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New Methods in Disaster Medicine: the Utstein Guidelines and Their Hungarian Application

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Abstract

One of the goals of disaster medicine is the conduct of studies to enable evidence-based learning that will translate into prevention or reduction of the adverse effects of a disaster on human health and the health system infrastructure.

Due to the complexity of the subject and the different opinions of the nations and NGOs on the management procedures of disasters, there is no consensus on the priorities or best practice methodology for disaster evaluation and for conducting studies.

To offer a possible consensus on the standardization of disaster research the Utstein Task Force on Quality Control of Disaster Management was established; an international panel of public health experts and disaster medicine practitioners. The Task Force, which the authors are members of, identifies the priorities and proposes solutions concerning the design and conduct of such studies.

The authors aim to introduce the Utstein guidelines to the Hungarian research of health disaster management and relief planning and to commence the education and training on the subject in order to find the common understanding between the different players.

Keywords: disaster, security, disaster medicine, best practice, Utstein guidelines, qualitative and quantitative analysis, indicators

Introduction

Under specified circumstances, certain types of disasters may pose substantial safety risk for a country, region or even a continent. For example, in particular, man-made disasters including wars, warlike conflicts or nuclear, chemical, biological events. In our opinion, massive (largely illegal) migration as a potential disaster category (Figure 1), which for obvious reasons is not included in the traditional classifications, requires particular care, which,

in the case of insufficient management, may negatively affect even a significant part of the basic social functions of the country (region) generating additional unfavourable processes.

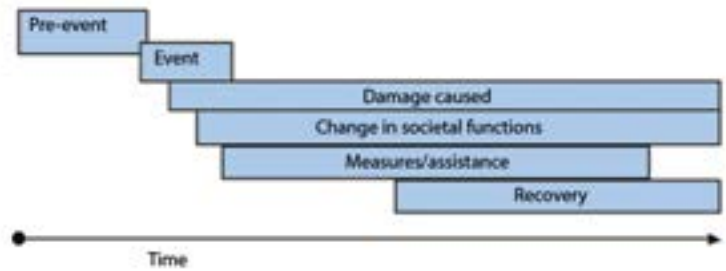

Figure 1

Longitudinal section of disasters

Phases have a chronological order, their length varies, they can overlap or occur simultaneously. Damage and damaged social functions will only be eliminated at the end of recovery.

Source: Scandinavian Journal of Public Health, 2014/42, 27

The challenge

The objective of disaster medicine is to make the research and studies carried out, based on evidence-based medicine, to help prevent disaster-related health damage and reduce harm both at the level of the individuals and healthcare as a system. Due to the extreme complexity of the issue, and the different national positions and also to the different interests of the many international and non-governmental organizations that are dedicated to disaster management issues, there is no broad consensus on health disaster management. Moreover, there is no consensus either on its research methodology, on research priorities of disaster medicine, not even on the *best practices* of disaster medicine.

The methodology

One of the possible solution alternatives to dissolve this situation was the establishment of the Utstein Task Force on Quality Control of Disaster Management (TFQCDM) at the beginning of the 1990s, of which the authors have both been members since 2010. The Task Force multidisciplinary experts from five continents are also members of a research group that meet several times a year, coordinate their activities in the framework of workshops and set guidelines for their research. Their results have been published in a number of studies and books, synthesizing their fieldwork experiences with theoretical considerations.

Based on their own experiences and on the results of other research groups, the members of the Utstein Task Force make recommendations on the further research directions, priorities and methodology of disaster medicine.

The results

The task force developed the Utstein guidelines, which constitutes the scientific basis for a "dual-mode" analysis, i.e. the simultaneous application of quantitative and qualitative methods. The mixed approach expands the spectrum of the research and enables the evidence-based approach of disaster medicine. The conceptual and structural fundamentals of the subject have already been published in two volumes, with the third volume being under preparation. This section presents the questionnaires required for data collection and the methods for evaluating the collected data.

Interpretation

The introduction of the methodology and research directions partially developed by the task force as well as the introduction of indicators to be adopted in the near future will greatly improve the quality of disaster medicine research and the assessment of current disaster management. The methods and techniques proposed by the Task Force are expected to greatly improve data collection and evaluation procedures used to eliminate the health consequences of disasters, and the reliability and reproducibility thereof. Standardized data become available in different databases and libraries, enabling researchers of a given subject to carry out comparative studies concerning the health disaster management of various disasters and the success of interventions.

