Research, Preparedness and Response for Sudden Impact Disasters in the 1990s

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Natural disasters such as floods, earthquakes, cyclones, are responsible each year for a large number of deaths and injuries. During the last 20 years, some three million people lost their lives, and 800 million were injured, made homeless or otherwise directly or indirectly affected In 1991 alone, the economic cost of disasters was estimated at 17 billion pounds

There are several reasons for this concern. Major disasters necessitating international aid make headlines several times a year, as a result of better reporting by the mass media they appear to occur more frequently. More people also are killed as a consequence of the population increase Urbanisation is another critical factor that is likely to multiply the human toll

There are many definitions of disasters. For health purposes, natural disasters can be defined as a disruption of the human ecology which exceeds the community's capacity to adjust so that outside assistance is needed. This definition takes into account both the nature of an extreme event, the hazard, and the capacity of the stricken community to absorb or not to absorb it within its proper set of constraints and values, its vulnerability It provides a human dimension. Disasters are disasters by what they do to people What might constitute a disaster for one community might not necessarily be one for another

A distinction is generally made between natural disasters, such as earthquakes, volcanic eruptions, landslides, floods, cyclones, lake gas bursts, and technological disasters, such as fires, dam collapse, transport accidents, release of chemicals, or the melting of a nuclear reactor. This distinction may be blurred, for a natural disaster may trigger secondary disasters associated with the vulnerability of the human environment, such as fires following an earthquake or release of toxic materials in the aftermath of floods.

Natural disasters constitute an important health problem worldwide They may cause many deaths and injuries Hundreds of thousands of people have been killed by single events such as earthquakes or floods. They may also obliterate or compromise health facilities and services. In the long term, they may affect health by jeopardizing economic development.

The health objectives of disaster management can be listed as follows in terms of a time sequence from immediate effects to long-term recovery.

1 Prevention or reduction of mortality, i e , the mortality due to the impact, to a delay in rescue, and to lack of appropriate care

2 Provision of care for casualties such as immediate postimpact trauma, burns, and psychological problems

3 Management of adverse climatic and environmental conditions (exposures, lack of food and drinking water).

4 Prevention of short-term and long-term disaster-related morbidity, e.g., outbreaks of communicable diseases because of disruption of sanitation, living in temporary shelters, overcrowding, and communal feeding (water-borne diseases, respiratory infections, food poisoning); epidemics due to interruption of control measures (malaria); occurrence of new diseases due to resettlement (schistosomiasis, malaria), introduction of imported diseases; appearance of zoonoses (rabies, leptospirosis); increased incidence of some communicable diseases such as tuberculosis, morbidity and mortality due to disruption of the health-care system; mental and emotional problems.

5 Ensuring restoration of normal health by preventing long-term malnutrition due to destruction of foodstuffs and disruption of agriculture, rises in the price of goods, economic marginalisation (loss of land, tools of trade, lost workdays), increased dependence of the community on external health resources, continued disruption of sanitary facilities, permanent relocation in temporary shelters and displacement of the population

6 Re-establishing health services to, or if possible, seizing the opportunity, above pre-disaster levels

For long, the approach to disasters has been crisis dominated. In the past two decades or so, there has been an increasing realisation that natural disasters should be amenable to management The emphasis has shifted from post-disaster improvisation to prevention, mitigation and preparedness

The decade 1990-2000 has been proclaimed by the United Nations the International Decade for Natural Disaster Reduction (IDNDR).

This approach through prevention, mitigation, and preparedness, meets, however, a number of obstacles.

First, people would say, all disasters are different What do a volcanic eruption in Colombia and floods in Bangladesh have in common? This objection does not hold, if natural disasters are viewed as a system, that is as a sequence of phases along a time scale. One may arbitrarily distinguish five phases· (1) the anticipative phase, (2) the pre-impact phase, (3) the isolation post-impact phase, (4) the short-term assistance phase, (5) the long-term rehabilitation phase

The anticipative phase is the time for prevention and pre-disaster planning for mitigation and response.

Mitigation may on a large scale be much more cost-effective than prevention or response. Required activities during the anticipative phase include hazard mapping, vulnerability analysis, implementation of preventive or mitigating measures, inventory of resources for rescue and relief, establishment of crisis management structures, training of personnel, education of the population, and disaster simulations.

The *pre-impact* phase is the time for alarm and warning. It corresponds to the period during which indications of an imminent disaster are accumulating. Many but not all disasters are preceded by preliminary signs. This is the time for warnings based on appropriate prediction techniques The number of deaths will depend for a large part on the early recognition of an impending disaster which would allow the population enough time to take evasive or protecting measures.

