

Disaster Research: Exploring Sociological Approach to Disaster in Bangladesh

Mahbuba Nasreen *

Introduction:

Disasters are annual events in Bangladesh. These disasters range from ravaging tornadoes to devastating floods. Of all the disasters the problem of flood has aggravated most from 1955 to 2004 and become one of the main concerns of people in Bangladesh. Abnormal floods submerge about 60 percent of the land, damage crops, property; disrupt economic activities and cause diseases and loss of life. Similarly, cyclones, which are sometimes accompanied by storm and tidal surge, pose multiple threats to human society along with erosion of soils, riverbank and coasts. Surge water creates salinity problem in the coastal belts. Consequently, cyclones are very destructive of property and people and disruptive of economic activities. Another hazard, drought, affects the standing crops, water supplies and plant growth leading to loss of productions, food shortages and famine. (Nasreen and Hossain, 2002). Arsenic, a toxic element and a silent disaster, is teaching a bitter lesson to humankind, particularly to those in Bangladesh who have been suffering from *arsenicosis*. The excessive level of the presence of arsenic in drinking water is redefining water from 'life saver' to a 'threat' to human survival. Because it takes 10 to 20 years, depending on the amount of arsenic accumulated in the body, to be identified as arsenic patient, people's response to the disease is not so prompt. Because of its severity and frequent occurrence, floods have attracted wide attention and are well documented by the researchers. However, sociological research on disasters, even on flood, is scant in Bangladesh.

In this paper an attempt has been made to explore what research has been done to address disasters in Bangladesh and to what extent disasters are highlighted from social perspective? The paper, in the process, also tries to define disaster and identify approaches to disaster research. The paper looks at the major works completed on disaster from various approaches. It has been argued that application of sociological approach to disaster research is very limited.

Defining Disaster

'Disaster' is defined differently by different people: to some 'disaster' is a summative concept' (Kreps, 1984) or a 'sponge world' (Qurantelli and Dynes, 1970). Some researchers mentioned disaster as a 'collective stress situation' (Barton, 1969) while others identified it with 'social crisis period' (Qurantelli and Dynes, 1977).

Britton (1986) argued that "disasters can be more easily recognized than they can be defined". Disaster is a severe, relatively sudden and unexpected disruption of normal structural arrangements within a social system over which the system has no firm control (Barton, 1974). A disaster may also be viewed as "a significant departure from normal experience for a particular time and place"(Turner, 1978). Disaster is also viewed as a mental construct imposed upon experience. This is because to understand disaster knowing the number of deaths, the value of property destroyed or the decrease in per capita income is not sufficient. The symbolic component requires knowledge of the sense of vulnerability, the adequacy of available explanation and the society's imagery of death and destruction (Barkun, 1977).

* Associate Professor of Sociology, University of Dhaka. mnasreen@bdcom.com

Approaches to Sociology of Disaster

Although there is no coherent discussion in the sociological studies in the development of disaster research, attempts had been made to indicate some of the substantive trends in the development of sociology of disaster. Quarantelli and Dynes (1977) examined the sociological research of three decades on disaster and identified the following issues. (Box 1)

