

# Pilot-testing of Data-collection on Occupational Injury through Household Survey in Mirsarai, Bangladesh



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# Pilot-testing of Data-collection on Occupational Injury through Household Survey in Mirsarai, Bangladesh

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### Introduction

Occupational injuries are a major public-health problem worldwide, especially in many low- and middle-income countries, where the incidence appears to be rising, and the impact on victims is more profound because of poor medical support and weak or non-existent compensation and rehabilitation infrastructure. In Bangladesh, a country with a population of 156 million where 65 million work, there are no reliable statistics on occupational injuries. Estimates made using data of the International Labour Organization (ILO) suggest that 11,700 people die each year from occupational injury, and several hundred thousands are hurt at work. However, more accurate data are required to adequately measure the problem and to identify priority areas for intervention so that future progress can be tracked.

In situations where the national infrastructure for data-collection is lacking, household surveys can be a useful tool. The ILO has published guidelines on the collection of injury surveillance data using this method. Our project adapted these ILO guidelines for use in an existing household survey under the “Health and Demographic Surveillance System” (HDSS) of ICDDR,B and undertook a pilot project to evaluate this new method and to collect preliminary data on the incidence and severity of occupational injury in Bangladesh.

### Materials and methods

The basic ILO survey guidelines were adapted for the HDSS of ICDDR,B and shortened to 14 questions. Its principal goal was to characterize serious injuries occurring at, or arising from, work over the past 12 months. A serious injury was defined as one causing the loss of one or more work days. The survey questionnaire was translated into Bangla and carefully edited for linguistic and cultural accuracy and appropriateness. Training materials for the field staff were developed and administered to those conducting actual interviewing.

The pilot test was conducted in the ICDDR,B field site of Mirsarai in Chittagong district. Three thousand males were randomly sampled from 19,082 males currently enumerated in the HDSS there, along with all 150 females known to be working. The aim was to interview at least 2,500 males and 100 females. To be eligible, subjects must have worked during the previous 12 months and be aged 18-60 years. Interviews were conducted in the participants’ homes, mostly in early morning and weekend to increase the likelihood of catching males at home before they went for work.

Primarily descriptive statistics were analyzed. Three kinds of rates were also estimated: incidence (serious injuries/participants x 100%); frequency rate (serious injuries/1,000 person-years worked); and severity rate (days lost/million hours worked).

### Results

Since all prospective participants were in households already enumerated in the larger HDSS, we expected excellent participation; in fact, only three males refused to participate. Since over 25% were not contacted (for unknown reasons), the true participation rate could not be calculated.

In the end, 2,017 males and 120 females were interviewed. Their average age was 37.5 years (male) and 38.5 years (female). Twenty-five percent of the males and 58% of the females had no formal schooling. Most had worked only one job in the previous 12 months; however, 147 had more than one seasonal jobs. Agriculture was the most common work (over 25% of the respondents) among men, followed by small trade and service. Among women, small trade was the most common occupation (83%). Most people worked 5-12 hours a day, seven days a week. These statistics are most likely to be biased because of the problem of recruiting men at home.

Over 50% of the respondents reported at least one injury at work during the past 12 months. This figure dropped to 31% when injuries requiring time-off work were included (although the rate in women was considerably lower—20%). The jobs with the highest crude injury rates were woodcutting and fishing but, in absolute terms, farming (33%) and small trading (16%) accounted for almost half of occupational injuries. The injury rates did not seem to be influenced by age; however, those with more education had fewer injuries, and these tended to be less severe.

The injury rates per 1,000 person-years were 318 for males and 211 for females. These are about 50% higher than the estimates from ILO data; this inflation may be due to the fact that the ILO estimates are national while ours are primarily for a rural region (great influence of agriculture, which is traditionally very dangerous work). Our definition of serious injury was one day's time-loss whereas the ILO's definition was three days' time-loss.

The median time-loss was seven days of work per injury. The mean severity was 1,607 days lost per million-hours worked. The most severe injuries appeared to occur among woodcutters. Surprisingly, there was a large disparity between severity rates among permanent male and female servants.

Most injuries occurred in the usual place of work and were most commonly caused by “coming into contact with something sharp or rough ...”, resulting in “open wounds or superficial injuries ...” to the upper or lower extremities. This is most likely to be driven by cuts in hands and legs due to the use of sharp tools in agriculture. However, detailed casual data were not collected. Ninety-seven percent of those who were injured sought some form of medical attention, and in 90% of the cases, the individual was responsible for meeting the treatment cost. Of those who said that they had an employer, only 17% had the cost of their treatment paid for by the employer. The median cost of treatment was Tk 550 (approximately US\$ 8).

## Discussion

This pilot study established the use of household surveys to evaluate the prevalence of occupational injury, using the existing household demographic surveillance infrastructure and provided preliminary data on the incidence of occupational injury in rural Bangladesh. Overall, the adaptation of the ILO method and the use of the existing ICDDR,B surveillance infrastructure worked well; however, we identified a number of limitations as follows:

- (a) data on some severe injuries may be missing;
- (b) missing treatment venue and agent of injury;
- (c) need to improve recruitment of males;
- (d) need to improve documentation of missing study subjects; and
- (e) need to reduce the number of no-classifiable responses.

Overall, our results are only representative of a small rural area of Bangladesh but show a worryingly high incidence of occupational injury and demonstrate that the burden of time-loss is almost completely borne by workers and households of agricultural workers. Over 4 in 10 reported time-loss due to injuries in the past 12 months. The median cost of injuries—Tk 550—was about one-third of reported household expenditure on healthcare each year, and in some cases, the costs resulting from injury were higher.

## Conclusions and recommendations

The ILO household survey method can be easily adapted for use in Bangladesh, and the use of

the existing infrastructure of the ICDDRB's HDSS in Mirsarai provides numerous efficiencies and benefits. We found injury rates to be higher than estimates based on ILO data but the reasons for the difference can only be hypothesized relating to the study area and case definition.

Based on the findings, we recommend that:

- (a) The method is ready for scaling up using the recommendations for changes to the survey itself and improving methods for recruiting males;
- (b) A future survey should be more representative of the distribution of different occupational categories and working conditions in both rural and urban Bangladesh; and
- (c) Meanwhile, urgent intervention is required to reduce the very high occupational injury rates in Bangladesh.



**Occupational injury surveillance data**

Occupational injuries are a significant public-health problem which, while to be decreasing in countries with established economies, is an increasing burden in the developing world. It is estimated that 312,000-334,000 deaths occur each year worldwide due to occupational risk factors. These figures are likely underestimated by 10% in the USA and as much as 85% in locations such as rural Africa (1,2). This is related to several factors; however, a major contributor is the lack of adequate data (3). Understanding the prevalence of occupational injury is critical for various reasons as follows: (a) to inform health providers, policy-makers, non-governmental organizations (NGOs), and the public; (b) to provide baseline data against which to measure interventions; (c) to aid priority setting and targeting for policy change and interventions; and (d) to estimate cost to society.

Bangladesh is a South Asian country of 155 million people, of whom 65 million work and are likely to have a major injury problem. Data relating to injuries are only just becoming available and are mainly focused on childhood injury. Estimates of rates suggest that, overall, injuries account for 13% of morbidity and 2.9% of mortality in Bangladesh (4). There seems to be a very limited study of unintentional injury in Bangladesh (5,6).

Occupational injuries are one of the national priority problems (7). With a few exceptions, little focus is given on occupational injury. In a 1990 study of patients attending an emergency department of a regional hospital, (8) found that injury due to machinery was the second most common cause of injury. For some types of injury, occupational aetiology may even predominate. A study of spinal cord injuries presenting at the National Centre for the Rehabilitation of the Paralyzed (CRP) (n=247) found that falling from height, often associated with fruit harvesting, was the most common reason whereas trips and falls while carrying head-loads were the second most common cause of injury (9). Hoque *et al.* found that these accidents were more common in Bangladesh than elsewhere; data, however, exclude deaths and all non-spinal injuries.

Two sources of national injury-related statistics were reviewed in the annual reports of the Department of Inspection for Factories and Establishments (Table 1) (10) and the ILO estimates (11). The former reported 716 fatal and non-fatal accidents in 2003 while the ILO estimates suggested as many as 11,700 deaths and several hundred thousand injuries requiring more than three days-off work. These numbers are estimated from regional data from countries which collect such data.

**Table 1.** Injury statistics reported by the Department of Inspection for Factories and Establishments, 1995-2003 (10)

Year	Minor injury		Serious injury		Fatal		Total
	No.	%	No.	%	No.	%	
1995	3,703	90	352	8	32	0.78	4,087
1996	2,529	83	481	15	26	0.85	3,036
1997	2,581	83	472	15	15	1.64	3,104
1998	-	-	-	-	-	-	-
1999	1,918	85	329	14.6	8	0.4	2,255
2000	1,420	76	375	20	77	4	1,864
2001	1,012	75	322	24	23	2	1,357
2002	819	68	373	31	12	1	1,204
2003	537	75	175	24	4	0.6	716

Source: Annual reports (1995-2003) of the Department of Inspection for Factories and Establishments

In Bangladesh, information on valid injuries is not presently available in any systematized form. In countries where they exist, sources of data are administrative records of labour inspectors, compensatory bodies, health and safety organizations, and other regulatory agencies. In Bangladesh, (12) examined these sources and concluded that inadequacies exist in all of them so that a future surveillance system should not rely on any one source but should combine data from many sources; they recommended conducting household surveys on injuries.

