

The Meaning of Health Security for Disaster Resilience in Bangladesh  
RES-167-25-0241  
ESRC - DFID

**Research Report**

**Background**

There has been an established knowledge on the association of health and poverty that extends to health and disasters (Marmot 1987, 1998; Gwatkin et al., 1999; SEI 1999; Bloom & Lucas 2000; ISDR 2002; Wagstaff 2002; Currat 2002). Disasters for the purpose of this project were considered to be any severe disruption to communities' survival and security that overwhelms their capacity to cope. Disease epidemics associated with rapid or slow onset environmental, economic, or social disasters generally impact disproportionately on the poor (McMichael 1995; Bloom et al 2000; Zwi 2002; Connelly et al., 2004). The project was set up on the basis that health security concerns people's resilience to physical and mental stresses or shocks, absence of poverty and presence of basic rights. Furthermore health security is considered a major component of human security. However, it was proposed by this project from the outset that health security demands a unique analytical re-focus, and had yet to be fully explored using a disaster reduction rationale. This project consulted existing datasets and carried out in depth field investigation in Bangladesh to examine the value of an identified health security approach to disaster resilience.

Strong health security was considered as meaning that people would be less likely to be overwhelmed by illness before, during and after a disaster. The project however needed to focus its research to identify how health mitigates disaster in the context of Bangladesh. There had been a conspicuous absence of grounded research to help interpret health security as part of disaster risk reduction. Whilst the latter has begun to enter the mainstream of some development thinking (ERM/DFID 2005, DFID 2006), disaster resilience has been interpreted primarily in terms of infrastructure, community preparedness and early warning (IFRC 2004, 2009). These are fundamental components, but health security mitigation of disaster impacts has required examining. This is to better understand its functioning and contribution to building safer and more resilient communities. Understanding the potential contribution of varied health assets in reducing the costs of disaster response has been theoretically and practically in demand from the disaster and development subject areas (Collins 2009). As part of this research project we examined secondary data but found that any in depth understanding of health security in disaster resilience requires a localised and integrative approach, building on earlier conception of complex health ecologies (Collins 2001, 2002, 2006). The project was particularly driven by the ethic of a potential increased role for health security perspectives in disaster resilience amongst people living in high risk environments in Bangladesh.

During the course of implementing this research, there has been significant interest in the rhetoric of health security from both global and local perspectives. Some of this relates back to earlier reports by the UNDP (1994) and the Commission on Human Security (2003) which helped increase convergence in ideas about the interrelated issues of 'health' and 'security' within a wider perspective of 'human security'. However, there remained little consensus on the meaning, definition and understanding of health security (Aldis, 2008), which is more frequently interpreted at global level (Lakoff and Collier, 2008). The global perspective on health security is

similar to some of the writing on human security (Kaldor 2007). Also, the United Nations Organisations (UNO) and the World Health Organisation (WHO) have been divergent in their views and practices. The former suggests health security as a developmental and human rights tool, whilst the latter used health security interchangeably with global public health security (WHO, 2007; Aldis, 2008; Lee and Collins, 2005). Whilst these may have resonance as being complimentary amongst globally orientated international organizations, typically, these views reflect little of what health security means to people at a local level, due to a dearth of empirical research on this subject. We posited that any theoretical and practical advancement in understanding what is really meant by health security should be informed by empirically lived realities. These have been documented by this ESRC-DFID project as part of a long terms plan of the Disaster and Development Centre and the International Centre for Diarrhoeal Disease Research to facilitate improved health security through policy and practice.

## **Objectives**

This main aim of the project is to assess how health influences vulnerability to major disaster events. This is to contribute to a goal of poverty and disaster risk reduction through improved health security.

The following overall research objectives were developed centred on the case of Bangladesh to:

- Identify how health security influences vulnerability and resilience to disasters.
- Assess how health security monitoring can facilitate early warning and preparedness against changing thresholds of disaster risk.
- Evaluate which approaches to health security enable people to monitor resilience as an aid to mitigating the impact of disaster events.

We have achieved all of our objectives in that we are now in a position to present findings for each of the above. However, we recognise also that each of these are substantive fields of research for which ongoing and extensive programmes of work are recommended. They are dynamic areas, which are likely to need to be re-evaluated from one location to the next and over time. One overall finding we refer to is the need for a system of evaluating risk governance such that risks that compromise health security are subject to a locally governed process of risk assessment and risk management. The wider implementation of this policy drive was beyond the remit of this essentially research driven project. However, we are engaged in related projects for which this approach is being implemented, including a ‘people centred hazard and vulnerability’ British Council supported project within which we are researching the efficacy of different types of risk and resilience committee in Nepal, Bangladesh and Mozambique, alongside varied state and community based end users. We also are engaged in an ‘infectious disease risk reduction’ project in Bangladesh and Mozambique supported by the British Council which is complimentary to this ESRC-DFID research. These are just some of the more practice and policy based activities that run alongside this research, with one activity helping to lend support to the other. The ICDDR,B is similarly engaged in health and development based projects that continue to generate experiences that can be interpreted and supported within the frame of analysis initiated by this ESRC-DFID supported study.

## **Methods**

The project adopted a mixed method approach combining quantitative and qualitative research methods. The quantitative study with the assumptions of a quantitative paradigm includes closed-ended information, whereas qualitative study is consistent with a qualitative paradigm

consisting of open-ended information that researchers gather through interviews with participants (Creswell, 1994; Creswell and Clark, 2007). We adopted a *pragmatist orientation* whereby we combined methods in the investigations based on the research context and research needs (Letherby, 2002; Creswell and Clark, 2007).

The background data for this study was compiled from the EM-DAT database of CRED at Louvain University. This categorises disaster events into environmental categories. However, for district level data of Bangladesh we used an analysis of actual field reports submitted to this data base, as no existing tabulated version was available. This data provided us with the basic background distribution of disaster events in Bangladesh. Further background data showing the correlation of health and disasters was generated by ICDDR,B staff based on admissions to the ICDDR,B clinics throughout the year.

The field research methods were selected to assess how the composition of households and their contexts influence health security in mitigating micro and macro level disaster impacts. Data was collected from three disaster affected communities using household questionnaires and group participatory research methods. This identified local perspectives on how health affects vulnerability to disasters alongside local health security indicators. In engaging with households and communities in this way, the project addressed the third objective of this research to develop a people centred approach for assessing health security; including wealth ranking techniques and finding how people self monitor through their awareness of health defences. This was further implemented as a methodology through the work of a DDC PhD candidate, Ross Edgeworth, who in association with the project is examining the role of self care in health security, as part of disaster risk reduction (Edgeworth and Collins 2006). We also hosted an intern to the project Keiko Ikeda, a visiting scholar from faculty at Shizuoka University, Japan, who conducted a study within this research on ‘enhanced resilience of women through community based disaster management’.

