DISASTERS EPIDEMIOLOGY. AN EPIDEMIOLOGIST'S VIEW OF HEALTH MANAGEMENT IN DISASTERS

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When I received the invitation to participate in this "Third International Conference on the Social and Economic Aspects of Earthquakes and Planning to Mitigate Their Impacts," two points struck me right away:

(1) There was no health section. Economics there was, and sociology, and urban and regional planning, and science, public administration, and miscellaneous, but not health.
(2) As the only medical man invited, I was included among the Sociologists! Indeed!

Still, earthquakes, like other natural disasters, do constitute a major health problem. They may kill hundreds or hundreds of thousands of people. They injure large numbers--many more than any other type of natural disasters. They leave countless numbers maimed. They destroy medical facilities, often in countries with scarce resources where such destruction can mean the loss of decades of hardwon progress.

What is more, earthquakes trigger a huge medically-oriented response from the community, both in the affected country and in so-called donor countries. Medical teams and unprepared volunteers of all kinds rush to the ruins. Blood, drugs and jumble are shipped overnight. And the radio vibrates with accounts of death and destruction interspersed with discussions about the finer points of plate tectonics.

All this is authentic, of course, and gives a true picture of the problem; that is of death, destitution and untended injuries.

As a medical man, now an honorary sociologist, I would risk a few comments:

(1) the reaction to the purely medical needs in case of natural disasters in general, and earthquakes in particular, has often been remarkably ill-judged. Let me emphasize that I do not mean to generalize to all disasters--some of them have been remarkably well managed from a medical point of view. The statement should also be qualified since definite progress has been made over the last decade or so. But often in the past, and still too commonly today, the reaction has been inappropriate.

Stereotypes have been the basis of action: that doctors are the main need--which is not true; that field hospitals are required--which arrive too late to be of any use; that any kind of supply will do, provided it has a medical connection--which is wrong.

More important and worse, the whole context of health care in disasters has too often been viewed as a purely immediate post-disaster acute phase problem, being dissociated from its whole context of prevention and predisaster preparedness on one side and the long term effects and rehabilitation on the other.

(2) the health aspects of disasters have for a long time been serenely ignored by public health officials. One has only to look at the specialized literature of the past twenty years to be convinced of this. So, the health problem has been tackled by various other organizations such as the Red Cross. There is no doubt that such organizations with a tradition of dedication and immunity from political involvement have performed remarkably well. But the fact is that, with relative lack of interest from the medical profession, various myths have been intentionally or unintentionally perpetuated. This is related partly to the fact that these organizations had to rely on enlisting public support to allow them to carry out their humanitarian activities.

(3) the health management of disasters based on a "take each crisis as it comes" approach has been amazingly short-sighted. As soon as the acute phase of the disaster is over, interest seems to wane. After a few weeks or months, medical teams go home, medical aid (appropriate or not) is withdrawn, field hospitals are eventually left to stay as a memorial to past benificence and testimony to present incompetence.

(4) the health aspects of disasters have generally been over-emphasized as compared to other health problems currently afflicting disaster-struck countries. A couple of years ago, at a seminar in Turkey, I stated that, taking one year with another, earthquakes do no kill more people than snake bites. This, I am afraid, later proved to be a cruel joke taking what happened in Managua, Friuli, Tengshan, Montenegro, El Asnam, Guatemala and Southern Italy.

However, attending a meeting of the local association of Public Health in Guatemala City a few months after the February 1976 earthquake, I got some strong reaction from the audience for merely mentioning earthquakes as a health problem. What the Hell, I was told, is twenty thousand mostly unpreventable deaths from an unpreditable cause! What about the tens of thousands of infants dying each year from treatable malnutrition and preventable infectious diseases. In the total health context of the country, the audience was fundamentally correct, of course. Deaths and casualties from natural disasters should not be singled out. They must be viewed in proper perspective.

The approach to the management of health problems in disasters has changed considerably over the last decade. There has been a growing realization, both in the health professions and among those whom I shall call the disaster managers, that natural disasters can be viewed as an epidemiological problem, as amenable to study by appropriate epidemiological methods as any other health problem.

Let us remind ourselves what epidemiology is. Contrary to what is written in the Oxford Dictionary, it is not merely the study of epidemics. It encompasses all health problems at the population level: chronic degenerative diseases such as cardiovascular ailments and cancer, transmissible diseases such as leprosy, influenza and cholera, mental diseases, accidents, suicide, violence, malnutrition, are part of it. Disasters,

including natural disasters are accidents at the community level. It is amazing that it took such a long time to realize that they were an ideal ground for the epidemiological approach. The epidemiologist seeks the answer to the questions: what, how many, who, when, where, and under what circumstances?

He has the following aims:

(1) To Define the Problem and Measure its Extent.
This can be given various names: community diagnosis, or definition of priorities. How many were injured and what types of injuries were they? Related decisions will bear on the kind and amount of resources needed for assistance: personnel, drugs, supplies, medical facilities.