## Using household surveys to collect data on occupational injury

The ILO has also recommended household surveys for occupational injuries in their publication titled “Occupational Injuries Statistics from Household Surveys and Establishment Surveys: An ILO Manual on Methods” (13). The benefits of household surveys are primarily that they do not rely on any governmental regulatory/compensation framework and that (a) these are more representative than workplace surveys; (b) these are better for capturing agricultural workers, the self-employed, and the informal sector; and (c) in some cases (such as with ICDDR,B), these may be able to use the existing infrastructure/expertise and link to the existing databases of demographic information. However, they have limitations, including being not as good at capturing fatalities, which are relatively rare events that they rely on self-reports and that they miss direct observations and data from workplaces that are useful in planning interventions.

## ICDDR,B surveillance

The International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) administers a Health and Demographic Surveillance System (HDSS) questionnaire on a quarterly basis to 25,000 households in Mirsarai, Abhoynagar (both rural), and Kamalapur (urban Dhaka). Quarterly interviews collect data from sampled household on subjects, including mortality, migration, occupation, and education of household members. Kamalapur is the only urban health and demographic surveillance in Asia.

Currently, the HDSS in Mirsarai covers a total population of 39,202 in 8,039 households. In each quarterly HDSS round, information on demographics, including changes in marital status as a result of marriage, divorce, widow, or separation, pregnancy outcomes, maternal and child immunizations, contraceptive-use, in- and out-migration, and deaths are recorded. Birth-place and delivery attendance, place of death, cause of death through verbal autopsy following the 10th version of International Classification Disease (ICD-10), and practitioners consulted before death are also collected. From October 2006, health service-use by household members for any reported medical problems within the past two weeks was introduced in the HDSS round. During each HDSS round, the heads of households were asked whether any member in the household had any illness in the past two weeks, any household member used or purchased any drugs for any reason, and who was consulted. The last socioeconomic status (SES) of all the HDSS households was updated in the first quarter of the HDSS round in 2009. There are 19 trained and experienced staff for the HDSS in Mirsarai.

## This Project

In this pilot project, we adapted the ILO methods (13) to take advantage of the HDSS infrastructure of ICDDR,B.

The specific objectives were to:

- a. Adopt the ILO methods for use in Bangladesh;
- b. Adopt the ILO survey questionnaire translated to Bangla and in the rural Bangladesh context;

- c. Develop training materials;
- d. Pilot-test in one HDSS area of ICDDR,B (Mirsarai); and
- e. Report on:
  - i. Prevalence of occupational injuries;
  - ii. Principal causal factors;
  - iii. Characterization of occupational injuries; and
  - iv. Characterization of impacts on victims and households

The project adapted two existing methods: (a) the occupational injury household survey produced by the ILO (13) and (b) the ICDDR,B HDSS.

### Implementation of survey

We investigated selected validated occupational injury-related questions from the ILO (13) and similar sources (4,14). Selected questions were assessed for cultural and linguistic appropriateness by experienced field staff in Mirsarai (15). Questions were translated and then back-translated by bilingual people, who had never seen the original questions (16). Translation discrepancies were discussed by the research team, and revisions were made as needed.

The selected questions covered:

- Occupation
- Characteristics of workplace
- Duration of employment
- Frequency of injury
- Cause of injury
- Location of injury
- Type of injury
- Body part affected
- Duration of time-off from work
- Cost of treatment
- Fatalities in workplace

The survey was designed to obtain information over the past 12 months before interview (but for the past 60 months for fatality information, as fatalities are much rarer events). Each participant was asked to give data on a maximum of three jobs held in the past 12 months, and for each job held, detailed data were collected on only the one most serious injury that occurred. Appendix A and B give sample Bangla and English versions of the survey questionnaire.

### Recruitment

To capture information specific to occupational injuries, the exiting ICDDR,B HDSS sampling frame was used. The sampling frame of the HDSS is described elsewhere in details (17). Given the pilot nature and limitations of time and resources, a target of 2,500 working males and 100 females was felt to be adequate.

To reach these numbers of subjects, 3,000 men were randomly selected from among 19,082 males currently enrolled in the ICDDR,B HDSS for the Mirsarai surveillance site. To be eligible, subjects had to be aged 18-60 years. People aged over 60 years were excluded because of their non-specific occupational status recorded as disabled without physical disability. All 150 women who were known to be economically active were also selected from among 20,643 females. Male and female students and women engaged in household work only were also excluded.

Four females and two males with postgraduate-level education and data-collection experience were recruited for data-collection. A five-day classroom orientation for them was organized. Training materials and recommendations for interviewers were developed by the experienced staff of ICDDR,B to ensure systematic and consistent delivery of questions and data-collection. The Director, National Institute of Preventive and Social Medicine (NIPSOM), also attended one of

those sessions.

Interviews were conducted in the participants' villages. The majority of the interviews took place in the early morning and evening when working members of the households were available at home.

For each potential subject, a maximum of three contacts was attempted, i.e. if the subject was unavailable at the first household-visit, a second and, if necessary, a third household-visit were made.

## Analysis

Severe or time-loss injury was defined as any injury occurring as a result of work that caused the loss of at least one day of work.

Analysis principally comprised enumerations and descriptive statistics. We examined location of injury, proximal cause, type of work, etc. by cross-tabbing with categories of age, gender, level of education, region, type of employment, etc.

## Rate calculation

Three key rates were calculated. These were:

Incidence (INC) %= number of serious injuries reported/number of participants x 100%

Frequency rate (FR) per 1,000 person-years= number of serious injuries reported/person-years worked x 1,000 person-years

Severity rate (SR) per million working hours= number of days lost/number of hours worked x (\*) 10<sup>6</sup> hours

The number of hours worked was calculated as: [self-reported hours/day x self-reported days/week x 52] x months worked/12 months] – [10 national holidays x months worked/12 months]

## Case studies

To help understand the context of data reported here, several case studies were recorded and are presented as Appendix D.

## Dissemination of results

Results were communicated to local stakeholders (policy-makers, clinicians, public-health officials, and community representatives), through this report, to the World Health Organization (WHO), and a mini-symposium was held on 2 May 2010 at ICDDR,B, Dhaka (Appendix E).

## RESULTS

### Participation

Interviews took place from 11 November 2009 to 30 January 2010. Of the sample, contact was made with 3,098 persons (2,960 males and 138 females).

Of the males, 820 were not at home during 1-3 visits and were not interviewed before the end of the study; their status is unknown. One hundred and twenty-three males were absent or ineligible (58 were working overseas; 18 were working elsewhere in Bangladesh; 32 were disabled or had died before contact; 1 had retired; 11 were unemployed; and there were 3 refusals).

Of the females, 12 were not at home and not interviewed, and 6 were not eligible (2 working elsewhere; 2 not economically active, and 2 disabled). In total, 2,137 persons (2,017 males and 120 females) from 1,913 households were interviewed.

The average age of the male participants was 37.5 years [standard deviation (SD) 12.1 years], and the average age of the females was 38.5 years (SD 11.5 years). Table 2 shows the distribution of participants' ages by sex. Table 3 shows the distribution of educational attainments.

Age (years)	Females		Males		Total	
	No.	%	No.	%	No.	%
<20	8	6.7	106	5.3	114	5.3
20-24	12	10.0	311	15.4	323	15.1
25-29	11	9.2	282	14.0	293	13.7
30-34	14	11.7	229	11.4	243	11.4
35-39	18	15.0	213	10.6	231	10.8
40-44	16	13.3	223	11.1	239	11.2
45-49	18	15.0	249	12.3	267	12.5
50-54	15	12.5	208	10.3	223	10.4
55-59	8	6.7	193	9.6	201	9.4
60 and over	0	0.0	3	0.1	3	0.1
Total	120	100	2,017	100	2,137	100

Years of schooling	Females		Males		All	
	No.	%	No.	%	No.	%
None	69	58	514	25	583	27
1-5	29	24	635	31	664	31
6-10	18	15	680	33	698	33
11 +	4	3	188	9	192	9
Total	120	100	2,017	100	2,137	100

Each participant was asked about the work performed in the past 12 months before the interview. Most (93%) participants had held a single job during that period but 147 reported having 2 jobs (1,46 males and 1 female), and 4 (3 males and 1 female) had performed 3 jobs. Table 4 shows the distribution of jobs reported by the participants.