With the need in these objectives to assess ground realities, the fieldwork was designed to use multiple methods in *sequence, simultaneously* and to some extent with *equivalent status* to the various aspects of the design (Tashakkori and Teddie, 1998). This took place over a period of 12 months of field work, as the earlier planned shorter period in the original proposal got held up by flooding. For sequential studies, the researcher first conducts a qualitative phase of a study and then quantitative phases of a study and then a quantitative phase, or vice versa. The two phases are separate. Parallel/simultaneous studies are where the researcher conducts the qualitative and quantitative phase at the same time. Equivalent status designs are where the researcher conducts the study using both the quantitative and the qualitative approaches about equally to understand the phenomenon under study (Tashakkori and Teddie, 1998: 18). We in effect implemented all of these.

The main fieldwork was conducted between September 2007 and September 2008 in the three identified locations of Bangladesh, in three different phases. Some other work continued beyond this period, for example the related PhD work of Ross Edgeworth. The three research locations chosen for this research were purposive: Matlab in Chandpur district, Chakaria in Cox Bazar district and Domar in Nilphamari district. All these locations are exposed to both environmental and non-environmental disasters. The mixed methods designed for use in each of this locations and across the topic more widely included; focussed group discussions (FGDs), household (HH) surveys, in-depth interviews, group discussions (GDs) (formal and informal), and household monitoring. In addition e-postal surveys were engaged. The fieldwork was designed and conducted by the research team of ICDDR, B and Northumbria University in consideration of

the logistics, ethics and research needs relating to the three research locations. The research was subject to the ethical guidelines of both Northumbria University and ICDDR,B.

A more detailed report on the method of implementation is as follows:

**Phase 1 (March – December 2007):** The first phase of the research design included conducting an e-postal survey with local, national and international organisations beyond Bangladesh, involved in disaster and health activities. Twenty-four organisations were requested to participate in the e-postal survey. Thirteen organisations completed the surveys. The purpose of the survey was to gather knowledge around the familiarity of ‘health security’ as a concept, and how it is understood and practised across nations and context. The initial findings of the survey suggest that ‘health security’ is an emerging and a multi-disciplinary concept. The majority of the respondents suggested a little knowledge on health security as a mainstream concept and in turn ranked health security as an absence of poverty, followed by food security and absence of disease and illness and a secured livelihood.

In sequence, the first phase also included selections of research locations in Bangladesh. Two phases of scoping exercise was conducted to identify the villages in Chakaria, Matlab and Nilphamari. The scoping exercises were conducted with the purpose of identifying the hazards and disasters that each locality is exposed to. This was achieved by engaging the community through informal- discussions, talks and interviews, reviewing secondary literatures and discussing with local governmental and non-governmental organisations. Finally three villages (Muhuripara in Chakaria, Subhongkordi in Matlab and Dolua in Nilphamari) were selected based on the following:

- village size (a smaller size village was selected so household surveys can engage the entire population)
- ICDDR,B’s area of operation (attention was attested in Matlab and Chakaria except Nilphamari to select villages, in which ICDDR,B operates so that we could have access to Demographic Surveillance System data)
- physical accessibility of the village and between households
- stratified population in order to get better perspective on the subjective aspect of health and health security
- that the village is exposed to multiple hazards/disasters.

Once three villages were selected based on this criterion, 15 tape recorded focus group discussions (FGDs) were conducted; 5 in each location. The purpose of the FGDs was to understand the real and perceived disaster threats and how people view or employ health as a defence. Additionally FGDs also aimed to understand the perceived and real disaster risks and threats through the development of a *Yearly Calendar* on health, hazards, coping and health impact.

### **Phase 2 (January – April 2008)**

Phase 2 begun with the translation, transcription and analysis of the recorded FGDs. The FGDs helped to develop the health and health security indicators including the multivariate hazards and risks that each village is exposed to. Based on these findings, more than 27 [semi] close ended research questions were developed under seven headings/sections<sup>1</sup> for the household survey

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<sup>1</sup> HH Information (Sec II), Migration (Sec III), Hazards, Disasters and Coping (Sec IV), Early Warning, Avoidance and Prevention of the Consequences of Disasters (Sec V), Health (Sec VI), Monitoring Health Security (Sec VII) and Health Security and Disasters (Sec VIII).

questionnaire. The questionnaire for the surveys was developed to adapt the different risks and hazards experienced by the people in three different locations.

In succession, household surveys were conducted from February till April 2008, starting with Chakaria, followed by Matlab and Nilphamari. The sample size for household surveys included the entire village in order to avoid bias and secure a complete picture. As a result a total of 631 households were surveyed- 195 households in Chakaria; 196 households in Matlab and 240 households in Nilphamari. The household surveys strictly adhered to the ethical guidelines normally prescribed by ICDDR, B for household surveys. The survey achieved data that has successfully contributed to our health security study. A small sample of the data generated through this method is included as an Annex to this report.

Simultaneously, we recorded in-depth interviews and formal group discussions were also conducted along with the household surveys. These qualitative methods were designed at a small scale in order to develop the guideline for the interviews for the Phase 3 and also explore some of the survey questions, which had the scope of being qualitative. Respondents for the interviews and the group discussions were randomly selected based on social class, gender and household headship. Some elderly group also took part in the group discussions and interviews. The community leaders played an important role in gathering respondents and organising the group discussions in Chakaria and Matlab in particular. In total six formal group discussions were conducted in Chakaria<sup>2</sup>. This included 29 people from rich and poor, male and female households. Five in depth interviews were also conducted- three with poor male and female households and two with local government officials. In Matlab five group discussions<sup>3</sup> and three interviews were conducted. In Nilphamari another five group discussions were conducted along with the household surveys. The household survey was analyzed using Fox pro package and Minitab and the qualitative data were translated, transcribed and analyzed. A sample of an interview is included in the annex. The latter also helped in developing the guideline for the interviews for Phase 3.

### ***Phase 3 (May – September 2008)***

In Phase 3, 34 tape recorded interviews were conducted by the research team of ICDDR, B<sup>4</sup> in order to explore in detail the meaning of health security for disaster resilience. Simultaneously household monitoring was also initiated in the three research locations. 15 households (5 in each location) were monitored by three fieldworkers by employing the techniques of observation at the household level (participant and non-participant), interviews at household level, photo diaries and written diaries maintained by a literate member of household. Households were selected based on their economic class (poor and non-poor) and household headship (male and female headed-households). Verifiable indicators were identified for the purpose of monitoring before, during and after disasters. This included:

- Monitoring household activities of each member.
- Changing patterns of occupations of each member.