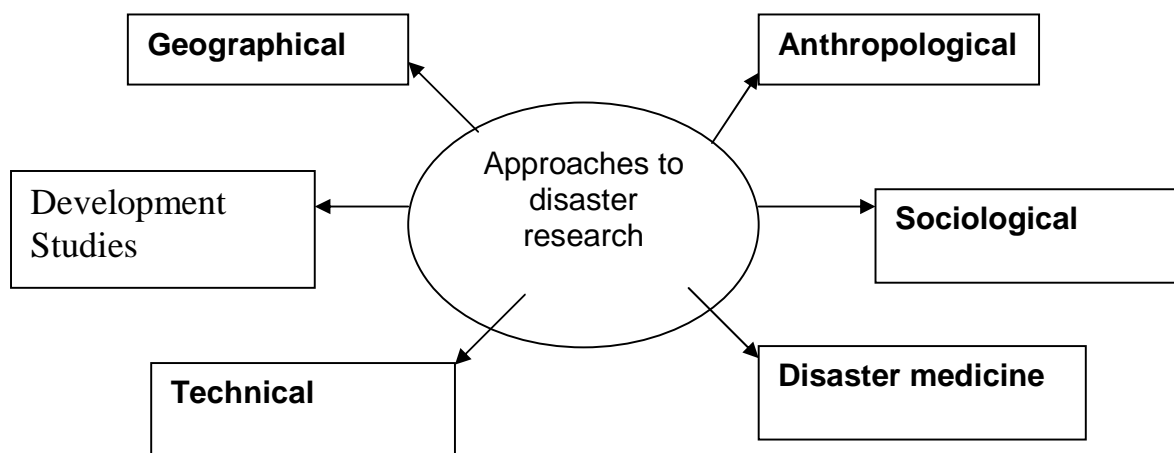
Box 1: Trends in Disaster Research

Efforts at codification
 The development of a social organizational, rather than a social and psychological emphasis
 The emphasis on groups, rather than individuals, as the basic unit of analysis
 The increasing emphasis on the pre-impact period as the source of post-impact changes
 The developing focus on functional and dysfunctional long range consequences and the initial attempts at model building

Source: Quarantelli and Dynes (1977)

Because disasters bring disruptions in the normal social life, create chaos, destroy social structure and contribute to replace social order, disaster research may be viewed as the study of 'social pathology' (Dynes, et al, 1978). However, Frtiz (1961) provided a sociological definition of disaster along with a rationale for which disaster should not be viewed as social pathology: "Disasters provide a realistic laboratory for testing the integration, stamina, and recuperative powers of large scale social systems. They provide the social scientists with advantages that cannot be matched in the study of human behavior in more normal or stable conditions".

Figure 1: Approaches to disaster research



After surveying the general literature on disaster, Alexander (1993) identified six schools of thought on natural hazards and disaster studies: the geographical approach, the anthropological approach, the sociological approach, the development studies approach, the disaster medicine approach and the technical approach. (Figure 1).

The geographical approach (pioneered by Barrows, 1923 and White, 1945) deals with the human ecological adaptation to the environment with special emphasis on the 'spatio-temporal' distribution of hazard impacts, vulnerability and people's choice and adjustment to natural hazards. Social science methods are widely used in this approach.

The anthropological approach (Oliver-Smith, 1979, 1986; Hansen and Oliver-Smith, 1982) emphasizes the role of disasters in guiding the socio-economic evolution of populations. Anthropologists adopting this approach search for reasons why communities in the 'Third World' fail to provide basic requirements for their people's survival. They also discuss the 'marginalization syndrome' caused by impoverishment of disadvantaged groups in 'Third World' countries. The sociological approach (Dynes, 1970; Quarantelli, 1978; Mileti, Drabek and Haas, 1975; Drabek and Boggs, 1968; Drabek, 1986) discusses vulnerability and the impact of disaster upon patterns of human behaviour and the effects of disaster upon community functions and organization. Oliver-Smith (1996) developed three general themes as the major trends in anthropological research in disaster: behavioural response approach, social change approach, and political economic/ environmental approach. Oliver-Smith argues that disaster in developing world occur at the interface of society, technology and environment and is fundamentally the outcomes of the interactions of these characteristics. He has also reported that although occurrence of disaster is frequent, theoretical work in disaster research is limited.

The development studies approach (Davis, 1978; Knott, 1987) discusses the problems of distributing aid and relief to 'Third World' countries and focuses on refugee management, health care and the avoidance of starvation. The disaster medicine and epidemiology approach (Beinin, 1985) focuses on the management of mass casualties. It also includes the treatment of severe physical trauma and other diseases which may occur after a disaster.

The technical approach (Bolt et al. 1977; El-Sabh and Murty, 1988) focuses on geophysical approaches to disaster such as studied in seismology, geomorphology and volcanology and seeks engineering solutions.