**Table 4.** Occupations held by participants during 12 months before interview. Of the 2,137 participants, 151 reported holding multiple jobs

Occupation	Females		Males		Total	
	No.	%	No.	%	No.	%
Farmer	-	-	535	24.7	535	23.4
Small trader	98	80.3	405	18.7	503	22.0
Service holder	2	1.6	256	11.8	258	11.3
Businessman	-	-	221	10.2	221	9.7
Non-agricultural day labourer	1	0.8	182	8.4	183	8.0
Skilled labourer	6	4.9	166	7.7	172	7.5
Driver	-	-	98	4.5	98	4.3
Agricultural day labourer	1	0.8	71	3.3	72	3.1
Rickshaw-puller	-	-	58	2.7	58	2.5
Other	-	-	53	2.4	53	2.3
Professional	5	4.1	39	1.8	44	1.9
Fisherman	-	-	34	1.6	34	1.5
Permanent servant	8	6.6	8	0.4	16	0.7
Mill/factory worker	-	-	13	0.6	13	0.6
Woodcutter	-	-	13	0.6	13	0.6
Garment worker	-	-	8	0.4	8	0.3
Unemployed	-	-	6	0.3	6	0.3
Beggar	1	0.8	-	-	1	0.0
Total	122	100	2,166	100	2,288	100

Of men, a little over one-quarter were agricultural workers (including farmers and agricultural day labourers). The next most common job held was small trader\*, then service worker (those who get a monthly salary from public- or private-sector agencies) and businessmen (such as selling vegetables/fish/meat in the village market, and some who own shops/factories). Skilled labourers included those who work in trades, such as mason, carpenter, blacksmith, goldsmith, barber, tailor, housepainter, bicycle, radio or TV repairers, cooks or their assistants. Non-agricultural labourers are those who work for daily wage in jobs, such as earth cutting, planting rice, cutting paddy, work in a tea shop or a saw mill, and selling bus tickets.

The participants were most likely to be self-employed (65.7% overall), with only 15.5% working for a traditional employer (Table 5). The remainders were employers or had some other working arrangements (not classified).

\*Small trader which includes people who come to the local market and sell groceries, vegetables, fruits, meat, fish, and cheap cake, biscuit, and tea. They conduct their business on empty government land or a rented space with or without any permanent shelter and do not employ any sales assistant. They mostly run their business from 7:30 am to 12:30 pm with a small break for lunch. But some of these people may stay until 8 pm

Type of employment	Females		Males		Total	
	No.	%	No.	%	No.	%
Self-employed	104	85.2	1,399	64.6	1,503	65.7
Employee	9	7.4	345	15.9	354	15.5
Not classifiable	8	6.6	317	14.6	325	14.2
Employer			80	3.7	80	3.5
Unknown			15	0.7	15	0.7
Family worker	1	0.8	7	0.3	8	0.3
Cooperative member			3	0.1	3	0.1
Total	122	100	2,166	100	2,288	100

The large majority (66%) of the participants worked independently (35% overall), and 90% worked in workplaces with less than 10 employees (Table 6).

No. of employees	Females		Males		Total	
	No.	%	No.	%	No.	%
1	76	62.3	724	33.7	800	35.3
2-3	38	31.1	712	33.2	750	33.1
4-5	3	2.5	325	15.1	328	14.5
6-9	2	1.6	165	7.7	167	7.4
10-29	3	2.5	155	7.2	158	7.0
30-49	-	-	22	1.0	22	1.0
50-99	-	-	17	0.8	17	0.7
100-499	-	-	13	0.6	13	0.6
500+	-	-	13	0.6	13	0.6
Total	122	100	2,146	100	2,268	100

The majority (65%) of the participants worked seven days per week (Table 7). Occupations where more than 50% of subjects worked seven days a week were farmers, fishermen, service holders, businessmen, small traders, rickshaw-pullers, beggars, servants, and others.

Overall, the mean number of hours worked per day was 8.7 (interquartile range 7-10), ranging from one hour to 18 hours (Table 8). Both Table 7 and 8 present data relating to jobs held (thus, the total number exceeds 2,137) but the distributions of days per week and hours per day is the same when viewed by subject rather than by job.



Days	Females (n=122)	Males (n=2,150)	Total (n=2,272)
1	0	5	5
2	4	36	40
3	11	46	57
4	13	99	112
5	8	214	222
6	11	337	348
7	75	1,413	1,488

16 missing responses; but all jobs held, and some subjects had more than one job

Hours worked per day	Females		Males		Total	
	No.	%	No.	%	No.	%
1-4	41	33.6	101	4.7	142	6.3
5-8	73	59.8	1,030	48.0	1,103	48.6
9-12	8	6.6	918	42.7	926	40.8
13-15	0	0.0	77	3.6	77	3.4
16+	0	0.0	22	1.0	22	1.0
Total	122	100	2,148	100	2,270*	100

18 missing answers; but all jobs held, and some subjects had more than one job

## Injuries

### *All injuries, including non-time-loss*

The participants were asked “how many times in the last 12 months you have been hurt due to an occupational injury (that an unexpected event that occurred at work or in connection with your work that caused you personal injury or illness)?”.

Fifty-two percent of the male respondents and 54% of the females reported at least one injury. About one-quarter (24%) of the participants reported more than one event. Table 9 shows the distribution of frequency of accidents by sex.

Total no. of injuries	Females (n=120)	Males (n=2,017)	Total (n=2,137)
0	55	973	1,028
1	31	561	592
2	9	161	170
3-4	14	209	223
5-9	11	103	114
10-14	-	6	6
15 or more	-	4	4
Total	120	2,017	2,137

Table 10 shows the proportion of the participants by occupation reporting any work-related injury; the highest rate (86%) was for woodcutting. Over 70% of those working as fishermen, skilled or non-agricultural labourers, and farmers reported at least one injury with loss of wage for at least one day. No garment industry workers had any injury but professionals (24%) and businessmen (36%) had.

<b>Table 10.</b> Percentage of participants reporting any injury by occupation (restricted to 1,870 persons holding only one job in the past 12 months)		
Occupation	No. reporting this occupation	% reporting any work-related injury
Woodcutter	7	86
Fisherman	34	79
Rickshaw-puller	48	77
Skilled labourer	148	72
Non-agricultural day labourer	151	72
Farmer	473	70
Mill/factory worker	9	67
Driver	91	66
Small trader	350	63
Permanent servant	8	63
Agricultural day labourer	47	60
Other	39	54
Service holder	210	54
Businessman	212	36
Professional	37	24
Garment worker	6	0

### Fatalities

Eight participants reported deaths in their families in the past five years, attributable to work (0.4%). Their occupations at the time of death were: agricultural day labourer (n=2), skilled labourer (n=1), service holder (n=1), businessman (n=1), rickshaw-puller (n=1), and driver (n=1); one participant did not mention the occupation.

### Time-loss due to injuries

The respondents were then asked to report up to one accident in each job held in the past 12 months that caused loss of work for at least one day.

Six hundred and fifty-nine (31%) participants reported having at least one time-loss injury. One person had an accident in each of three jobs held, and one person had an accident in each of two jobs held, for a total of 662 incidents. Among the males, the crude incidence<sup>§</sup> was 31% (n=637), and the average age of the affected persons was 38.1 years (SD 12.0 years, range 18-60 years). Among the females, the crude incidence was 20% (n=25), and the average age was 38.6 years (SD 12.3 years, range 19-59). The crude injury count by occupation and sex is shown in Table 11, by decreasing the total proportion. The table shows that two jobs—woodcutter and fisherman—stood out to the highest above the remaining jobs.

<sup>§</sup>Incidence (%)=number of time-loss injuries/number of workers x 100%

**Table 11.** Number of serious injuries (greater than 1 day lost) by occupation and sex, including crude serious injury incidence

Occupation	Females			Males			Total		
	No.	%	Inc	No.	%	Inc	No.	%	Inc
Farmer				219	34	40.9	219	33	40.9
Small trader	23	92	23.5	86	14	21.2	109	16	21.7
Non-agricultural day labourer				84	13	45.9	84	13	45.9
Skilled labourer	1	4	17	58	9	34.9	59	9	34.3
Businessman	-	-	-	33	5	14.9	33	5	14.9
Service holder	-	-	-	31	5	12.0	31	5	12.0
Agricultural day labourer	-	-	-	29	5	40.2	29	4	40.2
Driver	-	-	-	26	4	26.5	26	4	26.5
Rickshaw-puller	-	-	-	23	4	39.6	23	3	39.6
Fisherman	-	-	-	22	3	64.7	22	3	64.7
Woodcutter	-	-	-	9	1	69.2	9	1	69.2
Other	-	-	-	8	1	15.1	8	1	15.1
Permanent servant	1	4	12.5	4	1	50.0	5	1	31.3
Mill/factory worker	-	-	-	3	0	23.1	3	0	23.1
Professional	-	-	0	2	0	4.5	-	-	4.5
Garment worker	-	-	0	0	0	0	-	-	0
Beggar	-	-	-	0	0	0	-	-	0
Total	25	100	20	637	100	31.8	662	100	31
Inc=Incidence									

The crude injury rates by age and sex are shown in Table 12. The distribution of ages of the injured victims is similar to the overall distribution of ages.