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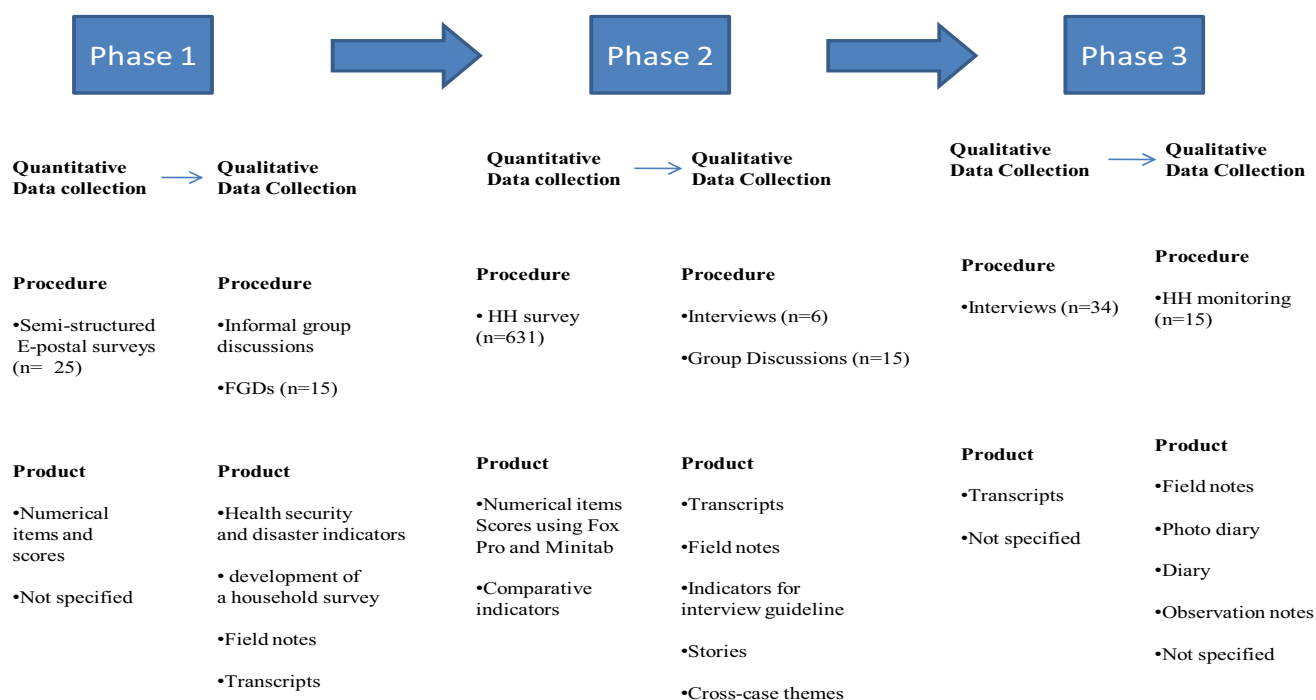
<sup>2</sup> 14 male and 15 female-headed households.

<sup>3</sup> 14 rich and poor male headed households and more than 40 rich and poor women [headed] households participated in the group discussions and interviews.

<sup>4</sup> 14, 10 and 10 in Nilphamari, Chakaria and Matlab respectively.

- Health activities of each household member. (This included food, hygiene, and sanitation, source of water for cooking and health care activities.)
- Other indicators. (This included listing of assets damaged due to a disaster, health problems, help seeking behaviour, health prevention activities, migration patterns and price hike adaptation).

The household monitoring led to the development of extensive field notes by the fieldworkers and the analysis of this part of our research remains in progress. Though the mixed method approach consumed considerable amount of time and resources, it has been appropriate in order to present the best inroads to understanding the meaning of health security for disaster resilience.



**Figure 1: Phases of data collection implemented by this study**

## Results

The results to date include the following: (see Annexes 1 and 2 for a few examples of data tables and a part of one interview – and extensive household questionnaire, transcripts of household monitoring and so forth are available but not included here)

**Objective no.1:** Identify how health security influences vulnerability and resilience to disasters.

We have found that health security is not only access to quality health services at an affordable rate, but also about people’s agency, resilience to physical and mental stresses, shocks and trends and capability of maintaining and securing health. Health security in a vulnerability context suggests

accumulation of knowledge, awareness and taking adequate preparedness prior to the disaster in order to cope. Furthermore health security also suggests people's resilience towards shocks and their agentic capabilities to reflect over their own insecurities and seek some solution to ascertain security. Agentic capabilities are revealed through the exploitation of the finite resources available to them. This includes poor households moving to safety prior to the disaster when they know their house and other assets will not be able to protect their security during floods. For the rich households, chair, table, bed and information become a source of security for them. Information received through mobile phones and television regarding floods becomes an important asset in terms of preparedness. During flood, robust concrete houses arrests the displacement of basic infrastructure and chairs and tables become an important means to keeping mobile stoves for cooking, and spaces within which to eat and rest when there is water inside the house. Without mobile and disposable household assets, poor households feel extremely vulnerable and insecure during floods. These factors support Antonovsky's salutogenesis approach (Antonovsky, 1985) because it reveals people as socially conscious subjects who take necessary actions and reflect over varied actions in avoiding risks. In doing so, it is suggested that the actions people undertake to stay reasonably safe and healthy before and during floods is part of their own requirements for reducing vulnerability (Ray-Bennett, Collins et.al. 2009).

**Objective no.2 and 3:** Assess how health security monitoring can facilitate early warning and preparedness against changing thresholds of disaster risk. Evaluate which approaches to health security enable people to monitor resilience as an aid to mitigating the impact of disaster events.

Under these objectives we explored whether 'self-care' as a tool has the potential to monitor health security at a household level against changing thresholds of disaster risk. We also explored how and when health security monitoring can facilitate early warning and preparedness against disaster risks and thrust change at local, regional and national levels. Fifteen households were monitored in three locations over a period of four months. In the context of this research self-care is defined as the action individuals take for themselves and their families to stay healthy and manage minor and chronic conditions, based on their knowledge and the information available and working in collaboration with healthcare professionals [*where possible, desired*] and necessary.

Participant observations, diary keeping, photo diary, field notes and interviews were the methods used for data collection, though also in part experimental of how individuals might monitor health security in the community over the longer time from after the research would end. The preliminary findings of the field notes and diaries suggest self-care as a tool not only has the immense scope and potential to monitor health security at a household level but also suggest some significant limitations. Further the scope and potential of self care as a tool is understood in the light of household's agency, resilience and coping to maintain health before, during and after disasters through a multitude of livelihood and health care activities. But these elements are mired with class and gender understandings. On the other hand, limitations are visible when human capabilities are severely constricted by hand-to-mouth existence for poor households. Then self-care as a tool may sound empty and meaningless to some. Concomitantly these households also suggest likely interventions that may be essential at a local level to enhance human capabilities and thrust policy change at regional and national levels to facilitate early warning and preparedness against potential disaster risks. There is still further data analysis in progress and all results should eventually be published in peer reviewed outlets.

## Activities

A series of five presentations prepared by various members of the project team (2008) “The Meaning of Health Security for Disaster Resilience in Bangladesh”. ESRC-DFID funded International Meeting on “The Meaning of Health Security for Disaster Resilience in Bangladesh” at the International Centre for Diarrheal Disease Research (ICDDR), 12 November 2008, Dhaka, Bangladesh.

Ray-Bennett, N.S. and Collins, A.E. 2009. “Health Security and Disaster Resilience: Elderly as Assets or Victims in Rural Bangladesh? The Annual Regional Conference, Medsin, 21, February 2009, Newcastle University, UK.

Ray-Bennett, N.S. 2008. “Towards a health security approach using lay perspectives from Bangladesh”. Social and Behavioural Sciences Unit, ICDDR, B, 30<sup>th</sup> July, Dhaka, Bangladesh.