These comparisons contribute to the evidence-based scientific approach of disaster medicine in Hungary which later can be a reliable basis for an effective disaster relief system combined with an integrated approach. An additional benefit is that medical assistance can be provided in a personalized way with maximum impact, at the same time in a cost-effective way.

Methodological framework for disaster research

The determination of methodological framework of disaster research on the basis of consensus is required and essential to be able to investigate using scientific methodology. Disaster reports and case reports most often report on event from a different point of view, mixing or swapping concepts. The disaster, the situation created by the disaster, and the remedial events are not broken down into phases, therefore comparing of the reports is not simple or even impossible.

The methodological framework outlined in the study clarifies the concepts (hazard, risk, vulnerability, social preparedness, etc.) and provides a solution for longitudinal-sectional and cross-sectional analysis of the disaster evolution and eradication process of a particular hazard.

Phases of disasters

Longitudinal framework

The longitudinal-sectional framework divides disaster evolution into phases in a chronological order. The definition of each phase is determined by their attributes and not by time units, so the phases can flexibly follow the different time intervals of the different disasters.

These phases in the longitudinal framework are the following:

1. the period immediately before the event,
2. the event that causes the disaster to occur,
3. the damage caused,
4. change in basic social functions,
5. measures/assistance,
6. recovery.

The longitudinal-sectional framework (Figure 1) can be applied for every disaster. The duration of each phase will be of different length according to the evolution of the disaster. For example, in case of a drought, the event phase lasts for several months, and damage occurs afterwards, while a rise in the river water level causes floods relatively quickly, but there are still days available for preparation. A tsunami, however, changes rapidly, in minutes, from the event phase to the damage phase, if the wave hits a populated area.

Cross-sectional (trans-sectional) frame

In disaster research, the cross-sectional frame investigates events and changes occurring at a time in the light of the status change in basic social functions.

Basic social functions are as follows:

1. medical care/healthcare,
2. public health,
3. drinking water and sanitation services,
4. food supply and communal catering,
5. energy supply,
6. logistics and transportation,
7. public security,
8. public education,
9. social systems,
10. housing and clothing,
11. communication,
12. economy,
13. public spaces and infrastructure.

With the introduction of longitudinal-sectional and cross-sectional frames, the research methods of disasters became integrated, therefore the research materials became comparable (Figure 2). So the method works not only for assessing a particular disaster, but also when

we need to compare the damage caused by the same type of disasters (e.g. earthquake) or different types of events (earthquake and hurricane).

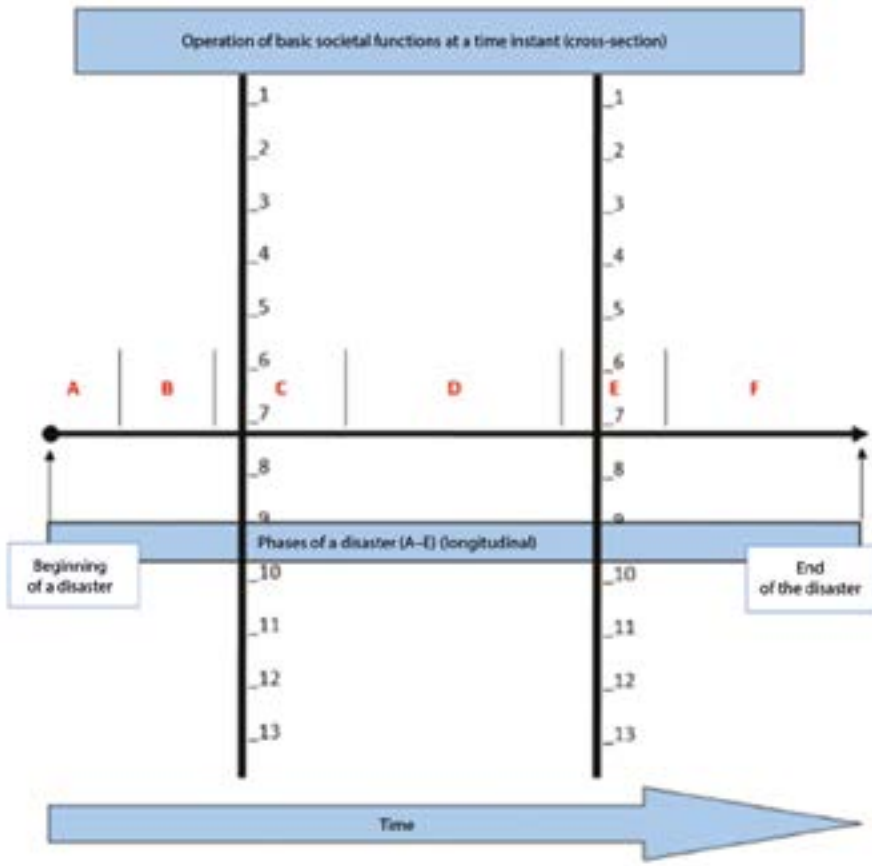

Figure 2

Longitudinal- and cross-section of disaster evolution

Source: Scandinavian Journal of Public Health, 2014/42., 19.

