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# Editorials

## After the Flood

With each passing decade, the number of people affected by disasters worldwide is escalating. The reported incidences of floods, storms, earthquakes, drought, and famine have all increased and in total occur more often than civil strife.<sup>1</sup> Floods accounted for more than a third of all disasters occurring in the 1970s although earthquakes caused the most deaths and financial losses.<sup>2</sup> Whatever the cause, however, the poorest suffer most in calamities: their houses are less sturdy and they have fewer resources and less means of social security.<sup>2</sup> Thus, disasters cause most devastation in developing countries, where the death rate is three to four times higher than in developed countries and survivors are 40 times more likely to be affected.

Bangladesh, which has a dense population of nearly 120 million, is one of the world's poorest countries, with a per capita gross national product of \$200. Estimates of infant mortality there are 101/1000, and life expectancy is 52 years.<sup>3</sup> Bangladesh also has the highest rates of flooding in the world, and floods, together with typhoons and cyclones, caused 633 000 deaths in that country between 1960 and 1981. As with many so-called natural disasters, human activity has played a role in the floods, which are thought to be associated with deforestation and consequent erosion in the higher reaches of the Ganges and Brahmaputra rivers, and with the absence of an adequate regional plan to cope with the dry and monsoon seasons in the Ganges delta.<sup>4-6</sup> Bangladesh thus exemplifies the problems produced by the interaction of environmental degradation, poverty, calamities, and political factors.

Early studies of children affected by situations of extreme stress such as floods,<sup>7</sup> storms,<sup>8</sup> and bush fires<sup>9</sup> reported

high levels of psychological symptoms, including nightmares, fears, and aggressive behavior. The use of standardized questionnaires and interviews now allows comparable data to be collected, and has demonstrated high rates of symptoms of posttraumatic stress disorder after catastrophes.<sup>10</sup>

These psychological responses are influenced by many factors: the extent of destruction and loss for individuals and the community, the meaning of the disaster to the population, and the short- and long-term consequences for the population.<sup>11</sup> Children, especially young ones, are particularly affected by the emotional reactions of their parents and by separation from family either during or after the disaster.<sup>11</sup>

The long-term results of disasters are not always immediately apparent: as with the nuclear accident at Chernobyl in 1986, the degree of threat may become evident only gradually. Such results can also be evidenced in a chain of events of increasing hardship when means of livelihood are lost, families are displaced, or deaths occur. The persistence of symptoms after the 1988 Armenian earthquake was linked to economic and housing difficulties and separations. Because their shoddy housing collapsed in the earthquake and promises of reconstruction were not fulfilled,<sup>12</sup> people became angry with the authorities. And with the slow pace of rehabilitation, children were continually confronted with the rubble of the earthquake and reminders of their devastating experience.

Thus, the short-term psychological results of a particular disaster merge with the long-term results of living in adverse circumstances and impede the process of

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**Editor's Note.** See related article by Durkin et al. (p 1549) in this issue.

recovery. Longitudinal studies suggest that, although most people recover over time from a disaster, mental distress may persist, especially in those who were already vulnerable or who continue to live in chronic adversity.<sup>13</sup>

The magnitude of these chronic difficulties will depend to some extent on the degree of social security and other support that families are able to draw upon. In developing countries, communities exposed to recurrent disasters like famine develop strategies of risk management—for instance, the sharing of risks and benefits at the village level, and the ability to draw upon patronage relationships for support.<sup>14</sup> Even where such strategies exist, however, they prove inadequate when millions are displaced and thousands die.

Most of the literature on the psychological effects of disaster deals with developed countries. Thus, the article by Durkin et al.<sup>15</sup> in this issue, about the effects of a flood in Bangladesh on child behavior, is of particular interest because it deals with children from a developing country. Fortunately, the authors were able to take advantage of a natural experiment and provide data on the same children both before and after the disaster.

The sample of 2667 2- to 9-year-old children on which Durkin et al. relied had already been identified 6 months before the flood in an epidemiological study of neurodevelopmental disability. Five months after the flood, the investigators undertook a search for the 64 children originally identified as having a disability and selected a random sample of 140 other children from the remainder. Of those 204 children, 49 from the disabled group and 113 from the random group were reevaluated. (Two had died and the rest of the 40 children could not be traced.) Seven percent of the children had experienced a family death; 4% were separated from their family for more than a day; and half were exposed to the flood for more than 10 days. In the sample seen at follow-up, lack of sphincter control, rather than decreasing over time as expected, increased from 16.8% to 40.4%. Sixteen children were reported to be very aggressive, compared with none before the flood; these 16 children also had more behavioral symptoms on behavioral screening scales.