Among these approaches two disciplines, geography and sociology, have dominated the field of disaster research since the 1950s and have emphasised the environmental and behavioural aspects of disaster. Drabek's (1986) findings on existing sociological literature are the significant contributions to the conceptual typology of sociological disaster research. He identified different areas of concern in disaster research such as planning, warning, evacuation, emergency, restoration, reconstruction, perceptions and adjustments. He discussed sociology of disaster under four major headings: preparedness, response, recovery and mitigation. However, most of the approaches and sociological research on disaster have been formulated and conducted for the developed world (especially the USA). Their application to developing areas is problematic and very limited, as in the Bangladeshi cultural context. Moreover, there is almost no discussion of the gender response to disaster under any theoretical approach. In fact, only recently sociologists turned their attentions to the larger questions of social change related to disaster or the pre-impact conditions in disaster areas as sources of post-impact changes (Oliver-Smith, 1986).

Disaster research in Bangladesh

Disaster research in Bangladesh is conducted from six major approaches: geographical approach, behavioural approach, structural approach, historico-structural approach, sociological approach and anthropological approach. Although geographical and sociological approaches have dominated the field of disaster research in developed societies, disaster research in Bangladesh mainly followed the

geographical approach. It can be said that disaster research from sociological approach in Bangladesh is done only in rare occasions.

Past research on natural disasters (such as, famine, river bank erosion, floods or cyclones) in Bangladesh has followed the geographical approach of the Chicago-Colorado-Clark-Toronto School of Natural Hazard Studies associated with Kates, 1962, 1971, White, 1964, 1974 and Burton et al., 1978. Disaster response studies (Islam, 1974; Paul, 1984; Alam, 1990, 1991) deal with people's behaviour, such as their perception, attitudes, beliefs, values, response and personalities. These studies fall in the first school of thought (i.e. geographical approach) described by Alexander. They are concerned with discovering people's choices, behaviour and adjustments to disaster, for example, how people viewed the hazard and how they perceived alternative opportunities available to them in coping with the hazardous events. However, social impact of disaster is also mentioned in some of these studies.

A recent publication, following geographical approach (Ahsan and Khatun, eds., 2004) in disaster focused on gender aspects during disasters. Various disasters such as flood, cyclone, riverbank erosion, earthquake, arsenicosis, famine and others have been discussed from geographical perspective. However, although in some of the writings in the study impact of disasters on people and coping with disasters have been emphasized, majority of them have only a geographical perspective.

Hossain et al (1987) examined, from behavioural approach, whether rural people in flood-free and flood-prone areas adopted different survival strategies or not and also focused on the responses of rural people in general, but not on women's responses. Shaw (1989) highlighted the problems of poor women in a relief camp in Dhaka city. She noted how women bore the social burden of shame when living with strangers and drew attention to the difficulties women faced when trying to maintain *parda* during floods. In his study on riverbank erosion and floods Rahman (1988) argued that people's ability to adjust to hazards should be viewed as an extension of social and natural systems already existing in society. He also pointed out that there are differences in people's reaction to riverbank erosion and flooding according to their socio-economic location. Alam's (1991) study focused on the survival strategies of rural people on the flood-prone and relatively flood-free villages. The author observed that some middle and poor income households sold or mortgaged their lands and other assets to avert hunger during floods.

Research conducted following geographical and behavioural approaches are significant in relation to disaster studies but some of their interpretations regarding people's problems and behaviour are misleading (see for example, Islam, 1974). They see Bangladeshi people as 'traditionally fatalist'. This mistaken idea came from certain answers given by rural people in response to questions such as, "What do you do when flood hits your homestead?" and from the response, "Pray to God". The reasons for such responses were not studied carefully (Rahman, 1988). Zaman (1989; 1986) points out that behaviouralists fail to understand the socio-cultural background of adjustment for Bangladeshi people. Alam's (1991) study, however, discusses human behavioural factors in the context of existing social relations. He sees flood-prone people in relation to vulnerability and argues that people's behaviour differs by gender, age, ethnic group and economic status.

There are also structural (Brammer, 1975; Currey, 1978; Alexander, 1993) and historico-structural (Zaman, 1986) approaches to natural disasters. The structural approach sees disaster as a consequence of administrative or institutional weakness. This approach makes a valuable contribution regarding structural remedial measures to cope with disasters but lacks an understanding of people's own initiatives to cope with disaster. According to the historico-structuralist approach individual responses to disasters in Bangladesh should be viewed in a broad socio-cultural and historical context (Haque and Zaman, 1989). Some of the researchers (Latif, 1989; Custers, 1993) have pointed out that any steps to control disasters, e.g. floods, should emphasise both the structural (i.e. building of embankments) and non-structural (i.e. people's initiatives) approach. They have discussed the problems and the negative consequences of floods and flood control projects for the environment, fisheries and many other aspects of life (Adnan, 1990; Boyce, 1990; Rogers et al., 1989; Pearce, 1991; Custers, 1993, Khalequzzaman, 1994).