Bhuiya, A., Collins, A., Ray-Bennett, N.S and Nahar, P. 2008. “Disasters and Health Security: Reflections on the Reality in Rural Bangladesh”. Dealing with Disasters 2008, International Conference: Putting Resilience into Response’. 10-11 July 2008. Cardiff International Arena, Cardiff.

Ray-Bennett, N.S., and Collins, A. 2008. “The Meaning of Health Security in Disaster Resilience in Bangladesh: Through Lay Perspective”. Geography and Environment (GAM), 30<sup>th</sup> April 2008, Northumbria University.

Bhuiya et al. (2009) Annual Scientific Conference at ICDDR,B; the Third International Conference on Community Based Adaptation to Climate Change and International Conference on Climate Change: Impacts and Response in India.

Alamgir, F. et al. A virtual presentation was made International Conference on Climate Change: Impacts and Response in India in January 2009 titled—“Climate Change and Food Security: Health Risks and Vulnerabilities of the Poor in Bangladesh”.

(2009) Annual Scientific Conference at ICDDR,B there was one poster presentation titled- “Focusing on Mental Health for Achieving Health Security in the Disaster Context” and another oral presentation titled -“Conceptualizing the Relationship Between Disaster and Health Security”.

(2009) Third International Conference on Community Based Adaptation to Climate Change organized in Dhaka in February 2009 - presentation on “ Indigenous Understanding of Disaster and Health Security”.

Collins, A.E. (2009) Joint Chair (with Govt. of Nepal) ‘*Dealing with Disasters 2009, Resilience through Local Governance*’, Kathmandu 11<sup>th</sup>-12<sup>th</sup> November. (includes health security)

Collins, A.E. (2009) Co-Convenor (with Few, R. et al. East Anglia University) Inaugural Conference of the ESRC / NERC Environment, Health and Development Network, ‘Environment and Health through a Poverty Lens’ University of East Anglia. 15<sup>th</sup> – 17<sup>th</sup> June. (includes health security)

Collins, A.E. (2009) ‘Risk, Local Knowledge and Governance’, Joint Institute of Hazard and Risk Research (IHRR) Durham University – Disaster and Development Centre (DDC) Northumbria University Disaster Research Seminar Series, 29<sup>th</sup> January.

Collins, A.E. (2008) Joint Convenor. ‘People Centred Hazard and Vulnerability Reduction through Risk and Resilience Committees in South Asia’, A side event of the 3<sup>rd</sup> Asian Ministerial



To cite this output:

Collins, Andrew et al (2009). The meaning of health security for disaster resilience in Bangladesh: Full Research Report ESRC End of Award Report, RES-167-25-0241. Swindon: ESRC REFERENCE No.

*Conference on Disaster Risk Reduction*, Kuala Lumpur, Malaysia, 1<sup>st</sup> December. Speaker: 'Local governance of risk, resilience and wellbeing: comment and prospect'.

Collins, A.E. (2008) Speaker 'Climate Change and Infectious Disease Risk Reduction', UK – Asia Scientists and Practitioners Seminar, a Pre-event of the 3<sup>rd</sup> *Asian Ministerial Conference on Disaster Risk Reduction*, Kuala Lumpur, Malaysia, 1<sup>st</sup> December.

Collins, A.E. (2008) Invited Discussant 'Health and Security' Research Councils UK (RCUK) workshop. Global Uncertainties: Security for All in a Changing World Programme, Medical Research Council, London, 6<sup>th</sup> November.

Collins, A.E. (2008) Invited Convenor 'Public Health Security in Disaster Management', a Session of the *International Disaster Reduction Conference (IDRC)*, Davos, Switzerland, 25<sup>th</sup> – 29<sup>th</sup> August.

Collins, A.E. (2008) 'Environmental Disaster Impact on Economic Development: a Health Ecology Approach', Presentation to 2<sup>nd</sup> Workshop on Risk Assessment, PRAMA: Probabilistic Risk Assessment Modelling to inform Arsenic mitigation, University of Manchester, 23<sup>rd</sup> – 25<sup>th</sup> June.

Collins, A.E. (2007) Climate Change and Infectious Disease Risk Reduction using a health ecology approach: directions for Mozambique, Ghana and Bangladesh, Headline Conference paper for Climate Change and Health session of the Institute of British Geographers / Royal Geographical Society Annual Conference, Royal Geographical Society, 29<sup>th</sup> – 31<sup>st</sup> August.

## Impacts

We are engaging a wide variety of policy makers with this approach, including the Disaster Management Bureaux and United Nations Development Programme in Bangladesh with whom further discussions about it are ongoing. Beyond Bangladesh, aspects of the research are being presented in some of the world's international gatherings of disaster management policy makers, such as the World Conference on Disaster Risk (WCDR) at Davos, Switzerland, August 2008, the Third Asian Ministerial Conference on Disaster Reduction at Kuala Lumpur, Malaysia, December 2008, and as part of the series of Dealing with Disaster Conferences at Northumbria in September 2007, Cardiff in July 2008, and Kathmandu in November 2009. Some aspects of this work also fed into the Research Councils UK Health and Security Workshop on 6<sup>th</sup> November 2008 at the Medical Research Council, London. Several publications are already drafted and others are planned. These are being produced with group authorship and are targeting a wide variety of outlets, from specialist peer reviewed journals, such as *Social Science and Medicine*, to various book chapters. Additionally, health security is the theme of a Chapter in the book by Collins on *Disaster and Development*, Routledge, that is released April 2009 and which is predicted to be core reading for students of development, environment, disaster management, sociology, public health and other subjects. A further edited book led by the PI of this project is focussed on 'people centred hazard and vulnerability mitigation in South Asia', and contains a chapter on the content of this research project. This research is also feeding into some aspects of the NERC and ESRC supported Environment, Health and Development network which is being jointly established by University of East Anglia and Northumbria Universities (Few, Brown and Collins). This will host a specialist symposium in June 2009 and provide an e-network through which this research and other related topics can be further disseminated.

To cite this output:

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## Outputs

An article is under review in the *Journal of Social Science and Medicine*. Ray-Bennett, N.S., Collins, A., Edgeworth, R., Bhuiya, A., Nahar, P and Alamgir, F. 2009. Exploring the meaning of health security for disaster resilience: Through people's perspectives in Bangladesh.

A database of natural and technical disasters for Bangladesh from 1997-2006.

Alamgir, F. et al. "Climate Change and Food Security: Health Risks and Vulnerabilities of the Poor in Bangladesh" accepted for publication.

Two other manuscripts of the working paper for this project is in the process of being reviewed by the research team members.

Analysis of regional and longitudinal dataset from 1996-2005 from the Matlab DSS archive and Chokoria at ICDDR, B.

Working Paper on the health security approach. The paper is particularly focussed on the many facets of health and disasters to address the meaning of health security and identify preliminary health security indicators in disaster contexts. Also a country specific Working Paper on disaster and health literature has been developed.

A press release for this project.

### *Other related items:*

Collins, A.E. (2009) 'The people centred approach to early warning systems and the 'Last Mile', International Federation of the Red Cross and Red Crescent Societies, *World Disaster Report*, Chapter 2.

