters, and the problem will enlarge over time. Medical professionals have to be prepared to face this challenge. The strive towards the acquisition of new skills and knowledge is obvious worldwide, but the most developed countries show the most progress. Japan is exposed to multiple hazards, resulting in frequent and intense disastrous events. Lessons learned from them are successfully implemented in the education and training of medical professionals.

One such event with an impact on disaster medicine education is The Great Hanshin and Awaji Earthquake from 1995. The enormous number of injured created a massive demand for medical care. Hospitals also were damaged by the earthquake and were unable to meet the needs. As a result, large numbers of casualties were transported out of the disaster-affected area. Other events, like Niigata-ken Chuetsu Earthquake in 2004, confirmed the need for fast evacuation. Therefore, the Japanese government decided to establish Disaster Medical Assistance Teams (DMATs) as “mobile, trained medical teams that rapidly can be deployed during the acute phase of a sudden-onset disaster”. [3] Training programs for these teams are subject to analysis and verification based on experience from real events. One important conclusion states that emergency teams need to assist damaged hospitals with casualty management, and this poses a specific challenge, mandating larger scope of competencies. Japanese researchers concluded that the DMAT training program is not suited to current situations. On the basis of this analysis, a newly revised program has been proposed. Questions on hospital evacuation have been added. Initial activities that should be carried out within damaged hospitals have been included. Consideration has been given to practical training about triage and treatment methods by the use of a simulator. Communication and collaboration with teams from other agencies have also been discussed. [4]

A major difference in disaster medical support that has been implemented as a result of retrospective analysis is the concept that when hospitals close to the area of damage are overwhelmed, patients with pathological conditions such as chronic diseases are better candidates for wide-area transport rather than those with severe trauma, severe burns, or crush syndrome. Managing patients in the severe medical conditions in nearby medical facilities that have maintained their functions is considered more beneficial. [4]

Not only do natural calamities impose the establishment of disaster medicine training curriculum, but also major technological failures contribute additional requirements. The Great East Japan Earthquake, followed by the

nuclear accident at the Fukushima Daiichi Nuclear Power Plant from 2011, has emphasized the role of disaster medicine. After this event, Tohoku University established the International Research Institute of Disaster Science that took the initiative to influence the Sendai Framework for Disaster Risk Reduction 2015-2030 to include health aspects. [5] Before the accident, the Japanese government had established a system for nuclear disaster preparedness. Response to accidents at nuclear power plants had been included there. Still, the magnitude of this disaster reminded that devastating events could happen and cause severe consequences. The medical community needs to be prepared to face them. In addition, the accident revealed the insufficient number of specialists in the field of nuclear disaster medicine in Japan. [6]

After the Fukushima accident, the Japanese government strengthened the nuclear disaster preparedness system by designating four universities as Nuclear Disaster Medical Care/General Support Centers, and four universities and one research institute as Advanced Radiation Emergency Medicine Support Centers. They are responsible for establishing regional and national medical radiation networks during a non-disaster time and for organizing the functioning of medical teams during a nuclear disaster. They also provide proficient education and training of radiation disaster medicine professionals during non-disaster periods and participate in advanced and specialized medical support to Nuclear Emergency Core Hospitals. [6] This approach addresses a very important area that has proven to be highly vulnerable. Focusing research and proficiency towards this specific field aims to perfect disaster medical support to the population.

Another consequential disaster with huge international impact is the terrorist attack with sarin in the Tokyo subway in 1995 that resulted in the killing of twelve people and more than five thousand people seeking medical care. It brought up the topic of medical teams' preparedness and resulted in The Defense Against Weapons of Mass Destruction Act of 1996, which established first responder training for weapons of mass destruction. Basic training on Weapons of Mass Destruction is provided for hospital personnel, public health workers and other health professionals in many countries. [7]

The impact of man-made and natural disasters on disaster medicine specialty establishment and development is clearly demonstrated by the activities following Hurricane Katrina in 2005. Approximately 1,836 deaths were directly attributed to the storm. Among the many lessons learned following Hurricane Katrina is the obvious need for scientific research, discussion, and exchange in the field of disaster medicine. [1] Two new teaching hospitals were opened in the affected area. In addition to standard medical training, they offer their students “the opportunities to explore community development, entrepreneurship, involvement in the political process, organized medicine, and practical experiences in the Governor's Office and Department of Health”. Also, new training programs were created for those interested in healthcare management. [8] This is driven by the understanding of the importance of having medical professionals

capable of managing healthcare provision, especially in extreme situations, in accordance with local community demands.

Another example of the link between disasters and disaster medicine education is coming from Chinese medical reports. China is the most over-populated country in the world; therefore, the cost of any calamity is huge. Unfortunately, it is also one of the countries most frequently affected by these events.

In China, very few medical colleges have the subject of disaster medicine, and research on the topic has started after some devastating events hit the country. In 2008, after the Wenchuan earthquake, when over 69 000 people lost their lives, 374 176 were injured, with 18 222 listed as missing, the first Chinese department of emergency and disaster medicine was founded in Tongji University School of Medicine. In 2009, the first Chinese department of rescue medicine was established in the Police Medical College. In 2012, the first Chinese institute of disaster medicine was founded in Tongji Hospital. Interest in disaster medicine is increasing with scientific efforts directed towards disaster resilience. In 2009, China Association for Disaster & Emergency Rescue Medicine was founded. In 2011, the Disaster Medicine Branch of the Chinese Medical Association was established.

Still, Chinese researchers state that disaster medicine specialists are scarce. Medical professionals are gradually educated and trained in disaster medicine to meet the need for these specialists. [9]

CONCLUSION

Results of the performed analysis prove the connection between major disasters in recent history and the understanding of disaster medicine specialty importance and usefulness. In the study, evidence from the most developed countries is analyzed. Even the most efficient healthcare systems face difficulties in disastrous situations. Lessons learned from experience point out the requirement for improvement. The disastrous consequences and public expectations have forced the experts in these countries to create new models for disaster medical support. They have changed medical policies and practices and have led to amendments and advances in medical tuition. Disaster medicine training has found its' place in medical education and is constantly improving by implementing the best practices approved throughout the disaster relief operations. Every gained experience and lesson learned has to be reflected in the lectures and seminars, thus transforming real life achievements into knowledge and wisdom.

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