CONTEMPORARY TRENDS FOR DISASTER MEDICINE TRAINING

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Abstract: Disasters are unusual and sometimes unpredictable events. The incidence has increased in recent decades as the society progress. We cannot always predict them, but we can prepare for them. It is the responsibility of healthcare to achieve the highest possible level of readiness for medical professionals so that they could be of service if and when they are needed. The purpose of this study is to research the forms of disaster medicine training available in different countries to analyze contemporary trends for development. Materials and methods: By the means of the descriptive method, significance of disaster medicine knowledge and skills for medical professionals are presented. Comparative and deductive analyses are performed to assess the forms of disaster medicine training in different countries around the world. Results and discussion: The review of current disaster scenarios illustrates that the healthcare system can face disaster at any time, in any place and without warning, with a limited response interval. To provide timely and adequate medical care for the casualties, numerous challenges have to be overcome. The medical staff has to perform coping activities that differ significantly from their daily routine. The limited time and the overwhelming number of casualties may hinder the access to many of the modern technologies. This requires simplified techniques for diagnosis and treatment, patient tracking and communication, as well as transitioning to old-fashioned practices and procedures. The available specialists may be overwhelmed, leaving casualty management to professionals from different fields. A shortage of consumables and medicines can be expected, as many deliveries are made daily. As a result, there will be a much greater need for prioritization, both among patients and between diagnostic and therapeutic procedures, compared to standard medical care. With the growing awareness of the need for disaster medicine training, in recent years a large number of modules have been presented. All researched countries offer disaster medicine courses. Substantial differences are noticed in the time and form in which they are conducted, as well as in the topics and teaching methods. Most of the researched educational institutions conduct postgraduate or master's courses in disaster medicine. Training modules for undergraduate students are also available, mainly in the form of elective courses. Several of the analyzed medical universities include the subject in the primary schedule for most of the medical specialties. Conclusions: Knowledge in the field of disaster medicine is essential and targeted training to prepare medical professionals for the specific disaster challenges is needed. There is a tendency of increasing efforts in this field in all researched countries. Despite that, currently there are no unified training programs and methods. More research is necessary to design and validate a conventional disaster medicine course, which should be implemented in the educational schedule of all medical professionals.
Keywords: Disaster Medicine, Education, Disaster Readiness

1. INTRODUCTION

The risk of disasters has increased in recent decades as the society has developed. Even if some countries and regions are at greater risk, there is no safe place in the world and accidents can happen at any time and in any place. It is an important responsibility of the healthcare system in each country to be prepared and to train all potentially involved employees to respond adequately to these situations.

The purpose of disaster medical support is to protect the life, health and ability of the population. The differences between normal medical care and disaster medical care are numerous. Disasters create an imbalance between the immediate need for medical care and the resources available. This insufficiency of medical means and capabilities is not typical of ordinary medical practice and mandates the activation of all available medical staff, who, if necessary,

can perform activities that are not typical for them, completely outside their specialty field.(Huang et al., 2011; Smith et al., 2012) Acquiring this knowledge and skills is a task of disaster medicine, the medical specialty that studies disaster medical support to the population.

2. THE PURPOSE of this study is to research the forms of disaster medicine training available in different countries to analyze contemporary trends for development.

3. MATERIALS AND METHODS

By the means of the descriptive method, the significance of disaster medicine knowledge and skills for medical professionals are presented. Comparative and deductive analyses are performed to assess the forms of training in the field that is performed in different countries around the world.

4. RESULTS AND DISCUSSION

The review of current disaster scenarios illustrates that the healthcare system can face disaster at any time, in any place and without warning, with a limited response interval. In order to provide timely and adequate medical care for the casualties, numerous challenges have to be overcome. The medical staff has to perform coping activities that differ significantly from their daily routine.(Lennquist, 2012) The limited time and the overwhelming number of casualties may hinder the access to many of the modern technologies. This requires simplified techniques for diagnosis and treatment, patient tracking and communication, as well as transitioning to old-fashioned practices and procedures. The available specialists may be overwhelmed, leaving casualty management to professionals from different fields. A shortage of consumables and medicines can be expected, as many deliveries are made daily. As a result, there will be a much greater need for prioritization, both among patients and between diagnostic and therapeutic procedures, compared to standard medical care.(Atliev K., Kostadinov R., 2020)

Medical care does not cover the entire support that the casualties require. Healthcare professionals are a part of a larger, mostly non-medical, multidisciplinary response. This demands knowledge far beyond purely medical. It is necessary to know the methods and procedures of other services and agencies, capabilities and limitations of their activities. Success depends on the cooperation and coordinated actions of all participants in disaster relief to the population.