Collins, A.E. (2009) *Disaster and Development*, Routledge Perspectives in Development Series, London. Chapter 4 uses a health ecology to health security approach.

Alam, E. and Collins, A.E. (in press 2009) 'Cyclone Disaster Vulnerability and Response Experiences in Coastal Bangladesh, *Disasters*.

Collins, A.E. (2008) 'Climate Change and Infectious Disease Risk Reduction', *Proceedings of the UK – Asia Scientists and Practitioners Seminar*, a Pre-event of the 3<sup>rd</sup> Asian Ministerial Conference on Disaster Risk Reduction, Kuala Lumpur, Malaysia, 1<sup>st</sup> December.

Collins, A.E. (2008) 'Health Security or Climate Change Adaptation? What do we really mean by Disaster Risk Reduction in times of disease?' *Proceedings of the International Disaster and Risk Conference (IDRC)*, Davos, Switzerland, August 25<sup>th</sup> – 29<sup>th</sup>, pp.136-139.

Alam, E. and Collins, A.E. (2008) 'Understanding Vulnerability and Local Responses to Cyclone Disasters: Experiences from the Bangladesh Coast', *Proceedings of the International Disaster and Risk Conference (IDRC)*, Davos, Switzerland, August 25<sup>th</sup> – 29<sup>th</sup>, pp.768-770.

Edgeworth, R. and Collins, A.E. (2006) Self-Care as a Response to Diarrhoea in Rural Bangladesh: Empowered Choice or Enforced Adoption? *Social Science and Medicine*, 63, 2686-97. Also released in ID21, University of Sussex.

## **A NUMBER OF MORE CURRENT PAPERS INVOLVING THE JOINT DDC AND ICDDR,B HEALTH SECURITY TEAM FOCUSSED ON PROJECT FINDINGS ARE PLANNED FOR RELEASE OVER THE COMING YEAR OR SO.**

### **Capacity Building**

Twelve fieldworkers in ICDDR,B were trained in conducting field research. Constant sharing of literatures and ideas between the two institutions has built the capacity of the research team.

### **Project Linked Doctoral Studentships**

The grant did not fund a PhD student. However, the university funded a Scholarship, and this was then run in conjunction for a PhD alongside this project. The PhD candidate has focussed his research on one subject of the project which addresses the role of self care as part of health security. The principal supervisor of this PhD is also the PI of this research project. The candidate has made very good progress with their research and has progressed successfully beyond their mid-point progression stage of the study. They have published a key paper on Self Care in Bangladesh in the journal *Social Science and Medicine*, and this has also been published in short format in ID21, a development paper review that operates from Sussex University. The candidate is expected to complete their PhD on time.

### **Future Research Priorities**

There are multiple lines of research arising from this work that could be profitably pursued. We would recommend that a longer term programme of action research be established to monitor health security at a local level in high risk areas, particularly amongst vulnerable communities. This should also be extended to in depth studies on the health security of urban areas, and amongst forcibly displaced communities. A preferred assessment process would include communities being empowered to adopt more of the research activity for themselves. For example, using existing civil societal networks we would propose that a risk register could be developed by communities to analyse their own health security. There is evidence from some of our pilot studies in this respect that through this approach, a community becomes motivated and takes action with significant impacts on health risks.

It is also suggested that there should be a priority investment to promote more interdisciplinary (including environmental and health sciences) work around the issue of localised health security. For example this project primarily focussed on social and behavioural characteristics of health security within a political and cultural context. Crucial though we have found this to be, it is very apparent that the ecological aspects of health security need to be, and could be, integrated with this approach. Furthermore, there is a need for low cost monitoring technologies (for example of pathogenic risk) in and around these communities, and elsewhere in developing areas.

We are not aware of any current programme of focussed research on the points of assessment and decision making within a community. The system for establishing the dynamic and multi-faceted characteristics of health security in the community is only initiated in our research. Our finding point to the need for analysis of the governance contexts within which self managed

health security builds resilience. This would need to include an examination of governance relative to differing cultural norms for contrasting local communities.

It was not part of the study design to include wider conceptions of wellbeing and decision making in health security, which would require a focus on how people prioritise and manipulate risks and wellbeing for greater security, including what are termed psychosocial aspects or mental health factors. The roles of different rights and responsibilities of the communities with respect to building health security similarly required further research. Finally, the next step needs to be taken in establishing how health security early warning can operate proactively and sustainably. This needs to better explore how people receive health security information as a form of early warning message, and what are the cues and support needed for stepping that up to enhanced resiliency and wellbeing.

**Annex 1 A very small section of quantitative data produced by the project**

Survey Sample Table

	Matlab		Chakaria		Nilphamari		All	
	N	%	N	%	N	%	N	%
<b>Male</b>	50	25.5	74	37.9	143	59.6	267	42.3
<b>Female</b>	146	74.5	121	62.1	97	40.4	364	57.7
<b>Poor</b>	177	90.3	153	78.5	171	71.3	501	79.4
<b>Rich</b>	19	9.7	42	21.5	69	28.7	130	20.6
<b>Elderly</b>	55	28.1	40	20.5	60	25	155	24.6
<b>&lt;50</b>	141	71.9	155	79.5	180	75	476	75.4
<b>Literate</b>	166	84.7	151	77.4	153	63.8	470	74.5
<b>Illiterate</b>	30	15.3	44	22.6	87	36.2	161	25.5
<b>Educated</b>	117	59.7	103	52.8	96	40	316	50.1
<b>No Education</b>	79	40.3	92	47.2	144	60	315	49.9
<b>Sample Size</b>	196	31.1	195	30.9	240	38	631	100

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Survey Sample by Area and Gender

	Matlab		Chakaria		Nilphamari		All		Total
	Male N (%)	Female N (%)	Male N (%)	Female N (%)	Male N (%)	Female N (%)	Male N (%)	Female N (%)	
<b>Poor</b>	32 (64)	145 (99.3)	36 (48.6)	117 (96.7)	75 (52.4)	96 (99)	143 (53.6)	358 (98.4)	501 (79.4)
<b>Rich</b>	18 (36)	1 (0.7)	38 (51.4)	4 (3.3)	68 (47.6)	1 (1)	124 (46.4)	6 (1.6)	130 (10.6)
<b>Elderly</b>	20 (40)	35 (24)	22 (29.7)	18 (14.9)	45 (31.5)	15 (15.5)	87 (32.6)	68 (18.7)	155 (24.6)
<b>&lt;50</b>	30 (60)	111 (76)	52 (70.3)	103 (85.1)	98 (68.5)	82 (84.5)	180 (67.4)	296 (81.3)	476 (75.4)
<b>Literate</b>	44 (88)	122 (83.6)	59 (79.7)	92 (76)	92 (64.3)	61 (62.9)	195 (73)	275 (75.5)	470 (74.5)
<b>Illiterate</b>	6 (12)	24 (16.4)	15 (20.3)	29 (24)	51 (35.7)	36 (37.1)	72 (27)	89 (24.5)	161 (25.5)
<b>Educated</b>	32 (64)	85 (58.2)	39 (52.7)	64 (52.9)	65 (45.5)	31 (32)	136 (50.9)	180 (49.5)	316 (50.1)
<b>No Educ.</b>	18 (36)	61 (41.8)	35 (47.3)	57 (47.1)	78 (54.5)	66 (68)	131 (49.1)	184 (50.5)	315 (49.1)
<b>Sample Size</b>	50 (100)	146 (100)	74 (100)	121 (100)	143 (100)	97 (100)	267 (100)	364 (100)	631 (100)

Section 6 Question 1  
(Which health conditions did you experience since last winter?)