The timing of the warning is all important A decision has to be made whether to be on the safe side and run the risk of giving a false alarm, or to wait for definite signs of a disaster and perhaps give the alarm too late The problem is similar to the dilemma of sensitivity versus specificity of criteria in health surveys. For example, the 300.000 or so deaths from the cyclone in the Gulf of Bengal in 1970 were partly due to a decision to delay the warning because an alarm had been given a few days previously for a threat which failed to materialise Development of new or improved technologies for forecasting can play a major role They make a large part of the Research Programme proposed for the Decade

The *impact phase* is the period during which the disaster strikes. It may last from a few seconds, in an earthquake, to weeks, in droughts for example. It is the time for self-help, when the community is isolated and left to itself, no outside assistance having arrived on the spot

Relatively little is known about the health effects in the few minutes or hours after impact. This is owing to the lack of reliable observations, for there are obvious emotional objections to the gathering of data during an emergency, when relief is the top priority. Epidemiological observations however indicate that external aid, however prompt it might be, comes too late to have a significant impact on the prevention of early deaths and that insufficient use is made of local resources for rescue and immediate relief in the affected community Search and rescue are therefore essential components of disaster preparedness and should be part and parcel of primary health care.

The *relief phase* begins when assistance from outside starts to reach the disaster area This stage is often characterised by the intervention of ill-informed and unprepared personnel Provision of aid may be based on stereotypes and myths, such as the need for sophisticated field hospitals, teams of highly specialised physicians, large quantities of medical supplies, and vaccines for non-existent diseases At this stage, information is essential to direct relief and make it efficient. Relief should be more carefully directed. In reality, the sacrifice in promptness required to collect the information necessary to provide apt and well-directed aid is more than justified by the improved results. The need for relevant information should not be sacrificed to ill-considered haste, especially in view of the fact that however prompt the aid given from outside it will have minimal or no effect on early deaths and casualties This is a very difficult message to pass on to donors and relief organisations

The *rehabilitation phase* should lead to restoration of pre-disaster conditions Much could be said about the need to bridge short-term relief with rehabilitation. Suffice it to say that rehabilitation starts from the very first moment of a disaster Too often, measures decided in a hurry tend to obstruct the re-establishment of normal conditions of life Temporary provision by foreign agencies of sophisticated medical care can have negative effects: when such care is withdrawn, the population is left with a new level of expectations that simply cannot be fulfilled. This aspect should also be part of preparedness.

The time frame allows and justifies an integrated and systematic approach to all types of natural disasters. It makes no doubt that much can be learnt from one type of disaster to another, from one disaster to the next.

At each of these phases, research can provide the necessary intelligence for designing appropriate measures.

Research, however, and this is the second obstacle, research is something lagging behind. The initial thrust of the International Decade was for a noticeable part laid on research

A broad and comprehensive programme of interdisciplinary research was proposed as one of the aims of IDNDR, covering such fields as geophysics, engineering, epidemiology, health management, meteorology, sociology. Much impetus is needed to stimulate, activate, and further develop these programmes We need solid data to convince governments as well as disaster managers and donor agencies that prevention for disasters is better than cure

The frustration of course is that the effectiveness of preventive measures is always hard to demonstrate. The end point is a non-event, and non-events do not attract attention.

The third limitation, and possibly one of increasing importance, has to deal with priority. There are so many tragedies in the world today that interest for natural disasters could well lose momentum Whatever the immediate priorities, it should however not be a reason for relegating natural disasters to the shadows. Priority does not mean exclusivity Human conflicts, even while making hell of life for millions, will sooner or later have to be solved But earthquakes, cyclones, floods, will still be with us when present conflicts will hopefully be confined to history books.

Medicine in the IDNDR

As stated by the UN Secretary General, Mr Boutros Boutros Ghali, at a recent meeting:

"There is no hard-and-fast division – in terms of their effects on civilian populations – between conflicts and wars, and natural disasters Droughts, floods, earthquakes and cyclones are just as destructive for communities and settlements as wars and civil confrontation. Just as preventive diplomacy can foresee and prevent the outbreak of war, so the effects of natural disasters can be foreseen and contained "

This forceful statement should clear any ambiguity. There is no competition between these overlapping priorities

I would like to conclude on an encouraging though perhaps rather cynical note. It has been mentioned that natural disasters cost the world community at the moment close to 50 billion dollars per year, mainly in poor countries, and going up. Money providers have become quite sensitive to such figures. Natural disasters are increasingly considered as a threat to the long term effectiveness of development policies Prevention and mitigation are thus now viewed as part of sustainable development It should be an opportunity to integrate the short-term objectives of improving life in disaster-prone countries.