Very recently (Hussain, 2001) anthropological approach to disaster has been discussed with only a few relevant ethnographic examples. The theoretical viewpoints of anthropological approach can be divided into four perspectives: human behavioural perspective, eco-feminist perspective, theories of vulnerability, and theories on women's oppression. The Flood Action Plan 14's (FAP-14) study (1992) on peoples' responses to floods was conducted under the auspices of the Bangladesh Flood Action Plan. Findings of 'The Gender Study' were included in FAP 14's draft final report (Hanchett and Nasreen, 1992). Using the case study method this study dealt with the experiences of a few women in female-headed households. It contributed significantly to the understanding of gender issues in floods through highlighting some of the major problems faced by women during floods.

Ahmed (1993) emphasizes the importance of kinship during disasters. The author conducted the anthropological study on the survivors of riverbank erosion and found that kinship, especially patriarchal, bonds are very strong in Bangladesh. In most of the cases the whole patrilineage becomes affected by riverbank erosion due to their proximity. The author argues that under such circumstances, it becomes difficult to seek support from patrilineage and many people depend on matrilineage for their family sustenance.

Like flood, cyclone is also a regular phenomenon, especially in the coastal areas and in offshore islands. In the *Ain-E-Akbori* of the 16th century cyclone is mentioned as a disaster in this belt. During the last three decades almost all of the coastal areas and offshore islands faced cyclones. Detail and in depth sociological study on cyclone is also limited in Bangladesh. Hossain et al (1992) conducted a research after the devastating cyclone of 1991. The cyclone extended from Teknaf in the southeastern seaboard to Barguna – a coast line of 644 kilometers. The study dealt with peoples' immediate responses to disaster in the context of providing support to the survivors, governments' relief operation, problems and contributions of women during disaster, warning system, support from NGOs, health, conditions of children and others. Although the researchers emphasized on some of the coping mechanisms adopted by the cyclone affected people and some of the social aspects related to disaster, they were not based on sociological approach and lack proper methods in social research.

Though useful, past studies did not take sociological approach into account. Although some of the above-mentioned studies have considered socio-economic and cultural variables in assessing human responses to cyclones, riverbank erosion and floods, they have failed to provide a theoretical basis.

The pioneering disaster research (Nasreen, 1995) based on sociological approach portrait a detailed picture of a disaster experienced by rural households. It focused on the pre, during and post disaster activities performed by men and women during floods. The author argues that disaster affect both women and men but the burden of flood coping falls heavily on women. During floods men in rural areas lose their place of work while women shoulder the responsibilities to maintain households' sustenance. Nasreen (1995, 1999) argued that although poor rural women have very few options open to them to overcome their problems, their roles in disasters are obviously not simple: they relate to a complete range of socio-economic activities. During floods women continue to be bearers of children and responsible for their socialization, collectors and providers of food, fuel, water, fodder, building materials and keepers of household belongings: they also represent a productive potential which was not recognised earlier. The study argues that it is women's strategies, developed over the last few years, those are vital in enabling the rural people to cope with disaster. Government and many other bodies dealing with disaster management mainly communicate with wealthier, influential landowners who do not represent or serve the interest of the poor or of women. Nor does it seem to have occurred to policy makers that women might be involved in activities different from men or experience disasters differently than men.

Vast majority of the rural people is inextricably linked with the arsenic contaminated water for their daily survival. It is reported that most of these people neither had the idea of arsenic contamination, or the future impact of the catastrophe of *arsenicosis*. However, there has been very limited discussion on the socio-economic impact of *arsenicosis* in Bangladesh.