Illness <sup>5</sup>	Matlab		Chakaria		Nilphamari		All		Total
	Male N (%)	Female N (%)	Male N (%)	Female N (%)	Male N (%)	Female N (%)	Male N (%)	Female N (%)	
Diarrhoea	7 (14)	15 (10.3)	13 (17.6)	26 (21.5)	17 (12)	13 (13.5)	37 (13.9)	54 (14.9)	91 (14.5)
Dysentery	11 (22)	16 (11)	12 (16.2)	12 (9.9)	48 (33.8)	20 (20.3)	71 (26.7)	48 (13.2)	119 (18.9)
Diarrhoeal Disease	18 (36)	31 (21.2)	25 (33.8)	38 (31.4)	65 (45.8)	33 (34.4)	108 (40.6)	102 (28.1)	210 (33.4)
Typhoid	4 (8)	12 (8.2)	4 (5.4)	5 (4.1)	4 (2.8)	4 (4.2)	12 (4.5)	21 (5.8)	33 (5.3)
Jaundice	7 (14)	18 (12.3)	6 (8.1)	10 (8.3)	17 (12)	8 (8.3)	30 (11.3)	36 (9.9)	66 (10.5)
Fever	20 (40)	55 (37.7)	38 (26)	60 (49.6)	72 (50.7)	30 (31.3)	130 (48.9)	145 (39.9)	275 (43.7)
Skin Disease	5 (10)	3 (2.1)	11 (14.9)	16 (13.2)	7 (4.9)	7 (7.3)	23 (8.6)	26 (7.2)	49 (7.8)
High Fever cough	13 (26)	14 (9.6)	27 (36.5)	31 (25.6)	19 (13.4)	9 (9.4)	59 (22.2)	54 (14.9)	113 (18)
Broken limbs	1 (2)	2 (1.4)	1 (1.4)	1 (0.8)	4 (2.8)	0 (0)	6 (2.3)	3 (0.8)	9 (1.4)
Malaria	0 (0)	2 (1.4)	7 (9.5)	11 (9.1)	0 (0)	0 (0)	7 (2.6)	13 (3.6)	20 (3.2)
Pneumonia	0 (0)	1 (0.7)	1 (1.4)	2 (1.7)	2 (1.4)	0 (0)	3 (1.1)	3 (0.8)	6 (1)
Mental Illness	0 (0)	2 (1.4)	1 (1.4)	1 (0.8)	0 (0)	0 (0)	1 (0.4)	3 (0.8)	4 (0.6)
Other	11 (22)	43 (29.5)	7 (9.5)	19 (15.7)	25 (17.6)	15 (15.6)	43 (16.2)	77 (21.2)	120 (19.1)
Sample Size	50	146	74	121	142	96	266	363	629 (100)

<sup>5</sup> Categories are not discrete

Section 6, Question 2  
(Treatment response for all illnesses, number of times treatment is identified, e.g. self-care identified 227 times in response to ill health)

Treatment Response <sup>6</sup>	Matlab		Chakaria		Nilphamari		All		Total
	Male N (%)	Female N (%)	Male N (%)	Female N (%)	Male N (%)	Female N (%)	Male N (%)	Female N (%)	
Self-Care	20 (40)	65 (44.8)	21 (28.4)	36 (29.8)	49 (34.5)	36 (37.5)	90 (33.8)	137 (37.8)	227 (36.1)
Village Doctor	36 (72)	82 (56.6)	35 (47.3)	65 (53.7)	129 (90.8)	84 (87.5)	200 (75.2)	232 (64.1)	432 (68.8)
Union Health Complex	0 (0)	1 (0.7)	0 (0)	1 (0.8)	28 (19.7)	28 (29.2)	28 (10.5)	30 (8.3)	58 (9.2)
MBBS Doctor	27 (54)	88 (60.7)	39 (52.7)	70 (57.9)	37 (30.6)	21 (21.9)	103 (38.7)	179 (49.4)	282 (45)
Private Clinic	1 (2)	8 (5.5)	10 (13.5)	14 (11.6)	7 (4.9)	3 (3.1)	18 (6.8)	25 (6.9)	43 (6.8)
Upazila Health Complex	3 (6)	15 (10.3)	24 (32.4)	35 (28.9)	18 (12.7)	7 (7.3)	45 (16.9)	57 (15.7)	102 (16.2)
Homeopathy	2 (4)	6 (4.1)	4 (5.4)	15 (12.4)	4 (2.8)	3 (3.1)	10 (3.8)	24 (6.6)	34 (5.4)
Kabiraj	11 (22)	30 (20.7)	3 (4.1)	5 (4.1)	25 (17.6)	14 (14.6)	39 (14.7)	49 (13.5)	88 (14)
Spiritual Healer	3 (6)	14 (9.7)	2 (2.7)	13 (10.7)	7 (4.9)	2 (2.1)	12 (4.5)	29 (8)	41 (6.5)
Religious Healer	2 (4)	4 (2.8)	1 (1.4)	5 (4.1)	2 (1.4)	1 (1)	5 (1.9)	10 (2.8)	15 (2.4)
Health Worker	0 (0)	0 (0)	2 (2.7)	3 (2.5)	0 (0)	0 (0)	2 (0.8)	3 (0.8)	5 (0.8)
Medicine Shop Seller	10 (20)	29 (20)	19 (25.7)	45 (37.2)	5 (3.5)	4 (4.2)	34 (12.8)	78 (21.5)	112 (17.8)
Pray to God	5 (10)	11 (7.6)	18 (24.3)	34 (28.1)	4 (2.8)	2 (2.1)	27 (10.2)	47 (13)	74 (11.8)
Government Hospital	9 (18)	46 (31.7)	15 (20.3)	11 (9.1)	5 (3.5)	7 (7.3)	29 (10.9)	64 (17.7)	93 (14.8)
Other	0 (0)	5 (3.4)	1 (1.4)	1 (0.8)	0 (0)	1 (1)	1 (0.4)	7 (1.9)	8 (1.3)
Sample Size	50	145	74	121	142	96	266	362	628 (100)

<sup>6</sup> Categories are not discrete



Section 5 Question 4 (Could you and other members of your household protect your health during disaster?)

Could you protect your health during disaster?	Matlab		Chakaria		Nilphamari		All		Total
	Male	Female	Male	Female	Male	Female	Male	Female	
Yes	37 (74)	87 (60)	61 (82.4)	100 (82.6)	92 (64.3)	63 (64.9)	190 (71.2)	250 (68.9)	440 (69.8)
No	13 (26)	58 (40)	13 (17.6)	21 (17.4)	51 (35.7)	34 (35.1)	77 (28.8)	113 (31.1)	190 (30.2)
All	50	145	74	121	143	97	267	363	630 (100)

Section 5 Question 5  
 (What prevented you from maintaining health?)