<b>Table 12.</b> Crude incidence by age and sex (all accidents, n=662)						
Age (years)	Females		Males		All	
	No.	%	No.	%	No.	%
<20	2	8	33	5	35	5
20-24	2	8	99	16	101	15
25-29	2	16	73	11	75	11
30-34	4	12	69	11	73	11
35-39	3	16	69	11	72	11
40-44	4	16	71	11	75	11
45-49	4	16	86	11	90	14
50-54	1	4	71	10	72	11
55-59	3	12	65	11	68	10
60 and over	0	-	1	0.2	1	0.2
Total	25	100	637	100	662	100

The injury-frequency rates are shown in Table 13. Overall, the injury rate was 312/1,000 person-years. The overall rate among males (318/1,000 person-years) was higher than among females (211/1000 person-years), although small trade was the only occupation with a significant number (n=98) of females, and in this occupation, injury rates were quite similar between sexes.

Wood-cutters and fishermen again had the highest rates of time-loss injury, with almost 90% of the wood-cutters had at least one of these injuries in the past 12 months. In fact, all jobs, except professional, garment workers, and beggars, reported the level of injuries above 1 in 10.

**Table 13.** Rate of time-loss injury for 1,000 person-years of employment by occupation

Occupation	Females		Males		All	
	No. of time-loss injuries	Rate per 1,000	No. of time-loss injuries	Rate per 1,000	No. of time-loss injuries	Rate per 1,000
Woodcutter	-*	-	9	891	9	891
Fisherman	-	-	22	647	22	647
Agricultural day labourer	0	0	29	511	29	511
Non-agricultural day labourer	0	0	84	504	84	504
Farmer	-	-	219	437	219	437
Rickshaw-puller	-	-	23	431	23	431
Skilled labourer	1	182	58	365	59	359
Permanent servant	1	139	4	500	5	329
Mill/factory worker	-	-	3	316	3	316
Driver	-	-	26	276	26	276
Small trader	23	238	86	230	109	231
Other	-	-	8	184	8	184
Businessman	-	-	33	153	33	153
Service holder	0	0	31	134	31	134
Professional	0	0	2	47	2	47
Garment worker	-	-	0	0	0	0
Beggar	0	0	0	0	0	0
Total		211	637	318	662	312

\*-' means no women reported working in this occupation

The severity of injury rate is given by the days lost/million hours worked (Table 14). The overall average days lost was 1,607 (1,629 males and 929 females). The highest overall rate was 8,066 days lost per million hours worked for woodcutters. However, the next most severely injured were permanent servants, and this varied dramatically between sexes, with the rate for men was 16 times higher than women.

Occupation	Males			Females			All		
	Hours worked	Days injured	Days lost/ million hours	Hours worked	Days injured	Days lost/ million hours	Hours worked	Days injured	Days lost/ million hours
Woodcutter	28,639	231	8,066	-	-	-	28,639	231	8,066
Permanent servant	27,220	159	5,841	14,020	5	357	41,240	164	3,977
Agricultural day labourer	1,25,346	494	3,941	726	0	0	1,26,072	494	3,918
Non-agricultural day labourer	4,27,380	1,462	3,421	2,070	0	0	4,29,450	1,462	3,404
Rickshaw-puller	1,56,533	519	3,316	-	-	-	1,56,533	519	3,316
Driver	2,90,294	901	3,104	-	-	-	2,90,294	901	3,104
Fisherman	103,816	315	3,034	-	-	-	1,03,816	315	3,034
Farmer	13,10,047	2,816	2,150	-	-	-	13,10,047	2,816	2,150
Skilled labourer	4,48,822	773	1,722	10,449	14	1,340	4,59,271	787	1,714
Small trader	12,99,948	1,192	917	154,452	166	1,075	14,54,400	1,358	934
Mill/factory worker	28,974	20	690	-	-	-	28,974	20	690
Businessmen	7,23,062	479	662	-	-	-	7,23,062	479	663
Service holder	7,32,634	282	385	4,244	0	0	7,36,878	282	383
Other	1,23,776	46	372	-	-	-	1,23,776	46	372
Professional	88,908	5	56	9,518	0	0	98,426	5	51
Garment worker	23,949	0	0	-	-	-	23,949	0	0
Beggar	-	-	-	3,630	0	0	3,630	0	0
Total	59,49,504	9,694	1,629	1,99,109	185	929	61,48,613	9,879	1,607

### Age and education

Table 15 shows the injury-frequency rates by age-group. There was no obvious trend of injury rate with age in either sex. The injury rates among females were lower than among men. However, the rates were less stable across different age-groups but this is likely because of the smaller number of cases in each category.

Age (years)	Total			Male			Female		
	Person-years	No. of Injuries	Rate	Person-years	No. of Injuries	Rate	Person-years	No. of Injuries	Rate
<20	112.8	35	310.3	104.8	33	314.9	8	2	250.0
20-24	318.8	101	316.8	307.5	99	322.0	11.2	2	178.6
25-29	288.8	75	259.7	277.8	73	262.8	11	2	181.8
30-34	242.3	73	301.3	228.3	69	302.2	14	4	285.7
35-39	230.7	72	312.1	212.7	69	324.4	18	3	166.7
40-44	238	75	315.1	222	71	319.8	16	4	250.0
45-49	266.5	90	337.7	248.5	86	346.1	18	4	222.2
50-54	221.3	72	325.4	206.8	71	343.3	14.5	1	69.0
55-59	200.8	68	338.6	192.8	65	337.1	8	3	375.0
60+	3	1	333.3	3	1	333.3	8	2	250.0
Total	2,122.8	662	312	2,004	637	318	118.8	25	210

Table 16 shows the incidence and severity of injuries and by level of education. Both measures decreased with increasing levels of educational attainment.

Years of schooling	Males		Females		All	
	Frequency rate	Severity	Frequency rate	Severity	Frequency rate	Severity
No schooling	429	2,382	219	1,180	405	2,296
1-5	355	1,904	241	831	350	1,878
6-10	266	1,137	174	373	264	1,126
11 or more	75	427	0	0	73	420
All	318	1,629	211	929	312	1,607

### Where do accidents happen?

Table 17 shows the reported location of accidents by occupation. The large majority (78%) of the injuries occurred at the usual work place. Injuries also occurred during travel (driver, rickshaw-puller) but at 'no fixed place'. Those who had more control over their own environment included service persons, businessmen and small traders; there was an increased risk of injuries occurring 'somewhere else in the unit'.

Occupation	In usual work place		Somewhere else in the unit		In your usual work place away from establishment or no fixed area		On work-related travel		Elsewhere		Unknown		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Farmer	210	96	9	4	-	-	-	-	-	-	-	-	219
Small trader	75	69	29	27	3	3	2	1	-	-	-	-	109
Non-agricultural day labourer	72	86	8	10	4	5	-	-	-	-	-	-	84
Skilled labourer	48	81	10	17	1	2	-	-	-	-	-	-	59
Businessman	18	55	13	39	1	3	1	3	-	-	-	-	33
Service holder	20	65	8	26	-	-	2	6	1	3	-	-	31
Agricultural day labourer	28	97	1	3	-	-	-	-	-	-	-	-	29
Driver	3	12	3	12	20	77	-	-	-	-	-	-	26
Rickshaw-puller	3	13	1	4	19	83	-	-	-	-	-	-	23
Fisherman	20	91	2	9	-	-	-	-	-	-	-	-	22
Woodcutter	9	100	-	-	-	-	-	-	-	-	-	-	9
Other	4	50	2	25	1	13	-	-	-	-	1	13	8
Permanent servant	5	100	-	-	-	-	-	-	-	-	-	-	5
Mill/factory worker	3	100	-	-	-	-	-	-	-	-	-	-	3
Professional	1	50	1	50	-	-	-	-	-	-	-	-	2
Total	519	78	87	13	49	7	5	1	1	<1	1	<1	662

Table 18 shows the number of injuries due to different causes by sex. ‘Came into contact with sharp or rough object’ was the most frequently-reported cause for both sexes (53%), followed by ‘fell or crashed onto something’. The definitions of these cause categories are given in Appendix C. Briefly, the most frequent category (H) means that neither a person nor an object was in motion but that person was injured because, for example, a tool (e.g. knife) slipped. Category E represents falls but is not detailed enough to show whether fall was on the same level or from height. Struck by something (F) and collided with something (G) differ with regard to what was moving the object or the subject respectively.

ICD code	Cause of injury	Females		Males		All	
		No.	%	No.	%	No.	%
H	Came into contact with sharp or rough object	24	96	325	51	349	53
E	Fell onto something	1	4	92	14	93	14
F	Struck by something	-	-	76	12	76	12
G	Collided with something	-	-	64	10	64	10
J	Acute overloading of body	-	-	38	6	38	6
A	Contact with electricity	-	-	9	1	9	1
B	Came into contact with extreme heat or cold	-	-	9	1	9	1
D	Drowning or buried	-	-	3	0.5	3	0.5
K	Animal bite, kick	-	-	3	0.5	3	0.5
I	Trapped, squeezed, crushed	-	-	2	0.3	2	0.3
L	Other	-	-	15	2.4	15	2.3
C	Contact with hazardous substance	-	-	0	0	0	0
	Not applicable	-	-	1	0.2	1	0.2
Total		25	100	637	100	662	100

### **Body part affected**

Eighty-one of the 662 injuries occurred in more than one body part (definitions given in Appendix C); 74 occurred in two body parts, and seven occurred in three body parts. Table 19 shows the distribution of affected body parts by type of injury. The most frequently-affected parts of the body were lower and upper limbs, representing over three-fourths of the injuries. Open wounds and superficial wounds (including cuts, puncture wounds, and animal and insect bites) were the most common types of injuries (56%), followed by sprains, strains, and dislocations (18%). Not surprisingly, the majority (53%) of open wounds were associated with coming in contact with something sharp or rough (Table 20). Sprains and strains were associated with falls but also collisions, being struck by something and overloading.