A sociological research (Nasreen, 2002) has been conducted on the problem of *arsenicosis* from a new environmental paradigm. It has been argued in the study that arsenic contamination in Bangladesh ground water is a widely recognized fact and that is causing suffering to millions. The author identified some of the social consequences related to *arsenicosis* such as social instability, superstition, ostracism, diminishing of working ability, increase of poverty, impact on women, disruption of social network and marital ties and causing death.

Hanchett (2003) argued that there is a gender side to the arsenic problem because women and men are affected in different ways. "Women who do know about the problem and wish to do something about it are faced with new demands on their time as they search for safer drinking/cooking water sources. Poor women also face insults – a problem they were able to avoid once they no longer needed to ask more affluent neighbors to share their safer wells".

Conclusion

Disasters are frequent events in Bangladesh. Disaster research in Bangladesh has been dominated by geographical approach probably because disasters are mainly considered as physical phenomena. However, although many disasters are related to physical phenomena, they mostly affect society, community, people, institutions and the overall environment. In this paper it is argued that less attention has been given to conducting in-depth research on disasters, especially from sociological perspective. In times of disasters government and other organizations pay attention to identify causes of disasters, mechanisms to control disasters and disaster mitigation instead of focusing on coping strategies. There is a need for timely and well-focused policy to solve disaster related problems. Raising of awareness regarding the coping mechanisms of disaster should be given priority. Sensitization of community people, law enforcement authority and policy makers to manage disasters and support to survivors are also necessary. Rehabilitation programme for disaster victims/survivors should be taken by all. Adopting Sociological approach is necessary to exhort any programme to manage disasters.

Sociological research is very much relevant to identify what attempts should be made to grasp the different issues relating to disasters, such as the problems, coping with the wounds and gender based differential impact of disasters on the survivors. It has been argued by the disaster research that women are the major victims of disasters due to their lower status than men in society. Thus attention should be given to special groups such as women and children. Programmes on disaster management will be most effective if they are backed by strong policy support and guidance. This paper lends support to the policy that a sociological perspective is necessary to involve disaster survivors in planning, that takes into account the disadvantageous position, especially of poor and of women and give priority to them.

REFERENCES

- Adnan, Shapan. 1990. *Institutional Aspects of Flood Protection Programmes*. Report No.2. Dhaka: Research and Advisory Services.
- Ahmad, Mohiuddin (ed). 1989. *Flood In Bangladesh*. Dhaka: Community Development Library.
- Ahmed, Hasina. 1995. 'Attioy Samparker Upor Nodi Bhangoner Provab (Impact of river bank erosion on kinship relationship)' *Samaj Nirikkhon (Journal of Social Science)* 58. Dhaka: CSS
- Ahsan, Rosie Majid and Hafiza Khatun (eds.). 2004. *Disaster and the Silent Gender: Contemporary Studies in Geography*. Dhaka: Bangladesh Geographical Society.
- Alam, S.M. Nurul. 1991. 'Survival: An Analysis of General Issues and Concerns with Emphasis on the Strategies to cope with Floods in Bangladesh'. A paper presented at the Seminar on *Environment and Natural Resources Management in Bangladesh*, organised by Bangladesh Sociology Association, Dhaka, January 25-26, 1991.

