SOME POSSIBLE IMPLICATIONS FOR NATURAL DISASTERS OF RECENT ISRAELI EXPERIENCE WITH THE ELDERLY AND DISABLED

Prepared for the: UCLA International Conference on the Impact of Natural Disasters
Los Angeles, Calif., July 1991

Reuben Eldar M.D.,D.P.H.
Loewenstein Rehabilitation Center, Raanana
Faculty of Health Sciences,
Ben Gurion University, Beer Sheva

ABSTRACT

Populations at risk to a disaster situation comprise also disabled and elderly. This large and growing population segment is in many ways more vulnerable to safety and health hazards of disasters and has specific needs in emergency situations.

The "Desert Storm Operation" as it affected the elderly and disabled in Israel is described. Although the circumstances were rather specific, the increased vulnerability and some particular needs of these population groups were disclosed. Their implications could be of use in the plans for preparedness planning of other types of disasters, including natural disasters of various types.

INTRODUCTION

Populations at risk in a disaster situation consist of subgroups with different degrees of vulnerability to hazards and varying abilities to cope with them. The variables associated with this variance may be demographic: children aged 5 to 9, women and elderly have higher casualty rates in disasters (1,2) and the proportion of injured among elderly is higher than would be expected from the population distribution (3,4).

Some individuals or groups of elderly and younger persons possess physical, sensory or mental disabilities that restrict their various activities. Functional limitations make these individuals or groups more vulnerable to injury at the time of the disaster impact and cause problems during extrication, rescue and evacuation. They may have difficulties in walking, bending, using arms, negotiating stairs, hearing and communicating, seeing, orientating themselves. Some of these difficulties - such as hearing or sight impairment - may limit them in perceiving warnings, alerts and emergency instructions. Others will reduce their ability to carry out recommended self-protective actions or their agility to leave a room or building (5). Consequently, they will be at higher risk of injury or death during disasters and their aftermath (6,7).

BACKGROUND

From a medical point of view a disaster can be defined as a destructive event that causes so many casualties that extraordinary mobilization of medical services is necessary (8). The period during the Desert Storm Operation in the Persian Gulf was in Israel, not a disaster situation as defined above.

There was a high level of preparedness of armed forces, Civil Defence, medical services and the civilian population for the possibility - repeatedly threatened by Saddam Hussein - of a chemical mass casualty situation caused by unconventional warheads of Iraqi ground-to-ground missiles launched against the Israel population. The time-gap between the launching of the missile - and of the sounding of the alert - to its hitting ground was anticipated to be only 90 seconds (at a later stage during the Operation it extended to 5 minutes); therefore, the population was instructed not to run to shelters but was advised to seal off one room in the dwelling to which the family should retreat at the sounding of the alert, and stay there, wearing masks and listening to the radio for further instructions (including "all clear").

The population was issued gas masks and self-administrable atropine injections and was instructed in their use. Certain subgroups were issued blowers instead of masks (chronic pulmonary, cardiac and myopathic patients) and there were also special arrangements for infants and small children.

"DESERT STORM OPERATION" IN ISRAEL

From January 18th to February 25th 1991, there were 18 alerts during which 39 Scud missiles hit Israel. Fortunately, all missiles carried only conventional warheads and caused damage mainly by their blast effect, felt in a radius of 200 to 250 meters.

10992 dwellings (in 3773 buildings) were affected: 235 (2%) completely destroyed, 1553 (14%) severely and 9204 (84%) mildly damaged. Consequently, 2391 individuals became permanently or temporarily homeless and were evacuated to hotels. Among these the proportion of elderly was, according to their distribution within the population of the neighbourhood hit. However, some elderly whose homes were damaged, were found roaming on the site, aimlessly, confused and disoriented; they had to be evacuated - together with casualties - to hospitals, given reassurance there, some rest and a hot beverage, and only later taken to hotels. Many elderly evacuees, leaving their damaged homes in a hurry, forgot their medications, hearing-aids, glasses, clothes; this created difficulties later on, in the hotels to which they were evacuated.