Table 21 shows the frequency and frequency rates of injuries (per 1,000 person-years) by type of injury. In absolute terms, open wounds and other superficial injuries among the farmers, small traders, and non-agricultural day labourers were the three most significant contributors, along with sprains and strains in the same occupations. However, the highest rates of injuries were seen among woodcutters (open wounds, 495/1,000 person-years), and fishermen (open wounds, 441/1,000 persons-years), followed by sprains and strains among woodcutters (396/1,000 persons-years) and open wounds among agricultural day labourers. There was a high rate of burns among factory workers but this is based on a single occurrence; the rate was quite high among small traders (28/1,000 persons-years) where there were also more occurrences. Internal injuries and concussions occurred at a generally low rate but the highest incidence occurred among drivers. Rates of fractures were also generally low, and the highest rates were seen among rickshaw-pullers (but again based on one incident) and non-agricultural day labourers. Only one amputation was reported in a rickshaw-puller.



**Table 19.** Body parts affected by type of injury (n=743; 81 incidents involved multiple body parts)

Body part	Superficial and open wounds	Strains, sprains, and dislocation	Burns, scalds	Concussion and internal injury	Fractures	Traumatic amputation	Other	Acute poisoning or infection	Unspecified	Total
Lower limbs	152	80	18	6	5	0	26	0	43	330
Upper limbs	170	30	6	2	1	0	16	0	11	236
Trunk/internal organs	66	19	3	5	9	1	4	0	0	107
Head	18	1	0	6	0	0	2	0	0	27
Neck	0	0	0	0	0	0	0	0	0	0
Back	1	1	0	1	0	0	0	0	2	5
Unclassified	8	4	3	3	1	0	18	0	1	38
Total	415	135	30	23	16	1	66	0	57	743

**Table 20.** Type of injury by frequency and cause

Type of injury	Open wounds and superficial	Sprains, strains, and dislocation	Burns, and scalds	Concussion and internal injury	Fracture	Amputation	Other	Unknown	Total
Came in contact with something sharp or rough	298	16	8	3	3	0	25	7	360
Fell onto something	30	46	1	5	2	0	12	18	114
Collided with something	29	22	9	5	5	1	7	13	91
Struck by object	42	16	2	4	2	0	13	9	88
Acute overloading of body	3	28	0	4	0	0	3	4	42
Contact with electricity	6	0	1	1	0	0	2	1	11
Came in contact with temperature extreme	1	0	8	0	0	0	0	0	9
Drowning or burial	1	0	0	0	2	0	0	1	4
Animal bite, kick	1	2	0	0	0	0	0	1	4
Trapped, crushed	0	1	0	0	1	0	0	1	3
Not applicable	0	0	0	0	0	0	0	1	1
Other	4	4	1	1	1	0	4	1	16
Total	415	135	30	23	16	1	66	57	743

Occupation	Open wound and Superficial	Strain, Sprain Dislocation	Other	Burn and Scald	Internal injury, concussion	Fracture	Amputation	Unknown
Farmer	149 (297)	35 (70)	27 (54)	4 (8)	6 (12)	1 (2)	-	9 (18)
Small trader	55 (117)	27 (57)	9 (19)	13 (28)	4 (8)	7 (15)	-	7 (15)
Non-agricultural day labourer	52 (312)	21 (126)	7 (42)	1 (6)	4 (24)	3 (18)	-	7 (42)
Skilled labourer	41 (250)	11 (67)	5 (30)	-	3 (18)	-	-	10 (61)
Businessman	20 (93)	8 (37)	1 (5)	3 (14)	1 (5)	3 (14)	-	5 (23)
Service holder	16 (69)	7 (30)	5 (22)	3 (13)	-	1 (4)	-	3 (13)
Driver	14 (149)	7 (74)	2 (21)	2 (21)	3 (32)	-	-	5 (53)
Agricultural day labourer	19 (335)	3 (53)	6 (106)	-	1 (18)	-	-	1 (18)
Rickshaw-puller	17 (318)	4 (75)	1 (19)	1 (19)	1 (19)	1 (19)	1 (19)	3 (56)
Fisherman	15 (441)	7 (206)	-	2 (59)	-	-	-	3 (88)
Other	5 (115)	1 (23)	1 (23)	-	-	-	-	3 (69)
Woodcutter	5 (495)	4 (396)	-	-	-	-	-	-
Permanent servant	4 (263)	-	1 (66)	-	-	-	-	-
Mill/factory worker	1 (105)	-	1 (105)	1 (105)	-	-	-	-
Professional	2 (47)	-	-	-	-	-	-	1 (23)
Total	415	135	66	30	23	16	1	57

Figures in parentheses indicate frequency rates (per 1,000 person-years)

Table 22 shows the median days lost (and inter-quartile range) by type of injury and sex. The overall median duration of time-loss was 7 days, with an interquartile range of 3-15 days. The distribution of days lost was right skewed (mean=15 days, SD=23 days, range 1-270 days). By days lost, the most severe injuries were fractures and concussions/internal injuries. The single amputation reported had loss of only seven days, suggesting that it was not a major injury.

The most common injuries (open wounds, sprains and strains, etc.) had the median time-loss of 7-8 days.

Type of injury	Males			Females		
	No. of injuries	Median days lost	IQR	No. of injuries	Median days lost	IQR
Superficial or open wound	391	7	3-14	24	5	3-7
Strain or sprain dislocation	125	8	4-30	1	20	-
Unclassified	60	5	2-13	-	-	-
Burn or scald	23	5	2-30	-	-	-
Concussion or internal injury	22	20	15-60	-	-	-
Fracture	14	60	7-90	-	-	-
Amputation	1	7	-	-	-	-
Total	637	7	3-15	25	5	3-7

IQR=Interquartile range

#### *Medical attention and cost*

Of the 662 persons who reported time-loss due to injuries, 645 (97%) sought medical attention. Table 23 shows who paid the expenses for medical treatment (the sum of doctors' fees, drug costs, and related transportation costs) by employment status. The table also shows that the individuals paid the entire cost (90% of the time); even for those who had an employer, their medical costs were paid by the employer in only 17% of the time.

Who paid medical expenses	Employment status				Total
	Employee	Employer	Self-employed	Not classifiable	
Self	38	17	412	113	580
Others	1	1	29	8	39
Employer	9	0	4	4	17
Self and employer	4	0	2	2	8
Total	52	18	447	127	644

The median overall cost of treatment for time-loss due to injuries was Tk 550 (range Tk 0-50,500). This was equivalent to approximately US\$ 8 in 2010.

Table 24 and 25 show the costs of injuries by type of injury and by body part affected respectively. The most costly injuries were fractures and internal injuries/concussions. These two were associated with the highest costs of medical treatment, medication costs, and transportation costs. 'Unspecified' injuries were also costly; gathering information on what these injuries are through improved coding would be helpful in future studies. We also observed that head and back injuries were most costly (again in all three sub-categories of expenditure).

The low cost associated with the amputation injury should be viewed cautiously as we did not know the severity of the event but based on associated time-loss, it would be assumed that it was not a major injury.

Type of injury	No.	Physician		Medication		Transportation		Total cost	
		Me-dian	Range	Me-dian	Range	Me-dian	Range	Me-dian	Range
Fracture	16	450	0-6,000	7,579	60-43,000	300	0-5,500	4,275	60-50,500
Unspecified	55	150	0-15,000	5,916	42-80,000	50	0-10,000	2,000	0-34,500
Concussion or internal injury	23	200	0-2,000	5,693	200-25,000	100	0-5,000	4,000	216-32,000
Strain, sprain, or dislocation	131	60	0-15,000	3,638	20-80,000	50	0-8,888	1,230	20-39,000
Burn or scald	30	125	0-6,000	1,805	30-8,000	45	0-10,000	1,085	216-32,000
Other	65	0	0-1,000	1,098	0-32,000	45	0-2,000	462	20-16,500
Superficial or open wound	401	0	0-2,000	975	20-12,000	0	0-1,500	400	0-34,500
Amputation	1	0	-	300	300	40	40	340	340-340
Total	722	0	0-15,000	0	0-80,000	0	0-10,000	550	0-50,500

Body part	No.	Physician		Medication		Transportation		Total cost	
		Me-dian	Range	Me-dian	Range	Me-dian	Range	Me-dian	Range
Unknown	10	20	0-1,500	500	200-10,000	10	0-700	520	240-10,500
Head	27	200	0-700	1500	100-15,000	60	0-3,000	1760	100-15,800
Back	5	500	0-2,000	2000	400-20,000	150	0-10,000	2600	400-32,000
Trunk/internal organs	100	20	0-6,000	500	0-43,000	20	0-5,500	600	0-50,500
Upper limbs	230	0	0-2,000	300	0-35,000	0	0-8,888	345	0-39,000
Lower limbs	320	20	0-6,000	500	0-43,000	25	0-10,000	675	0-50,500
Unknown	27	0	0-900	500	60-12,000	0	0-4,000	550	60-16,500
Total	719	0	0-6,000	500	0-4,300	0	0-10,000	550	0-50,500

This pilot study has demonstrated that the existing HDSS infrastructure can be used for estimating the prevalence of occupational injuries. The study also provided an estimate of incidence of occupational injuries in rural Bangladesh and characterized the injury causal factors and economic impact on the injured individuals.