- Alam, S.M. Nurul. 1990a. *Annotation of Social Science Literature On Natural Disasters in Bangladesh*. Dhaka: Community Development Library.
- Alam, S.M. Nurul. 1990b. 'Perception of Flood Among Bangladeshi Villagers' *Disasters* 14(4): 354-357.
- Alexander, David. 1993. *Natural Disasters*. London: UCL Press.
- Barkun, M. 1977. 'Disaster in History' *Mass Emergencies* 2:219-231.
- Barrows, H. H. 1923. 'Geography as human ecology' in *Annals of the association of American Geographers* 13:1-14.
- Beinin, L. 1985. *Medical consequences of natural disasters*. New York: Springer.
- Bolt, B.A., W.L. Horn, G.A. Macdonald, R.F. Scott 1977. *Geological hazards: earthquakes, tsunamis, volcanoes, avalanches, landslides, floods*, 2nd edn. New York: Springer.
- Boyce, James. 1990. 'Birth of a Megaproject: Political Economy of Flood Control in Bangladesh' *Environmental Management* 14(4):419-428.
- Brammer, H. 1990. 'Floods in Bangladesh: 2. Flood mitigation and environmental aspects' *The Geographical Journal* 156(2):158-165.
- Brammer, H. 1990. 'Floods in Bangladesh: 1. Geographical background to the 1987 and 1988 floods' *The Geographical Journal* 156(1):12-22.
- Britton, N.R. 1986. 'Developing An Understanding of Disaster' *The Australian and New Zealand Journal of Sociology* 22(2):255-271.
- Burton, Ian, Robert W. Kates and Gilbert F. White. 1978. *The Environment As Hazard*. New York: Oxford University Press.
- Chen, L.C., A.K.M. Chowdhury, S.L. Huffman 1980. 'Anthropometric assessment of energy-protein malnutrition and subsequent risk of mortality among pre-school age children' *American Journal of Clinical and Nutrition* 33:1836-1845.
- Cuny, Frederick C. 1983. *Disasters and Development*. New York: Oxford University Press.
- Currey, Bruce. 1978. 'The Famine Syndrome: Its Definition for Relief and Rehabilitation in Bangladesh' *Ecology of Food and Nutrition* 7(78):87-98.
- Custers, Peter. 1993. 'Bangladesh Flood Action Plan: A Critique' *Economic and Political Weekly* July 17-24, 1993: 1501-1503.
- Davis, I. 1978. *Shelter after disaster*. Headington, Oxford: Oxford Polytechnic Press.
- Drabek, Thomas, E. 1986. *Human System Response to Disaster: An Inventory of Sociological Findings*. London: Springer-verlag.
- Drabek, Thomas, E and Keith Boggs. 1968. 'Families In Disaster: Reactions and Relatives' *Journal of Marriage and The Family* 30:443-451.
- Dynes, Russel R. et al (eds). 1978. *Sociology of Disasters: Contribution to Disaster Research* Italy: franco Angeli.
- Dynes, Russel R. 1970. *Organised behaviour in disaster*. Lexington, Massachusetts: Lexington Books.
- El-Sabh, M. I. and T. S. Murty (eds). 1988. *Natural and man-made hazards*. Dordrecht: Kluwer.
- Fritz, C.E. 1961. 'Disaster' in R.R. Merton and R.A. Nisbet (eds.) *Contemporary Social Problems*, New York: Harcourt, Brace and World.
- Hanchett, Suzanne and Mahbuba Nasreen. 1992. 'Gender Issues in the Flood Action Plan'. A paper presented at the workshop of *Flood Response Study (FAP 14)* organised by Bangladesh Flood Action Plan, Dhaka, November 9, 1992.
- Hanchett, Suzanne. 2003. 'Gender and Water in Bangladesh', paper presented at the Annual Conference of American Anthropological Association, USA: Chicago, Illinois, November, 2003.
- Hansen, A. and Oliver-Smith (eds.) 1982. *Involuntary Migration and Resettlement*. Boulder: West View Press.
- Haque, C.E. and M.Q. Zaman. 1989. 'Coping With Riverbank Erosion Hazard and Displacement in Bangladesh: Survival Strategies and Adjustments' *Disasters: The Journal of Disaster Studies and Management* 13(4):301-314.
- Hossain, H., C.P. Dodge and F.H. Abed. 1992. *From crisis to Development: Coping with Disasters in Bangladesh*. Dhaka: University Press.
- Hossain, M. et al. 1987. *Flood in Bangladesh: Recurrent Disasters and Peoples Survival*. Dhaka: University Research Centre.
- Hussain, A.M. 2001. 'Anthropological Approach to the Study of Natural Disaster' in Proshanta Tripura (ed.) *Nribiggan Potrika* 6, Jahangornagar University, Dhaka
- Islam, Aminul, M. 1974. 'Tropical Cyclones: Coastal Bangladesh' in G.F. White (ed) *Natural Hazards: Local, National, Global*. New York: Oxford University Press.
- Kates, R.W. 1971. 'Natural Hazard in Human Ecological perspective: Hypotheses and Models' *Economic Geography* 47:438-451.
- Kates, R.W. 1962. *Hazard and Choice Perception in Flood Plain Management*. Research Paper No. 78. Chicago: Department of Geography, University of Chicago.
- Khalequzzaman, MD. 1994. 'Recent Floods in Bangladesh: possible causes and solutions' *Natural Hazards* 9:65-80.
- Knott, R. 1987. 'The Logistics of Bulk Relief Supplies' *Disasters* 11:113-116.
- Latif, A. 1989. 'Control of Flood in Bangladesh: Need for International Co-operation for solution of problem' in Mohiuddin Ahmad (ed) *Flood In Bangladesh*. Dhaka: Community development Library.
- Mileti, Dennis S, T.E. Drabek and J.E. Haas. 1975. *Human Systems in Extreme Environments*. Boulder, Colorado: Institute of Behavioural Science, University of Colorado.
- Nasreen, Mahbuba. 1995. *Coping with Floods: The Experience of Rural Women in Bangladesh*. Unpublished PhD. Dissertation. Massey University, New Zealand.
- Nasreen, Mahbuba. 1999. 'Coping with Floods: Structural Measures or Survival Strategies?' in Imtiaz Ahmed (ed.) *Living with Floods: An Exercise in Alternatives*. Dhaka: The University Press Limited.
- Nasreen, Mahbuba. 2001. 'Socio-Cultural Impact of Arsenicosis in Rural Bangladesh' in *Journal of Asiatic Society, Bangladesh*, 47 (2): 159-172.
- Nasreen, Mahbuba and K.M. Hossain. 2002. 'Sustainable Development: Bangladesh Perspective', paper presented at the NGO session of World Summit on Sustainable Development (WSSD), held in Johannesburg, South Africa, August 26- September 4, 2002.
- Oliver-Smith, Anthony. 1986. 'Disaster Context and Causation: An Overview of Changing Perspective in Disaster Research' in Vinson H. Sutlive et al (eds) *Natural Disasters and Cultural Responses*. Williamsburg: Department of Anthropology, College of William and Mary.
- Oliver-Smith, Anthony. 1979. 'Post disaster consensus and conflict in a traditional society: the 1970 avalanche of Yungay, Peru' *Mass emergencies* 4:39-52.