Obviously, all this requires additional skills, not only at the level of coordination and command, but also regarding immediate patient care. (Huang et al., 2011; Smith et al., 2012) The mental attitude needed to successfully perform tasks in such conditions is not the subject of conventional medicine and is studied only by disaster medicine. (Williams, 2008) If the medical staff does not have this knowledge and skills, medical support outcome can never be optimal. (Lennquist, 2012)

Opportunities to study disaster medicine in Europe include both courses offered by higher education institutions and various programs conducted by several international organizations.

The European Society of Emergency Medicine (EUSEM) was founded in May 1994. It mentions disaster medicine in its 1998 Manifesto, and disaster Medicine Section was formally established in Munich in September 2008. Its aim is to promote and disseminate scientific knowledge, research, training and education in the field of disaster medicine. The goal is to create a 'culture and language' of disaster medicine across Europe, thus enabling a single, cross-border response to mass casualty events. EUSEM conducts a number of disaster medicine courses for students, postgraduates and specialists in emergency medicine. (“EUSEM”, 2021)

The International Federation of Medical Students' Associations, registered in the Netherlands in 1951, strengthened its commitment to the disaster medicine by organizing a series of trainings at international, regional, national and local levels in 2013-2016. There is an opportunity for continuing education, as well as the world's first training for trainers. Periodically, courses are held in Italy for students who show interest in the subject.(“IFMSA”, 2021)

One of the best known educational programs is the European Master's Program in Disaster Medicine (EMDM). The idea for it arose during the First Congress of the European Community of Emergency Medicine in April 1998 in San Marino, as a pilot project implemented in the framework of European inter-university cooperation. It was implemented with the support of the European Center for Disaster Medicine. It was created to increase the knowledge, skills and attitude of health professionals for an effective response to disasters and humanitarian crises. A number of universities from Italy, Belgium, USA, Switzerland, Sweden, Turkey and Ireland are participating. The master's program includes a one-year e-learning course, a two-week attendance course in Novara, Italy, a final exam, and the writing and defense of a master's thesis based on own research. (“EMDM”, 2021) The European Disaster Medicine Center, based in San Marino, was set up to mitigate the effects of natural and technological disasters. It promotes and develops training and research in the field of disaster medicine, aimed at health professionals and volunteers. (“CEMEC”, 2021)

Disaster medicine training differs in its' form and content in the researched countries.

Great Britain

Recognition of the need to teach disaster medicine to medical students leads to the development of a bachelor's program. ("St George's University", 2021) Many universities offer courses and master's programs for medical graduates, nurses, and other categories of medical and non-medical staff. ("Barts & The London School of Anesthesia", 2021; "The University of South Wales", 2021)

Since 1993, the Diploma for Medical Care in Accidents has been introduced. It is a part of postgraduate education and is targeting medical, surgical and public health professionals that participate in the response to natural and man-made disasters, both national and international. ("The Worshipful Society of Apothecaries", 2021)

Medical Incident Management and Insurance (MIMMS) is a system in many centers in the United Kingdom and around the world. It is also recognized by military organizations, including the North Atlantic Treaty Organization. As the only internationally recognized standard for medical incident management, the course is taught and its principles are applied in civilian and military medical practices around the world. MIMMS is developed as "all hazards" model - ie. a systematic approach, flexible enough to be applied in any major incident. ("MIMMS", 2021)

France

In France, disaster medicine training is conducted according to a program designed by specialists in anesthesiology and resuscitation who work in emergency departments. The course is held twice a year for two weeks and comprises lectures and practical exercises. It is designed for doctors of all specialties. (Feldstein et al., 1983)

Germany

In 2016, a four-week disaster medicine module was introduced in Germany in the regular program of fourth-year medical students. The program is interdisciplinary and covers over twelve medical specialties. The module consists of 72 hours of seminars, discussion of clinical cases, group classes, e-learning and practical training.(Pfenninger et al., 2010)