## Participation

A very high rate of participation was anticipated as the study sample was drawn from an existing surveillance sample. However, the original idea that the occupational injury surveillance project could simply be a supplement to the household survey had to be modified as the original recruitment/interview strategy aimed at women who are available at home all the day whereas we needed to contact men.

Despite all the households being the existing participants in the ICDDR,B surveys, there were three refusals (0.1%), who were males; this is consistent with the fact that, in the main ICDDR,B HDSS, the female head of the household participated—therefore, there might be some males who are likely to be dissent but a small fraction. However, the true participation rate was unknown because of the large number of recruitment attempts that were inconclusive.

The pilot study demonstrated a potentially-serious selection bias problem. While the study was conceived to exploit the extant household survey, it was difficult to recruit males who were often absent from the home at the time the data collector visited the home. For 820 males, at least one home-visit was made but at the end of the pilot study (11 weeks), the subject's status could still not be determined. Since the reason for non-participation was not known, its impact on the results cannot be determined. However, if these subjects were missed due to particular job characteristics (i.e. working far from home, working long hours, or working in specific kinds of jobs), it means that they will be systematically underrepresented in analyses, resulting in skewing the data. This would be most obvious for results, such as 'hours per day worked' but that could impact any analyses, including injury rates, if, for example, we were systematically excluding a specific kind of job category that has a particularly high (or low) injury rate.

Of the 150 women sampled purposively, 120 (80%) were interviewed, emphasizing the gender difference in recruitment. Another problem resulted from this was that it made the possibility of doing weighted analysis (for population estimates) more difficult.

Future surveys must collect more data during the contact attempts. For example, we recorded only 2.5% of foreign migrant workers while the ICDDR,B surveillance (latest data, 2005) estimates 17%. So, it is possible that, of the 820 persons not contacted, a large fraction was foreign migrants but we did not collect data from the household members who were available to verify this.

The timing of interviews—early mornings and evenings—was designed to maximize the likelihood of contacting males. Extra home-visits were also made during Eid to catch those taking time off from work for holidays, especially those internal migrants (working elsewhere in Bangladesh) who return to their villages.

## Demographics

Distribution of injuries by age between males and females was similar, although it appeared slightly less consistent among women likely due to the lower number of females in the study not that because of the exclusion criteria, we could not investigate child labour and injury rates among those aged less than 18 years. Levels of education were diverse; in males, 25% had no schooling (vs 58% of women), and 56% had less than six years of education (vs 87% in women).

## Occupation characteristics of subjects

Overall, the participants were quite stable in their job histories, with 93% of men and 98% of women holding only a single job during the preceding 12 months. The jobs held by the subjects appeared to reflect a rural setting (i.e. ~50% in agriculture or small trade). This sample has, thus, limited representation. There were also very small numbers of participants in some occupations, meaning that the estimates of injuries are likely not very robust.

Other labour jobs (15.5%), service people (11%), and businessmen (10%) were the other main occupation categories. The jobs with the fewest subjects were beggars, garment workers, fishermen, and woodcutters. Future studies should, therefore, be designed to capture a more representative distribution of jobs, although it may also be useful to oversample rarer jobs, especially if they are thought to have an elevated risk of injuries.

The majority (65%) of the participants were self-employed while only 15.5% had an 'employer'. Unfortunately, 14.2% were not classifiable with respect to work arrangement, indicating that there needs to be a reassessment of types of work to reduce this number. The worksites where the subjects worked were generally small—less than six people in 83%, and about 70% had less than 4 employees. This has an important implication for future health and safety interventions as many traditional methods that focus on the large, institutional-type workplace will not be appropriate.

Most (98%) men and women worked seven days a week, and 50% of males worked eight or less hours a day (92% of females) but as mentioned above, this number was likely underestimated due to the recruitment difficulties, i.e. missing those workers who worked very early and/or very late. It is likely that, for many, this is 6.5 days as many will work a half day on Fridays.

## Occupational injuries

We first asked about any injury occurring at work. Over 50% of the participants responded that they had been hurt at work, although not all resulting in loss of earnings; over half of these reported being injured more than once during the past 12 months. The majority (52%) of job types had high levels of reported injuries—most having over 50% of the people who had some form of injury at work during the past 12 months. More than 25% of businessmen and professionals reported injuries. Only six garment workers reported no injuries, and the estimate is, therefore, more susceptible to error.

## Fatalities

Our survey asked two questions relating to fatalities associated with work: occurrence and occupation. Eight (0.4%) households reported one death in the household while in work over the past five years. The resulting rate (75/100,000 person-years) is high compared to the ILO estimate (approximately 3 times the ILO estimates (Hämäläinen *et al.* estimated 21.8/100,000 person-years) but given the small number it is likely not a 'stable' estimate. Also, the heavy weighting of agricultural vs service and industrial jobs in this sample means that the estimate is not representative of national occupation distribution on which the ILO estimate is based. Nevertheless, this is a potentially-alarming figure and is worthy of more investigation. The problem here is recall bias when such a long period (60 months) of recall is required to get sufficient data.

## Time-loss due to injuries

The main emphasis of this pilot study was loss of time due to injuries, whereby an accident in the workplace had resulted in the loss of at least one-day income by a subject. The fact that we

restricted responses to one severe injury per job of a maximum of three jobs held in the past 12 months may mean that there is a slight underestimation in these rates. As mentioned earlier, only 7% of men had more than a single job, and only four had held three jobs.

Approximately one-third of the subjects (but one-third of males and one-fifth of females) reported at least one time-loss injury. In our sample, most injuries occurred among farmers, small traders, and non-agricultural day labourers, mainly reflecting the distribution of jobs. However, other labouring jobs generally gave a higher percentage of injuries than their ranks in job frequency would predict.

The age distribution of those with injuries was similar to the underlying age distribution. We did not see any increase in rates among the young and old-age categories as is sometimes reported, which is presumed to be due to inexperience (for the former) and deteriorating physical condition (for the latter).

Overall, the frequency of occupational injuries (312 per 1,000 person-years) was very high, being 318 for males and 211 for females. Despite the overall difference between sexes, in the one job where there were sufficient numbers for reasonable comparison (small trader), the rates were similar (238 females, 230 males).

The frequency rates by occupation ranged from 0 to 891; woodcutters (891/1,000), fisherman (647), unskilled laborers (511/504), and farmers (437) had the highest rates.

Only available data in Bangladesh with which to compare these findings were the ILO-data-based estimates (11), which suggested a rate of approximately 20,000 per 100,000 (or 200/1,000 using our scale). However, Hämäläinen based their estimates on three-day time-loss injury (so, we would expect their rates to be lower). Our estimates for the entire country were based on one-day time-loss injury and for a largely rural (agricultural) sub-sample which may be expected to have higher than average risk for injury.

We can also compare our data with results of similar household survey studies. In Ghana, Mock *et al.*, using a similar case definition like ours, also found that, in rural areas, the predominant occupation vulnerable to injury was farming (72%) (19). They also found that occupational injuries among males were more common than among females. They further found a striking trend of increasing rates of injuries with increase in age. Overall, the injury rate (44.9/1,000 persons) among rural Ghanaians was lower compared to that in our study (312/1,000). However, farm-related occupations (100.5/1,000), street food vendors (120.6/1,000), and skilled labourers (carpenters and joiners, 198.8) had the highest rate of injuries which is similar to our findings in Mirsarai.

A study by Phung *et al.* in Viet Nam, using the same case definition, found that rates of occupational injuries were considerably lower (overall 7.0/1,000) but again higher in males (10.4) than in females (4.1) (20). Incidence rates—even for farming occupations in Viet Nam—did not rise above 24/1,000. These lower rates may result from having a more mature occupational health and safety infrastructure in that country. These rates are comparable with those of Western countries having established market economies.

Farmers and small traders accounted for 50% of the injuries but the highest injury rates were found among woodcutters and fishermen. In both the cases, open wounds (i.e. cuts), other superficial wounds, and strains, sprains, and dislocations accounted for the majority of injury types. Open wound injuries were consistent with what we know about work practices in rural Bangladesh (use of knives/scythes) but we could not be certain as we lacked information on the causal 'agent'.

## Severity of injuries

The severity of injuries, in terms of time-lost per million hours worked, was the highest among

woodcutters at just over 8,000 hours. This was followed by permanent servants (3,977), agricultural day labourers (3,918), non-agricultural day labourers (3,404), and rickshaw-pullers (3,316). The rates for male vs female permanent servant showed some disparity, with males apparently having more serious injuries (5,841/106 for males vs 357/106 for females).