- Paul, Bimal Kanti. 1984. 'Perception of and Agricultural Adjustment to Floods in the Jamuna Floodplain' *Human Ecology* 12(4):3-19.
- Pearce, Fred. 1991. 'The Rivers That Won't be Tamed' *The New Scientist* 130(1764):34-37.
- Pearce, Fred. 1991. 'Human Lives Shrugged Off In Flood Plain' *The New Scientist* 130(1768):7.
- Quarantelli, E.L. (ed) 1978. *Disasters: theory and research*. Beverly Hills, California: Sage.
- Quarantelli, E.L. and R. R. Dynes. 1970. 'Editors' introduction' *American Behavioral Scientist* 13: 325:330.
- Quarantelli, E.L. and R. R. Dynes. 1977. 'Response to Social Crisis and disaster' *Annual Review of Sociology* 3: 23:49.
- Rahman, M.M. 1988. 'Vulnerability syndrome and the question of peasant adjustment to riverbank erosion and flooding in Bangladesh'. A paper presented at the international symposium on the *Impact of Riverbank Erosion, Flood Hazard and the Problem of Population Displacement*, Dhaka, April 11-13, 1988.
- Rogers, Peter et al. 1989. *Eastern Waters Study: strategies to manage flood and drought in the Ganges-Brahmaputra basin*. Washington D.C.: United States Agency for International Development (USAID).
- Shaw, Rosalind. 1989. 'Living With Floods in Bangladesh' *Anthropology Today* 5(1):10-13.
- Turner, B.A. 1978. *Man Made Disasters*. London: Wykeham.
- White, Gilbert F. (ed) 1974. *Natural Hazards: Local, National, Global*. New York: Oxford University Press.
- White, Gilbert F. 1964. *Choice of Adjustment to Floods*. Chicago: University of Illinois Press.
- White, Gilbert F. 1945. *Human adjustment to floods: a geographical approach to the flood problem in the United States*. Chicago: Department of Geography, University of Chicago.
- Zaman, M.Q. 1989. 'The Social and Political Context of Adjustment to Riverbank Erosion Hazard and Population Resettlement in Bangladesh' *Human Organization* 48(3):196-205.