More extensive study would be needed to determine whether the kinds of posttraumatic reactions described by others (e.g., flashbacks of the event) were present in this population. Even without this knowledge, however, the paper by Durkin et al.<sup>15</sup> raises the issue of providing

psychological help to developing country communities exposed to disaster.<sup>16</sup> Mental health professionals throughout the world are deploying "disaster teams" that can respond at short notice with the aim of reducing immediate distress and preventing long-term difficulties. Simple methods of group work and counseling have been shown to improve symptoms of posttraumatic stress in treated children compared with control subjects.<sup>17</sup>

An impressive example of the help provided to disaster victims followed the Armenian earthquake in 1988. Between 25 000 and 100 000 people died, and 530 000 were left homeless out of a total population of 3.5 million. The Armenian Relief Society of the Western United States mobilized a team of European and North American volunteer mental health workers, many of whom spoke Armenian. Together with Armenian colleagues, these volunteers worked in relays to provide first aid to 10 000 people over a period of 2 years. Brief psychotherapy was given to those who needed extra help. A special clinic was built in each of the two main towns where the affected population was concentrated.<sup>12</sup> High rates of chronic posttraumatic stress reactions were found in children, who were helped through classroom discussions as well as through group work, play therapy, therapeutic booklets, and individual counseling where needed.<sup>18</sup>

The World Health Organization<sup>2</sup> emphasizes the need for similar programs of psychosocial help in disaster-prone countries. However, one must ask how realistic this recommendation is for a poor, crowded country like Bangladesh, where hundreds of thousands of people are affected by recurrent disasters. In all, Bangladesh has only nine small psychiatric units within medical college hospitals, two mental health units in military hospitals and one in the university hospital, one small mental health hospital, and 30 practicing psychiatrists.<sup>19</sup> With a population that is more than 90% rural, few people would find access to these limited urban mental health services. Given this situation, then, is not investment in disaster prevention the most urgent priority? When resources are limited, poor villagers might prefer relief money to be used for income-generating projects that would increase their resources to withstand disaster and buffer misfortune.<sup>20</sup>

Before investing in a disaster response program, a traditional society might find some other steps to be more helpful. The coping strategies and support

systems that are already available need to be explored in consultation with the village population. This exploration might include the role of traditional healers, the ways in which the community and families are able to reestablish themselves when floods subside, and what kinds of help the communities feel they need. Mentally distressed village people generally have recourse to traditional healers, priests, and astrologers, and they might not look to Western-style psychiatry for help in any case.<sup>20</sup> As has been noted,

many potential users do not come to a facility which is openly labelled as a mental health service, since they do not see themselves as people needing specialized help but consider themselves only as victims of extreme adversity.<sup>2</sup>

More practical than special mental health programs would be approaches aimed at helping affected populations through welfare and primary care. A priority should be a family tracing program for unaccompanied children and adequate protection for those children whose families cannot be found.<sup>21</sup> Efforts could be made to raise awareness both of how disasters affect children and of how such children can be helped. These measures could be integrated into general programs aimed at promoting child development.

Additionally, advantage could be taken of local experience from women's associations, community development schemes, village family welfare workers, and teachers. School-based programs aimed at helping children affected by war have proved feasible in other developing countries such as Mozambique.<sup>22</sup> Other programs have trained community activists to provide support to families affected by war.<sup>23</sup> Local training materials, booklets, and radio programs about the effects of disaster on children and ways of helping them could support the programs and inform administrators. While the level of expertise would be nowhere near that supplied by the teams that worked in Armenia, such an approach could reach large numbers of people and, if it proved useful, be gradually extended.

This model of support not only reduces the need for scarce professionals but has an important developmental perspective as well. It could be sustained largely through local resources and could contribute to the growth of mental health services that are sensitive to local needs. □