The median number of days lost per injury was 7. The median was given due to the skewed nature of the distribution of this variable.

The median cost was Tk 550 (about US\$ 8), which is a considerable amount, i.e. about one-third of (2003) annual health expenditure for households in Mirsarai (18).

Injury-related time-loss and expense are moderately correlated (Pearson  $r=0.64$ ); thus, those who are suffering from the greatest hardship due to loss of earning are also most likely to pay the most in medical expenditure.

Both injury incidence and severity decreased with increased schooling levels. This is most likely a result of the fact that more hazardous manual jobs are performed by those with the least education (i.e. 71% of rickshaw-pullers had no education vs just 8% of businessmen). Nevertheless, a more sophisticated multiple regression analysis might reveal more complex relationships in the data.

### Pilot study: issues identified

Overall, the strategy of adapting the ILO method to an existing household survey infrastructure worked well. Although all the anticipated benefits were not realized (mostly because we were targeting males and not females), there were still many efficiencies to be gained from the use of the existing infrastructure, including:

- Simplified sampling procedures
- Improved response rates
- Linkable demographic data
- Knowledgeable, well-trained local field workers

During the pilot study, we identified several issues that should be addressed before scaling up of the occupational injury surveillance programmes in Bangladesh.

The occupational injury survey design considered the issue of adding a short module with the existing HDDS, and it was, thus, kept very short. In fact, it was administered separately because working males were targeted. This means that additional questions which had been excluded should be added.

- We may be missing information on some severe injuries; information about injured adults unable to live at home will not have been captured (i.e. those in an institution or hospital) but this number is expected to be very small. It would be possible to add a question to determine if a household has a member in this situation.
- We are missing information on treatment venue (first aid/hospital/medically-trained individual/quack, etc.). This question should be added.
- Missing agent of injury (what agent acted to cause the injury, i.e. car/machine/knife). This question should also be added.
- Improve recruitment of males; it may be possible to improve the rate of participation of males if changes are made to the recruitment strategy, including change in timing, change in locations (target workplace if it can be located) or go to social sites, e.g. mosques.
- To improve the documentation about 'missing' subjects, secondary questions for a proxy should be devised.
- To reduce the number of 'unclassified' answers, we need to review the coding schemes.



## CONCLUSIONS

The standard occupational injury of the ILO survey questionnaire was successfully adopted for use within the HDSS of ICDDR,B. The overall injury rates were very high but results need to be evaluated in a larger sample in different geographic and economic activity areas, particularly industrial activities. Once recommended modifications are made, the survey is ready to be scaled up. Interventions will be challenging as most rural workers examined were self-employed or have been working in the informal sector or in very small workplaces.

## RECOMMENDATIONS

Based on the findings of the study, the following recommendations are made:

- Make modifications to the occupational injury survey as noted.
- Scale up to include other geographic regions to ensure more representative distribution of economic activities in the country [may use other ICDDR,B surveillance areas or others, such as Centre for Injury Prevention Research, Bangladesh (CIPRB)].
- Given the very high rates of injuries, begin intervention programmes as soon as possible.

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## Survey (Bangla version)

## পেশাগত দুর্ঘটনাজনিত কারণ-সংক্রান্ত প্রশ্নাবলী

a) গত এক বছরের মধ্যে আপনি কত ধরনের কাজ করেছেন বা করছেন? (নির্দিষ্ট বক্সে কোড করুন)

বর্তমান 1.   তার পূর্বে 2.   তারও পূর্বে 3.

1. কৃষক 2. কৃষি দিনমজুর 3. অকৃষি দিনমজুর 4. মিল/কারখানা শ্রমিক 5. দক্ষ শ্রমিক 6. নৌকার মাঝি 7. জেলে  
8. চাকুরীজীবী 9. ব্যবসায়ী 10. ক্ষুদ্র ব্যবসায়ী 11. গার্মেন্টস শ্রমিক 12. রিক্সা/ভ্যান চালক 13. ভিক্ষুক 14. গৃহিণী  
15. স্থায়ী চাকর/গৃহকর্মী 16. পেশাজীবী 17. মটরযান চালক (ট্রাক, বাস, লরি, ট্রাকটর, সিএনজি, ইত্যাদি) 18.  
কার্টুরিয়া 19. অন্যান্য ধরনের কর্মী .....(উল্লেখ করুন)

b) কাজের ধরন (নির্দিষ্ট বক্সে কোড করুন)। 1.  2.  3.

1. চাকুরীজীবী 2. মালিক (চাকুরীদাতা) 3. স্ব-নির্বাহী কর্মী 4. উৎপাদক সহযোগী সদস্য 5. পারিবারিক কর্মী হিসেবে  
অবদান রাখে এমন লোক 6. অশ্রেণীভুক্ত/শ্রেণীভুক্ত নয় এমন কর্মী .....(উল্লেখ করুন)

c) আপনিসহ যে কাজ করেছেন বা করেছেন ঐ কর্মস্থাপনা/প্রতিষ্ঠানটিতে কত লোক সেই কাজ করেন  
বা করতেন তা সংখ্যায় লিখুন (আনুমানিক)

1.     2.     3.

d) কত মাস/দিন ধরে উক্ত কাজের সঙ্গে যুক্ত ছিলেন/আছেন?

1.     2.     3.      
মাস দিন মাস দিন মাস দিন

e) উক্ত কর্মস্থাপনা/প্রতিষ্ঠানটিতে আপনি সচরাচর সপ্তাহে কতদিন এবং দৈনিক কত ঘণ্টা কাজ  
করেন বা করতেন ?

1. বর্তমান 

দিন
<input type="text"/>

ঘণ্টা
<input type="text"/>

2. তার পূর্বে 

দিন
<input type="text"/>

ঘণ্টা
<input type="text"/>

3. তারও পূর্বে 

দিন
<input type="text"/>

ঘণ্টা
<input type="text"/>

2. গত এক বছরে আপনি আপনার কর্মস্থলে কতবার দুর্ঘটনায় আঘাত পেয়েছেন (যেমন আপনার কাজের সাথে সংশ্লিষ্ট অবস্থায় এমন কোনো ঘটনা ঘটেছে যার ফলে আপনি আহত বা অসুস্থ হয়েছেন)?

নির্দিষ্ট বক্সে কোড করুন।

(যদি দুর্ঘটনায় আঘাত না পেয়ে থাকেন তবে skip করে 15 নং প্রশ্নে যান)

3. a) কখন সবচেয়ে মারাত্মক (বেশি সময় কর্মস্থলে আসা কিংবা না-আসা) দুর্ঘটনাগুলো ঘটেছে (সন/মাস)।

		সন		মাস
1.	বর্তমান	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		<input type="text"/> <input type="text"/>
		সন		মাস
2.	তার পূর্বে	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		<input type="text"/> <input type="text"/>
		সন		মাস
3.	তারও পূর্বে	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		<input type="text"/> <input type="text"/>

(3.a যদি কোড করা হয়, তাহলে 3.b প্রযোজ্য নয়, সেক্ষেত্রে 3.b তে 88 কোড করুন)

- b) কখন (সাধারণ) দুর্ঘটনাগুলো ঘটেছে?

		সন		মাস
1.	বর্তমান	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		<input type="text"/> <input type="text"/>
		সন		মাস
2.	তার পূর্বে	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		<input type="text"/> <input type="text"/>
		সন		মাস
3.	তারও পূর্বে	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		<input type="text"/> <input type="text"/>

4. কোনো পেশায় নিয়োজিত থাকা অবস্থায় আপনি কর্মস্থলে দুর্ঘটনায় আঘাতপ্রাপ্ত হয়েছেন? (নির্দিষ্ট বক্সে কোড করুন)

1.  2.  3.

1. কৃষক 2. কৃষি দিনমজুর 3. অকৃষি দিনমজুর 4. মিল/কারখানা শ্রমিক 5. দক্ষ শ্রমিক 6. নৌকার মাঝি 7. জেলে 8. চাকুরীজীবী 9. ব্যবসায়ী 10. ক্ষুদ্র ব্যবসায়ী 11. গার্মেন্টস শ্রমিক 12. রিক্সা/ভ্যান চালক 13. ভিক্ষুক 14. গৃহিণী 15. স্থায়ী চাকর/গৃহ কর্মী 16. পেশাজীবী 17. মটরযান চালক (ট্রাক, বাস, লরি, ট্রাকটর, সিএনজি, ইত্যাদি) 18. কার্হুরিয়া 19. অন্যান্য ধরনের কর্মী .....উল্লেখ করুন)

5. যখন দুর্ঘটনাটি ঘটেছিল তখন আপনি কোথায় ছিলেন? (নির্দিষ্ট বক্সে কোড করুন)

1.  2.  3.