(2) To Identify Risk Factors.
What kills or injures people? How are casualties caused? This requires an analysis of the effects as correlated to their supposed determinants, either behavioral or environmental. This relates to prevention. Is this or that type of house associated with higher mortality or special types of fractures. Are some patterns of flight from the disaster leading to higher mortality or on the contrary, to better survival. Such factors could then be dealt with, for example by adapting building techniques.

(3) To Define Vulnerable Population Groups.
Who dies and who is injured? Are they the children, or urban dwellers, or passers-by? The objective is not very different from the previous one, but it aims at directing the preventive measures to the groups most likely to benefit from them. An example is the study of age-specific death rates in earthquakes, which shows the special vulnerability of 5-9 year old children because they are mistakenly thought by their parents to be able to look after themselves. Educative measures for better preparedness are mostly based on this type of study.

(4) To Design Strategies.
When the health problems have been defined, what is then the best way to control them? Should we vaccinate prior to epidemics or keep the population under some kind of makeshift supervision to spot any unexpected increase in the frequency of diseases?

(5) To Evaluate Control Measures.
What is the record of performance of control measures including external assistance, both for effectiveness and efficiency in preventing or reducing the health problem, from death to long-term changes in disease patterns? For example, to what extent does high level sophisticated medical care or just plain slightly improved care jeopardize future development by creating levels of expectation which cannot be fulfilled and thus engendering counterproductive frustrations. Or more simply, for instance, does some kind of otherwise highly valuable nutritional aid induce a deficit in vitamin A, becoming responsible for large numbers of children subsequently going blind?

Disaster epidemiology seeks to achieve in the field of health what the sociologist has done regarding the psychosocial aspects of disasters.

I shall just mention the so-called "disaster syndrome", because it has directly stimulated the interest of epidemiologists. The observation made by social scientists that a large majority of the survivors of earthquakes are soon busy extricating victims from the ruins, if not efficiently, at least in an effective way, has led to the present concept that the health management of disasters is part and parcel of primary health care. Responsibility for effective rescue and relief rests first with the community involved. So its population must be given appropriate health education and its health workers must be trained to meet this need.

This view is corroborated by the few and still meagre studies of the effectiveness of external medical assistance. Patterns of health needs in populations surviving disasters and the time distribution of referral for health care, point definitely to the conclusion that field hospitals and supplies arrive too late to efficiently meet most of the demand. The same can be said of medical personnel, with its emphasis on highly skilled specialists while the need in fact is most often for unspecialized multipurpose health personnel.

A number of interesting epidemiological data have been collected in recent natural disasters. I shall quote only two examples. The ratio of the number of deaths to the type of building material employed has for a long time incriminated the concrete slabs on reinforced adobe walls as a major lethal factor in earthquakes, especially in Iran, in Turkey and in Central America. In Guatemala, the distribution of bone fractures has shown a large incidence of fractures of the clavicle associated with collapse of buildings with this type of construction. When it occurs, this type of fracture needs to be attended to in a special though unsophisticated way. Immediate attention is needed, not by specialized physicians, but by trained personnel using simple material not usually included in relief supplies.

The other example refers to the ravages of several communicable diseases with glamorous names, and the urge to indiscriminate vaccination. Just let an earthquake happen and in we go randomly shooting vaccines in all directions. Mass immunization has replaced the incantations to patron saints of yesteryear. Indiscriminate vaccination diverts resources which could be better used in other ways. It may be totally inefficient and can present definite risks when performed under strained conditions. Many studies are being conducted at present on the risk of a number of communicable diseases as related to disasters. In many cases the main requirement for control is the setting up of an adequate system of epidemiological surveillance.

The collection of epidemiological data in disaster-prone countries, both before (or between) disasters, and after the impact, is therefore essential, on the model of what has been done by the social scientists. It is now realized that collection of information, both on the spot immediately after the disasters and later, to measure long-term health consequences, is as important a component of the health management of disasters as relief and rescue. It is a necessary condition to make rescue and relief effective and also to prepare for the next disaster so that mistakes will not be repeated.

Capacity for epidemiological assessment is not developed overnight, however. It requires preparation, and the development of adequate methods, with adapted sampling techniques and relevant epidemiological indices.

Efforts along these lines are at present made by the World Health Organization and international agencies in cooperation with universities. A first international course on these two matters (WHO Course on Health Aspects and Relief Management of Natural Disasters) for senior health officials from some 25 countries was conducted in our University Department at the University of Louvain in Brussels in October 1980 under the sponsorship of WHO. Disaster epidemiology is also a field of choice for TCDC (Technical Cooperation between Developing Countries).

The health management of disasters has thus definitely moved beyond rescue and short-term relief, to encompass the whole disaster process, from predisaster planning and preparedness to long-term rehabilitation.

It should be pointed out that while natural disasters have major and dramatic consequences in the field of health, being major causes of death, casualties and permanent disability, they are far from being exclusively a health problem. Disasters, in fact are non-health problems with heavy health implications. Hence the complex interaction between their various aspects.

To be effective, the planning of health care in natural disasters must be closely associated with planning in other fields. There is still much to do to ensure proper communication between health and other disciplines in order to achieve better disaster management.