In one of the hit houses, a young couple, disabled by polio, remained with their two children (aged 6 and three-and-a-half) partly under the debris of their dwelling, being unable because of

their disability to extricate themselves. Neighbours arrived after one hour and took the children, but the parents had to wait for another hour for rescue teams to help them disengage themselves. Fortunately, they were only very mildly injured.

A 61 year-old paraplegic was in bed when the alert was sounded; he saw his wife, already out of bed, apparently having a heart attack and pleading for help. He severely injured one of his legs by throwing himself from the bed to the floor, and when he finally reached her, crawling on all four, she was already dead.

The hard-of-hearing had difficulties in identifying the alert siren. For them, one radio station operated a silent channel from 11 p.m. to 7 a.m., which could be left open, at high volume, when they went to sleep; in the case of an alert the siren was heard on this channel thereby awakening them. Imported beepers informing the deaf, by trembling in their pockets, that an alert was sounded, was also available and an apparatus, connected to a wireless set, sensitive to the frequency of the alert siren and flashing lights, was developed locally during the crisis. No particular difficulties were experienced by the blind persons during this situation.

There were 234 casualties, 2 killed and 232 injured (1 severely, 10 moderately, 221 mildly). 46.6% of injuries were caused by glass fragments, 31.1% were blunt injuries caused by building debris and the rest were due to tripping and falls. One of the

killed was an old lady (a glass fragment penetrated her abdomen injuring the aorta) but the incidence of elderly casualties was not higher than their distribution in the general population.

230 persons injected atropine unnecessarily and were brought to medical care, the majority of them in the 20 to 45 age group. However, the percentage of elderly among these casualties (22%) was higher than their proportion in the population (10%).

7 cases of femoral neck fractures were registered in the greater Tel-Aviv area, in elderly persons who fell while hurrying to sealed rooms/shelters upon the sounding of the alert siren. 544 persons were in need of care because of acute stress reactions. Measured on a 1 to 7 scale, anxiety was highest in those aged 20 to 30 and having small children (as compared to the childless of the same age group); those over 50 showed less anxiety, consistent with reports in the literature (7). Holocaust survivors showed the least degree of anxiety.

There were 7 deaths due to asphyxia because of inadequate handling of gas-masks, due mainly to forgetting to remove the plug after putting the masks on. Six of these deaths occurred in persons over 70.

There were also 5 sudden cardiac deaths, occurring withing one hour after the start of the alert; all were in persons under 60 years of age. An excess of death due to cardiac causes was reported during an earthquake in Athens, Greece in 1981 (9).

All causes of death were verified by a P.M. examination. It seems that the most lethal weapon was the plug of the gas-mask.

A part of a missile fell in the courtyard of an old-age home with 86 independent and 40 nursing-care residents, causing only very mild damage and no injury. Neither this home nor any other geriatric institution had plans for contingency evacuation of their residents or patients (10).

Approximately 40.000 institutionalized, very severely disabled, mentally retarded and nursing-care elderly were unable to put on the mask. The armed forces allocated girl-soldiers to geriatric hospitals and long-term nursing facilities in the most vulnerable geographical area of the country to help out the severely overburdened local staff.

Acute, general-care hospitals preparing for the admission and processing of the anticipated chemical mass casualties, had to discharge a certain percentage of their patients prematurely.

This discharge affected primarily the chronically ill and elderly patients; not in all cases was there satisfactory concern for continuity of care in their homes or in community clinics immediately following discharge, and it took several days and considerable effort to correct this deficiency.

A telephone hot-line, specifically devoted to problems of elderly persons, was set up during the crisis by the Kupat Holim (Sick Fund). It was staffed by geriatricians who answered questions concerning behaviour in a sealed room, breathing through gas-masks, taking of medications, and other matters troubling elderly persons.

DISCUSSION

This was the first of Israel's armed conflicts to affect the civilian population in the rear of the country directly; the elderly and the disabled were affected together with the rest of the population.

The circumstances created were rather special and not similar to an emergency situation created by a natural disaster. Nevertheless, the particular vulnerability of elderly and disabled and some of their special needs were disclosed in the situation and some of these could be considered for and applied in plans for preparedness for natural disaster situations.