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References

1. *Prevention Better than Cure*. Stockholm, Sweden: Swedish Red Cross; 1991:35.
2. *Psychosocial Consequences of Disasters, Prevention and Management*. Geneva, Switzerland: World Health Organization; 1992.
3. *The State of the World's Children 1993*. Geneva, Switzerland: United Nations Children's Fund; 1993.
4. Hassan S, Khan AR. Bangladesh floods: the political debate. In: Kabir MG, Hassan S, eds. *Issues and Challenges Facing Bangladesh Foreign Policy*. Dhaka, Bangladesh: Bangladesh Society of International Studies; 1989:80-92.
5. Islam MR. Indo-Bangladesh common water resources development: problems and prospects. In: Kabir MG, Hassan S, eds. *Issues and Challenges Facing Bangladesh Foreign Policy*. Dhaka, Bangladesh: Bangladesh Society of International Studies; 1989:62-79.
6. Kabir MG. Environmental challenges and the security of Bangladesh. In: Kabir MG, Hassan S, eds. *Issues and Challenges Facing Bangladesh Foreign Policy*. Dhaka, Bangladesh: Bangladesh Society of International Studies; 1989:93-107.
7. Newman CJ. Children of disaster: clinical observations at Buffalo Creek. *Am J Psychiatry*. 1976;133:306-312.
8. Burke JD, Borus JF, Burns BJ, Millstein KH, Beasley MC. Changes in children's behavior after a natural disaster. *Am J Psychiatry*. 1982;139(8):1010-1014.
9. McFarlane A, Policansky K, Irwin C. A longitudinal study of the psychological morbidity in children due to natural disaster. *Psychol Med*. 1987;17:727-738.
10. Yule W, Williams RM. Post-traumatic stress reactions in children. *J Traumatic Stress*. 1990;3:279-295.
11. Raphael D. *When Disaster Strikes: How Individuals and Communities Cope with Catastrophes*. New York, NY: Basic Books; 1986.
12. Goenjian A. A mental health relief programme in Armenia after the 1988 earthquake. *Br J Psychiatry*. 1993;163:230-239.
13. Green BL, Lindy JD, Grace MC, et al. Buffalo Creek survivors in the second decade: stability of stress symptoms. *Am J Orthopsychiatry*. 1990;60(1):43-54.
14. Platteau J-P. *Traditional Systems of Social Security and Hunger Insurance: Some Lessons from the Evidence Pertaining to Third World Village Societies*. London, England: London School of Economics; 1988.
15. Durkin M, Khan N, Davidson LL, Zaman SS, Stein ZA. The effects of a natural disaster on child behavior: evidence for post-traumatic stress. *Am J Public Health*. 1993;83:1549-1553.
16. Lima BR. Primary mental health care for disaster victims in developing countries. *Disasters*. 1988;10:203-204.
17. Yule W. Posttraumatic stress disorder in child survivors of shipping disasters: the sinking of the "Jupiter." *Psychother Psychosom*. 1992;57:200-205.
18. Pynoos RS, Goenjian A, Tashjian M, et al. Post-traumatic stress reactions in children after the 1988 Armenian earthquake. *Br J Psychiatry*. 1993;163:239-247.
19. Islam R. Psychiatry in Bangladesh. *Psychiatr Bull*. 1993;17:492-494.
20. Chambers R. *Rural Development: Putting the Last First*. Barlow, England: Longman; 1983.
21. Williamson J, Moser A. *Unaccompanied Children in Emergencies: A Field Guide for Their Care and Protection*. Geneva, Switzerland: International Social Service; 1987.
22. Richman N. Annotation: children in situations of organized violence. *J Child Psychol Psychiatry*. In press.
23. Metraux J-C. Training techniques of non-professionals (who may be refugees) in the framework of a preventive and primary care program in mental health. Paper prepared for the Refugee Studies Programme meeting on "the mental health of refugee children exposed to violent environments"; January 1992; University of Oxford; Oxford, England.

The Bell Tolls for a School of Public Health—and for Thee?

The School of Public Health of the University of California in Los Angeles is under threat of dissolution. It is one of the leading schools in the United States, not only large but also distinguished. The study of medical care here and abroad, the pioneering of packaged programs for health research, the demonstration of the ill effects of ozone, the clarification of numerous methodological problems that beset epidemiology, and, in the immediate present, the elucidation of the biological responses and social transmission of human immunodeficiency virus (HIV), as well as assistance rendered in the control of HIV through sentinel surveillance in several Southeast Asian countries, are a few of the school's many contributions to research and scholarship. To these must be added its production of public health professionals and scholars who grace public health departments, schools, hospitals, and other institutions throughout the country and the developing world. This is not a place struggling to survive in any academic sense.

The broad array of achievements and performance noted above is typical of good schools in the United States. It follows then

that the threatened dissolution is a message for all of us in public health. Regardless of standing and academic productivity, no school can be considered invulnerable. And because graduate education is an essential prop on which modern public health must and does rest, in the long view public health itself becomes vulnerable.

Impelled by the economic and social change of industrialization in England in particular, the public health movement grew in momentum from the beginning of the 19th century. This growth can be credited to the energy and efforts of socially conscious individuals. For the first 50 years at least, all were essentially amateurs. Over the next century, professional education in the field took shape. In this phase, public health in England was dominated by physicians, and their public health education was a special but minor addition to their training in the form of medical school studies and diploma courses.

In the United States, by contrast, public health has generally been more open to recruits from a variety of backgrounds. Here, a little more than 75 years ago, the initiative of the Rockefeller Foun-

ation led to the founding of The Johns Hopkins School of Hygiene and Public Health, the first graduate institution for public health to be independent of other schools or departments. Just as the medical school at Johns Hopkins was the harbinger and model of modern medical education, so was the new public health school to be for public health. On this foundation, the basic disciplines of public health could evolve and grow to an intensity sufficient to match the rapid and complex changes of the modern world. Other schools followed suit and made their own particular contributions.

Before public health education achieved independence, it languished and often wilted. In the medical school, in the shadow of a philosophy committed to the care of sick individuals, a contrasting philosophy of resolutely public commitment to the prevention of disease in populations seldom flourished. Thus, schools of public health liberated public health to pursue its proper goal.

A second major public health innovation cradled in the United States, the multidisciplinary effort to prevent disease,