For basic societal functions, in order to carry out the assessment it is necessary to have indicators that are partly available, others have been developed by the Utstein Task Force and will be made available in the near future in a publication. Certain basic societal functions have additional sub-functions that can be divided into different elements or sub-elements.

In addition, it is worth mentioning that the *Sphere Project*, managed by some non-governmental organizations and international relief organizations (Doctors Without Borders, Red Cross, etc.) has some indicators that are already being measured and used during disaster relief. The use of these variables already greatly facilitates the development and application of minimum standards for humanitarian operations and enables our task force to measure and evaluate basic societal functions in each disaster phase.

Operational considerations

One type of scientific research methods is the intervention method when the effects of some form of intervention is examined in the case of the observed system. The second type is represented by epidemiological research when a non-intervention method is used: research does not interfere with the system, it only observes and describes it. In disaster medicine both methods are used during the operational execution and both methods begin with data collection.

With a properly selected and consensual data set, the cross-sectional assessment of basic societal functions provides a snapshot of the process of disaster evolution. The operational framework helps to record the values of the studied basic societal function variables, and also the disaster assistance can be customized using the information obtained.

The additional elements of the process are the following:

1. evaluation,
2. needs assessment,
3. preparation of the intervention strategy,
4. selection of the type of intervention,
5. preparation of the implementation/operational plan,
6. implementation of the selected interventions,
7. analysis and evaluation of impacts.

The operational framework provides an evidence-based scientific approach to disaster research and enables a standardized assessment of disasters.

Feasibility in Hungary – the use of the Utstein guidelines in Hungary

The above mentioned characteristics of disasters and disaster medicine – the lack of an integrated approach and methodology between different schools, organizations and countries, including definitions, structured and objective data collection, the indicators used, the analytical and evaluation methodology, and research and development directions – in our opinion, are also valid for the situation in Hungary. In addition, it is also true that certain organizational elements are already being used to develop and educate the science of disaster medicine, especially in universities and scientific societies.

We are talking about disaster medicine, a new and emerging discipline whose importance is felt by everyone, but there are still no scientific cornerstones and methodologies adopted by broad international consensus – these are currently under development. Due to the diversity of actors and in many cases their radically different interests, this task does not seem simple and will certainly be a time-consuming process. In our opinion, the Utstein method, if adapted accordingly, is an excellent way to provide the theoretical bases and direction for Hungarian disaster medicine research, and can be an excellent basis for creating a national consensus to initiate the development of cooperation opportunities among practitioners of the profession. Regarding the size of the research ambition, we believe that this consensual approach can provide sufficient work and responsibility to all disaster management and disaster medicine organizations and research workshops in Hungary.

Our idea is to introduce the Utstein method in Hungary in several stages. As a first step, the key players in the country will learn the essence of the method and the exact schedule and roles will be developed. Subsequently – or rather in parallel – the participants would develop the syllabus for the teaching method, applying the principle of *train the trainer* which is commonly used in the field of military medicine.

Using the primary experience, they would later accredit training on both national and international (NATO) level with the involvement of the NATO Centre of Excellence for Military Medicine (MILMED CoE) and could be part of the national university graduate and postgraduate training, and through MILMED CoE it would be included in the circulatory system of international military medicine. In addition to the above, adapted and accredited accordingly, the method could be a part of the national defence, disaster management and law enforcement specialized medical training curriculum, we hope, helping to mitigate the chronic shortage of specialists of the area.

In the longer term, if the appropriate team of experts is available, as a member of the Utstein Group, the appropriate international coordination and cooperation opportunity for our specialists would be granted, and Hungarian disaster medicine would soon be able to join the mainstream of international research and cooperation. Based on the authors' international experience, it is possible for Hungary to be able to serve even as a regional leader if we have the corresponding ambition and will, and the necessary set of conditions.

The authors are withholding the more detailed and comprehensive discussion of disaster medicine applying the Utstein method for their subsequent publications. Only the authors working in the task force are entitled to publish the results of the Utstein Task Force on Quality Control of Disaster Management.

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