This vulnerable population is large and growing in all countries (11) and also becoming integrated into the socioeconomic life of society, and increasingly chooses to live independently in their own households. Thus, the issue of safety and vulnerability - once considered the domain of the family or the specialized institution caring for the disabled and elderly - has become the responsibility of the persons themselves and of the community in which they live and its various organizations, including those charged with preparations and preparedness planning for natural disasters (12).

On the basis of the Desert Storm Operation experience, as well as based on experiences of others, the following suggestions for planners in disaster-prone areas could be forwarded:-

* Planners should know as much as possible about the prevalence of different forms of disability in their area, the degree and type of functional limitation associated with it, their socioeconomic characteristics and residential pattern, as well as their specific risk factors (13). In order to obtain the necessary information the performance of surveys in the area or of occupant behavior studies may be necessary (6,12).
* It would be useful to identify all current disabled and elderly in the area and have them on a centralized location system (7,14). This would enable the provision of assistance required in view of an imminent disaster, as well as following the disaster impact.

* Provisions for the needs of functionally limited residents, such as:-
  * notification of hearing- or vision-impaired persons that an emergency is expected or exists
  * consideration for disabled and elderly in case authorities plan the evacuation of an area under imminent danger threat of disaster, or following the damage it has caused (12)
  * practical and material assistance for high-need/ high-risk segments of the disabled and elderly population
  * educational and training experiences for disabled and elderly on self-protective actions they should, and could undertake, as well as on evacuation/egressibility patterns
  * educational and training experiences for able-bodied in techniques necessary for managing the needs of disabled and elderly persons in emergencies
  * assisting disabled and elderly to safety, including the availability - at least in public buildings - of assistive devices for emergency evacuation and, if possible, multiple building access and egress routes
  * emergency transportation for disabled
  * establishment of evacuation centers accessible to disabled

* All nursing homes, old-age or pensioners' homes, vocational training centers or special schools for disabled existing in the area, should prepare written emergency plans (similar to those of hospitals) for both internal disasters (fires) and general disaster situations, to be reviewed periodically and to be exercized.

LIST OF REFERENCES

1. Glass R.I., Zurutia J.J., Sibony S. et al.: Earthquake injuries related to housing in a Guatemalan village. Science 1977,197:638-641.

2. Sommer A., Mosley W.H.: East Bengal Cyclone of November 1970: epidemiological approach to disaster assessment. Lancet 1972,1:1029-1036.

3. Gueri M., Guerra E.S., Gonzales L.E. et al.: Health implications of the Tumaco earthquake, Colombia 1979, Disasters 1983,7:174-179.

4. Kilijanek T.S., Drabek T.E.: Assessing long-term impacts of a natural disaster: a focus on the elderly. Gerontologist, 1979,19:555-556.

5. Schroeder C., Benedict P.: Egress during fire - wheelchair exiting in an emergency. The Amer. J. of Occup. Therapy 1984,38:541-543.

6. Tierney K.J., Petak W.J., Hahn H.: Disabled Persons and Earthquake Hazards. Institute of Behavioral Science, University of Colorado, 1988,pp.41-55.

7. Huerta F., Horton R.: Coping behavior of elderly flood victims Gerontologist 1978,18:541-546.

8. De Boer J., Brismar B., Eldar R., Rutherford W.H.: The medical severity index of disasters. The J. of Emergency Medicine 1989,7:269-273.

9. Trichopoulos D., Katsoyani K., Zavitzanos X. et al.: Psychological stress and fatal heart attack: the Athens (1981) earthquake natural experiment. The Lancet, 1983,1:441-443.

10. Roberts G.S., Banerjee D.K., Mills G.L.: The emergency evacuation of a geriatric hospital in Toxteth. Age and Ageing 1982,11:244-248.

11. The World Aging Situation: Strategies and Policies - United Nations Publications ST/ESA/176, New York 1985.

12. Coping with natural disasters: the role of the local health personnel and the community. WHO, Geneva, 1989.

13. Logue J.N., Melick M.E., Hansen H.: Research issues and directions in the epidemiology of health effects of disasters. Epidemiologic Reviews, 1981,3:140-162.

14. Cohen E.S., Poulshock S.W.: Societal response to mass dislocation of the elderly. Gerontologist 1977;17:262-268.