Barriers to the protection of health from disaster	Matlab		Chakaria		Nilphamari		All		Total
	Male	Female	Male	Female	Male	Female	Male	Female	
Being a woman	0 (0)	9 (6.2)	1 (1.4)	1 (0.8)	0 (0)	3 (3.1)	1 (0.4)	13 (3.6)	14 (2.2)
Childcare	2 (4)	7 (4.8)	5 (6.8)	4 (3.3)	1 (0.7)	2 (2.1)	8 (3)	13 (3.6)	21 (3.3)
Sickness: self, family member	1 (2)	14 (9.7)	5 (6.8)	3 (2.5)	8 (5.6)	1 (1.1)	14 (5.2)	18 (5)	32 (5.1)
Physical illness	5 (10)	26 (17.9)	5 (6.8)	9 (7.4)	14 (9.8)	10 (10.3)	24 (9)	45 (12.4)	69 (11)
Disability	0 (0)	1 (0.7)	2 (2.7)	3 (2.5)	3 (2.1)	1 (1.1)	5 (1.9)	5 (1.4)	10 (1.6)
Lack of food	7 (14)	34 (23.4)	7 (9.5)	14 (11.6)	28 (19.6)	25 (25.8)	42 (15.8)	73 (20.1)	115 (18.3)
Lack of money	8 (16)	37 (25.5)	10 (13.5)	15 (12.4)	34 (23.8)	25 (25.8)	52 (19.5)	77 (21.2)	129 (20.5)
Lack of employment	6 (12)	13 (9)	6 (8.1)	4 (3.3)	17 (11.9)	15 (15.5)	29 (10.9)	32 (8.8)	61 (9.7)
Lack of early warning	0 (0)	1 (0.7)	2 (2.7)	0 (0)	4 (2.8)	1 (1.1)	6 (2.2)	2 (0.6)	8 (1.3)
Lack of health service info	0 (0)	4 (2.8)	1 (1.4)	2 (1.7)	1 (0.7)	1 (1.1)	2 (0.7)	7 (1.9)	9 (1.4)
Lack of manpower in family	1 (2)	3 (2.1)	1 (1.4)	0 (0)	3 (2.1)	1 (1.1)	5 (1.9)	4 (1.1)	9 (1.4)
Lack of access to healthcare	1 (2)	6 (4.1)	2 (2.7)	1 (0.8)	3 (2.1)	3 (3.1)	6 (2.2)	10 (2.8)	16 (2.5)
Damage to communication	4 (8)	8 (5.5)	3 (4.1)	4 (3.3)	4 (2.8)	2 (2.1)	11 (4.1)	14 (3.9)	25 (4)
Lack of land	2 (4)	6 (4.1)	2 (2.7)	1 (0.8)	11 (7.8)	10 (10.3)	15 (5.6)	17 (4.6)	32 (5.1)

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<b>Lack of safe drinking water</b>	0	(0)	3	(2.1)	2	(2.7)	2	(1.7)	3	(2.1)	2	(2.1)	5	(1.9)	7	(1.9)	12	(1.9)
<b>Lack of sanitation</b>	0	(0)	2	(1.4)	0	(0)	0	(0)	4	(2.8)	3	(3.1)	4	(1.5)	5	(1.4)	9	(1.4)
<b>Unhygienic environment</b>	1	(2)	3	(2.1)	3	(4.1)	4	(3.3)	0	(0)	3	(3.1)	4	(1.5)	10	(2.8)	14	(2.2)
<b>Fear of being abused</b>	0	(0)	2	(1.4)	0	(0)	1	(0.8)	1	(0.7)	1	(1.1)	1	(0.4)	4	(1.1)	5	(0.8)
<b>Mental stress</b>	3	(6)	24	(16.6)	0	(0)	2	(1.7)	14	(9.8)	13	(13.4)	17	(6.4)	39	(10.7)	56	(8.9)
<b>Because of rain and water</b>	7	(14)	26	(17.9)	5	(6.8)	5	(4.1)	6	(4.2)	4	(4.1)	18	(6.7)	35	(9.6)	53	(8.4)
<b>Because of cold</b>	7	(14)	20	(13.8)	4	(5.4)	6	(5)	8	(5.6)	9	(9.3)	19	(7.1)	35	(9.6)	54	(8.6)
<b>Because of extreme heat</b>	1	(2)	4	(2.8)	0	(0)	0	(0)	11	(7.8)	10	(10.3)	12	(4.5)	14	(3.9)	26	(4.1)
<b>Other</b>	1	(2)	9	(6.2)	1	(1.4)	3	(2.5)	5	(3.5)	7	(7.2)	7	(2.6)	19	(5.2)	26	(4.1)
<b>All</b>	50		145		74		121		143		97		267		363		630	

**Annex 2: A short section of interview randomly selected here from many hours and mounds of engaging transcripts.**

Mahfuza: let you tell now.

A1: I passed my life in hardship. We lived here. We had a boat though it's not good. We stayed on the boat. Like this land is owned by some other. We live here now in miserable condition.

Q: isn't it yours?

A1: yes, it's not mine. They ask us to leave the place frequently. But we have not a piece of land, so where we might go. Other people request them to consider us to live here, as we have no land. They added that if we will buy our own land, then we would leave the place.

Q: who request them?

A1: local public.

Q: village/ community leaders?

A1: yes, they say them. However, we live here in hardship. I faced problem for looking after my children.

Q: how many children are you?

A1: I have two daughters. My one son and one daughter died.

Q: how did they die?

A1: they died in the delivery periods.

Q: so how many children are you now?

A1: I have two sons and two daughters.

Q: where do they live?

A1: my daughters live with me.

Q: so all of them are unmarried?

A1: yes, they are.

Q: what's about your sons?

A1: one son lives in Dhaka.

Q: what does he do?

A1: he works with others [probably in a small shop].

Q: does he send money to home?

A1: sometimes he sends but his salary is poor.

Q: what's about another son?

A1: he lives in Nardah.

Q: what does he do?

A1: he lives with his family there.

Q: what's about your husband?

A1: he does what he can do. We catch fish in the river. It profits more to catching small fishes. But nowadays we can't catch small fishes as it was declared.

Q: who did declare it?

A1: it's government rule.

Mahfuza: the government declared that nobody catches *jatka* (young *bilsa* fish).

A1: you can't catch any fishes.

Q: how do you live now?

A1: that's why I told we are live in miserable condition.

Mahfuza: after that you live on the boat.

A1: yes, it is.

Q: please tell us the story how you moved to the boat. Where were you born? How did your parents come here?

A1: my parents both of their family were well-off families from their past generations.

Q: where did they live?