Portugal

Following the recommendations of the World Association of Disaster and Emergency Medicine, Portugal is developing standards for training students in disaster-related areas. Many medical universities include disaster-related topics in their curricula. (de Oliveira & Palmeirim, 2017)

Belgium

The first course in disaster medicine in the Flemish part of Belgium began in October 1988 and lasted eight days. After the first edition, it became clear that the training of nurses was of paramount importance and the professional nursing organization joined. Since then, the course is also available to police, fire brigades, the Red Cross and the army. Until 2012, different uncoordinated disaster medicine courses are taught in Belgium. It has been found that this leads to different levels of acquired knowledge and skills, which cannot be applied as an effective standard. Representatives of seven universities team up with scientific and professional organizations in the field to analyze existing programs and develop a unified approach for the future. (Gillet et al., 2010)

Russia

All medical universities in Russia teach disaster medicine. In higher medical schools in Russia, it is studied in several separate disciplines. These include "First Aid", "Emergency and Catastrophic Medicine", "Safety of Life and Work" with two modules - Safety and Disaster Medicine. The specialties of medicine, pediatrics, dentistry, pharmacy, preventive medicine, clinical psychology, biotechnical systems and technologies, biology, biochemistry and social activities attend these courses. (Ивашин, 2010)

USA

In the United States, the study of disaster medicine is in the form of courses with different thematic focus. They are suitable for both students and doctors from various fields of medical practice. Courses are optional, some universities are considering including them in the compulsory training program for medical students. (Williams, 2008; "UCLA") Also there is a recognized specialty in disaster medicine and every hospital is aiming to have at least one disaster medicine specialist. ("The American Board of Physician Specialties", 2021; Franco, 2007)

The provision of medical care at events of national importance is carried out by the National Medical System for Disasters. Its teams can leave for the outbreak within 24 hours and work self-sufficiently for the first 72 hours. They undergo training on the specifics of working in various disaster situations under standardized disaster medicine programs. Such training is offered in many universities in the United States. ("Stanford University", 2021; "Medical College of Wisconsin", 2021)

Canada

Disaster medicine training in Canada is a part of public health, which is also not a compulsory subject in medical universities (Cummings 2005; Johnson 2008). Disaster Certificate and Fellowship programs for graduates provide

qualification in the field. A number of courses on different disaster-related issues are also available. ("University of Calgary", 2022)

South Korea

Following an analysis of the failure to manage past and present disasters, the development of more professional training and specialization in the field is considered necessary in South Korea. There is an active process to develop training courses and programs, covering both well-known disasters and current and emerging issues, such as the Covid-19 pandemic. Still, however, it is not mandatory for medical professionals. (Uhm et al., 2019)

Japan

The disaster medicine training program is available for medical students as an elective subject. Postgraduate specialized training and master's programs are also conducted.(YAMADA et al., 2014)

China

Disaster medicine is not included in China's medical education program, despite the fact that the country experiences various disasters each year. Following the SARS epidemic in 2003 and the Wenchuan earthquake in 2008, the focus has been on public health, emergency medicine and disaster medicine. Trainings are conducted as part of the postgraduate qualification of doctors, which is mandatory and is evaluated annually. (Huang et al., 2011)

5. CONCLUSIONS

Knowledge in the field of disaster medicine is essential and targeted training to prepare medical professionals for the specific disaster challenges is needed. With the growing awareness of its' importance a large number of modules have been presented. All researched countries offer disaster medicine courses. Substantial differences are noticed in the time and form in which they are conducted, as well as in the topics and teaching methods. The majority of the researched educational institutions conduct postgraduate or master's courses in disaster medicine. They focus on disaster preparedness and response management. Training modules for undergraduate students are also available, mainly in the form of elective course. They prepare the trainees for medical support in disasters and mass casualty events. Several of the analyzed medical universities include the subject in the primary schedule for most of the medical specialties.

There is a tendency of increasing efforts in this field in all researched countries. Despite that, currently there are no unified training programs and methods. The most effective form of education is still not determined since objective verification of the quality of training is difficult. More research is necessary to design and validate a conventional disaster medicine course, which should be implemented in the educational schedule for all medical professionals.

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