- A1: in Barisal. But riverbank erosion damaged their properties. Then when they were at risk, they bought boat to survive. Then they arranged my mother's marriage with my father.
- Q: ok, how many brothers and sisters were your father?
- A1: my father had five brothers and sisters.
- Q: so, then your grandpa moved to the boat with his family.
- A1: yes, it was. That time his children were unmarried. Then my grandpa arranged his sons' marriage after they moved to the boat. On the other hand, my mother's family was also well off. So, my grandpa chose her as his daughter-in-law. After that we were born.
- Q: when you were born then your family was on the boat.
- A1: yes, we were.
- Q: ok, then.
- A1: then my father died when we were small. My mother faced a lot of problems looking after us.
- Mahfuza: is your husband a *soudagor* [businessman]?
- A1: yes, he is.
- Mahfuza: but why did your parents arrange your marriage with a *soudagor* though you are from well off family?
- A1: it's my fortune.
- Q: please tell more what was happened after your father had died.
- A1: then my mother looked after us in hardship.
- Q: how did she manage it?
- A1: she was business on the river.
- Q: so you had been living on the river since you were small.
- A1: yes, we had. Like I was born on the river.
- Q: what's the name of the river?
- A1: it is somewhere in Barisal.
- Q: what's the name of the river?
- A1: Hizla thana. [Actually it's an administrative unit i.e. *upazila*]
- Q: is it the name of the river?
- A1: yes, it is. [There is no river in Barisal like that name. In fact, in Barisal there are a lot of rivers and canals without names.]
- Q: did you study?
- A1: no, I didn't.
- Q: how many brothers and sisters are you?
- A1: we are four sisters and one brother.
- Q: didn't anyone study?
- A1: no, you didn't. Oh, two of my sisters studied. But they studied for few years.
- Q: how did they manage to do it?
- A1: actually they studied in *madrassa* [Islamic school]. They got food [millet flour] for education. I was too small that time.
- Q: how old were you when you got married?
- A1: I was twenty years old.
- Q: are you the eldest one amongst your brother and sisters?
- A1: no, I'm the fourth one.
- Q: where did your mother arrange your marriage?
- A1: my mother arranged my marriage from there [Barisal] to here [Matlab].
- Q: was your husband a well off or a *soudagor* when your mother arranged your marriage?
- A1: no, he was *soudagor*. They were *soudagor* family. They live in Nargaon.
- Q: how did your mother arrange the marriage?
- A1: they have relatives here. They proposed through them to my mother.
- Q: after then your husband lived here.

- A1: yes, he did.  
Q: and your mother?  
A1: she had died.  
Q: did she die on boat?  
A1: yes.  
Q: what's about your other brother and sisters? Do they live on boats?  
A1: yes, they all live on boats. I also lived on boat.  
Q: so your marriage was happened in Barisal.  
A1: yes, after the marriage I went to Nargaon. Then we moved here from Nargaon.  
Q: where is in Nargaon?  
A1: it's nearly Narayanpur.  
Q: how did you come here from Nargaon?  
A1: by boat.  
Q: I see. You moved by boat here and there and finally reached here. Ok, how long do you live here?  
A1: oh, we came here during the Liberation War [in 1971].  
Mahfuza: here, I mean, at Kazir Bazaar.  
A1: yes.  
Q: the year of Liberation War means in 1971.  
A1: yes, it is.  
Q: so you have been living here since then.  
A1: yes, I have.  
Q: so after then what did you do here?  
A1: after we had come here we looked for business in the land. I worked as *Gramer Kaaj ferriwala*. But I had headache. So, doctor advised me to avoid carrying load on my head. Then what I could do. I started to catch fish in the river again.  
Q: what do you mean by *Gramer Kaaj*?  
Mahfuza: selling melamine or glass products carrying on your head from door to door.  
Q: how long did you do it?  
A1: I did it for 8-10 years. Then I had a problem in my head. So, I left the work. I didn't do it further.  
Q: did you carry on you children's studies?  
A1: no, I didn't.  
Q: ok, if you are sick where do you go?  
A1: here [nearly somewhere].  
Q: is he a doctor?  
A1: yes, he is.  
Mahfuza: what's his name?  
A1: he practices here. Sometimes I go to the *arong* [big bazaar/ haat]; even sometimes I go to Matlab.  
Mahfuza: where [doctor] do you go?  
A1: there are several doctors in Matlab. But I prefer to go to Dr Shahnewaz.  
Mahfuza: but he doesn't live in Matlab now.  
A1: I went to him. My last child was born in hospital.  
Q: in hospital. And did two of your children die in delivery periods on the boat  
A1: no, one of them died in hospital.  
Mahfuza: where is in the hospital?  
A1: the Matlab Hospital.  
Mahfuza: there are two hospitals in Matlab.  
A1: the old one.  
Mahfuza: that one is government hospital.

Q: then.

A1: after that this child was born in the same hospital. Two of them were born in the hospital.

Mahfuza: Were any of your children born on boat?

A1: yes, rests of them were born on boat.

Q: ok, now please tell me what is the daily routine of your life on boat. Like what you get up, what you do, what you do at night, etc.

A1: sometimes I have to work for all night.

Q: work means?

A1: work means catching fish.

Mahfuza: is it on the river?

A1: yes, it is. Sometimes I go to catch fish in daytime.

Q: so we all move together, I mean, when you catch fish some of you are sleeping.

Mahfuza: no, it's not. Actually look who blocked by bamboos in different places on the river they are the main owners. They set nets with bamboo case and then fish are caught into nets. They use *teta* [an instrument for catching fish] to catch fish into nets. Then they sell fish in the market or eat fish. They do it anytime, I mean, in daytime and at night as well. Like someone catches fish, another cooks food then and others sleep, is it?

A1: yes, it is.

Q: so when someone is going to catch fish by boat others all also moving with him.

Mahfuza: Yes, it is.

Q: so, we all including kids move together on the boat. Like when you're catching fish, the children sleep. And what's about cooking food?

A1: we do it on boat.

Q: you do it on boat. Ok, what's about toilet?

A1: you do all our works on boat.

Q: what's about having a bath?

A1: we have our bath on boat.

Q: from where do you collect your drinking water?

A1: we drink tube-well water and sometimes river water as well.

Q: where do you collect tube-well water?

A1: from here.

Q: is the river water clean?

A1: yes, it is.

Mahfuza: the water of the river is clean.

Q: what do you do during storm/ cyclone event?

A1: we move our river on the bank and stay at community on the land.

Q: when storm starts wind comes through both of the edges of the boat, is it? What do you do then?

A1: we close one side's door.

Q: oh, there is door in the house of your boat. Is it possible that the boat fly into the air in a storm?

A1: no, it isn't.

Mahfuza: it's the great relieve from Allah.

A1: Allah always assists to the poor.

Q: so, all of your activities on the boat.

A1: yes, it is.

Q: you passed all your life on the boat.

A1: yes, I passed my life on the boat.

Q: do you enjoy it?

A1: if I'm not like it where I can go.

To cite this output:

Collins, Andrew et al (2009). The meaning of health security for disaster resilience in Bangladesh: Full Research Report  
ESRC End of Award Report, RES-167-25-0241. Swindon: ESRC  
REFERENCE No.

Mahfuza:        actually she is used to with this life.