1. সাধারণত আপনি যে কর্মস্থলে কাজ করেন সেখানে 2. কর্মস্থলের অন্য কোথাও 3. সাধারণত/সচরাচর আপনি যে এলাকায় কাজ করেন সেটা আপনার কর্মস্থাপনা থেকে দূরে/নির্দিষ্ট কোনো কর্ম এলাকা নেই (যেমন ধরুন, লরি ড্রাইভার, ট্যাক্সি ড্রাইভার, ভ্রাম্যমান বিক্রেতা, নির্মান শ্রমিক) 4. কাজের সাথে সম্পৃক্ত কোনো ভ্রমণ 5. অন্যান্য ..... (উল্লেখ করুন) 6. জানা নেই

6. আপনার দেহের কোন অংশ ক্ষতিগ্রস্ত হয়েছিল? নির্দিষ্ট বক্সে কোড করুন।

- |                |                          |                          |                          |
|----------------|--------------------------|--------------------------|--------------------------|
| 1. বর্তমান     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. তার পূর্বে  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. তারও পূর্বে | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

1. মাথা 2. গলা 3. পিছনের দিক/অংশ 4. হাত, পা অথবা দেহের ভিতরের কোনো অঙ্গ ভেঙ্গে যাওয়া বা আঘাতপ্রাপ্ত হওয়া (পাঁজরের হাড়, হাত-পা, মাথার কোনো অংশে, যৌনঙ্গের বাইরের অংশে আঘাত লাগা বা জখম হওয়া) 5. দেহের উপরের অংশে আঘাত পাওয়া (কাঁধ/ঘাড়, হাতে, বাহুতে) 6. দেহের নিচের অংশে আঘাত পাওয়া (কোমর, পায়ের, পায়ের পাতায়) 7. সমস্ত শরীর অথবা শরীরের বিভিন্ন অংশে সংক্রমণ হওয়া (উদাহরণস্বরূপ বলা যায়, বিষক্রিয়া অথবা সংক্রমণ) 8. অন্যান্য ..... (উল্লেখ করুন). 9. জানা নেই

7. আপনি কী ধরনের আঘাত পেয়েছিলেন? নির্দিষ্ট বক্সে কোড করুন।

- |                |                          |                          |                          |
|----------------|--------------------------|--------------------------|--------------------------|
| 1. বর্তমান     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. তার পূর্বে  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. তারও পূর্বে | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

1. সামান্য/দৃশ্যমান আঘাত 2. হাড় ভেঙ্গে যাওয়া বা ফেটে যাওয়া 3. হাড় ভেঙ্গে স্থানচ্যুত হয়ে যাওয়া, মচকানো বা হাড়ে টান লাগা বা চোট লাগা 4. শরীরের কোনো অঙ্গ কেটে ফেলা বা অঙ্গহানি হওয়া 5. মাথায় প্রচণ্ড আঘাতের ফলে অজ্ঞান হয়ে যাওয়া, অথবা দেহের ভেতরে কোনো স্থানে আঘাতপ্রাপ্ত হওয়া 6. পুড়ে যাওয়া, ক্ষত হওয়া, ফোসকা পড়ে উপরের চামড়া চলে যাওয়া 7. তীব্র বিষক্রিয়া বা সংক্রমণ সৃষ্টি হওয়া 8. অন্যান্য ..... (উল্লেখ করুন)

8. কিভাবে দুর্ঘটনা ঘটেছিলো/অথবা আপনি কিভাবে আঘাতপ্রাপ্ত বা আহত হয়েছেন (নির্দিষ্ট বক্সে কোড করুন)।

1.  2.  3.

1. বিদ্যুৎ প্রবাহের সংস্পর্শে আসার কারণে 2. উচ্চ/অতিরিক্ত তাপমাত্রার সংস্পর্শে আসার কারণে 3. ঝুঁকিপূর্ণ কোনো বস্তু বা পদার্থের সংস্পর্শে আসার কারণে 4. কোনো কিছুতে ডুবে গিয়ে, কোনো গর্তে আটকে পড়ে শ্বাস নিতে না পারার কারণে 5. উপর থেকে পড়ে গিয়ে অথবা কোনো কিছু ভেঙ্গে পড়ে আঘাতপ্রাপ্ত হওয়া 6. কোনো কিছুর দ্বারা আঘাতপ্রাপ্ত হওয়া 7. কোনো কিছুর সাথে সংঘর্ষ বা ধাক্কা লেগে আঘাত পাওয়া 8. ধারালো/তীক্ষ্ণ/অসমতল, অমসূন/মোটা, অসূক্ষ্ম কোনো বস্তুর সংস্পর্শের ফলে আঘাত পাওয়া 9. কোনো জায়গায় বন্দী হওয়া 10. দেহে অতিরিক্ত চাপ অনুভব করা 11. কোনো কিছুর কামড়ে আক্রান্ত হওয়া, কারো লাথির দ্বারা আঘাতপ্রাপ্ত হওয়া 12. অন্যান্য ..... (উল্লেখ করুন)

9. একই ধরনের দুর্ঘটনায় আপনিসহ আর কতজন আহত/আঘাতপ্রাপ্ত হয়েছেন (না হলে skip করে Q.10-এ যান)

সংখ্যায় উল্লেখ করুন 1.  2.  3.

10. আপনি কি এমন কোনো আঘাত পেয়েছিলেন যার ফলে আপনি দুর্ঘটনার দিন থেকে কমপক্ষে একদিন কাজ করতে অক্ষম ছিলেন বা কাজ করতে পারেন নি? (10 নং প্রশ্ন উত্তর যদি না হয়, তাহলে skip করে 11.b তে যান)।

1.  2.  3.

(হ্যাঁ হলে 1 কোড করুন, না হলে 2 কোড করুন)

11. a) যদি হ্যাঁ হয় তাহলে সেই দুর্ঘটনার বা অসুস্থতার কারণে আপনি কতদিন কাজ করতে অক্ষম ছিলেন বা কাজ করতে পারেন নি ?

1.  2.  3.

(হ্যাঁ হলে 11.b. নং প্রযোজ্য নয়)

b) যদি না হয় তাহলে কোনো দুর্ঘটনা কি আপনার স্বাভাবিক কার্যকলাপকে সীমিত করেছিলো/বাধাগ্রস্ত করেছিলো, যার ফলে দুর্ঘটনা বা অসুস্থ হওয়া সত্ত্বেও আপনি আপনার কাজে উপস্থিত ছিলেন?

1.  2.  3.

(হ্যাঁ হলে 1 কোড করুন, না হলে 2 কোড করুন)

12. a) যদি আপনি আপনার কাজে যোগ দিয়ে থাকেন বা ফিরে থাকেন তাহলে আপনি কি দুর্ঘটনার সময় যে কাজ করতেন সে একই কাজে ফিরেছেন/যোগ দিয়েছেন?

1.  2.  3.

(হ্যাঁ হলে 1 কোড করুন, না হলে 2 কোড করুন এবং 12.b প্রশ্নে যান )

b) যদি না হয়, তাহলে কেন? 1 ..... উল্লেখ করুন   
2 ..... উল্লেখ করুন   
3 ..... উল্লেখ করুন

c) যদি না হয় আপনি কি মনে করেন আপনার পূর্বের কাজ করতে অথবা অর্থনৈতিক কর্মকাণ্ড পুনরায় চালিয়ে যেতে আপনি শারীরিকভাবে সক্ষম (পূর্বের কাজে বা অর্থনৈতিক কর্মকাণ্ডে ফিরে আসুন বা না আসুন)?

1.  2.  3.

d) (সক্ষম হলে 1 কোড করুন, অক্ষম হলে 2 কোড করুন এবং 12.d প্রশ্নে যান)

যদি না হয়, তাহলে কেন? 1 ..... উল্লেখ করুন   
2 ..... উল্লেখ করুন   
3 ..... উল্লেখ করুন

13. a) দুর্ঘটনার জন্য অসুস্থতার কারণে আপনি কি কোনো চিকিৎসা করেছিলেন?

1.  2.  3.

(হ্যাঁ হলে 1 কোড করুন, না হলে 2 কোড করুন এবং 15 নং প্রশ্নে যান)

b) হ্যাঁ হলে চিকিৎসা খরচ কে বহন করেছিল? নির্দিষ্ট বক্সে কোড করুন।

1.  2.  3.

1. প্রতিষ্ঠান 2. নিজে 3. উভয়ে (প্রতিষ্ঠান+নিজে) 4. অন্যান্য .....

14. চিকিৎসা বাবদ খরচের প্রশ্নাবলী:

a) ডাক্তার দেখানো বাবদ কত খরচ হয়েছে? 1) .....টাকা 2) ..... টাকা 3) .....টাকা

b) ঔষধ বাবদ কত খরচ হয়েছে? 1) .....টাকা 2).....টাকা 3) .....টাকা

c) যাতায়ত ও অন্যান্য খরচ 1) ..... টাকা 2) .....টাকা 3).....টাকা

15. a) গত পাঁচ বছরে আপনার পরিবারের/ঘরের কোনো সদস্যের কি কর্মক্ষেত্রে দুর্ঘটনার কারণে মৃত্যু হয়েছে?

(হ্যাঁ হলে 1 কোড করুন, না হলে 2 কোড করুন)

(যদি না হয়, তাহলে সাক্ষাতকার এখানে শেষ করুন এবং 15.b. বক্সে প্রযোজ্য নয় 88 কোড লিখুন)

b) এই সময়ে একই কারণে যার মৃত্যু হয়েছিল তার পেশা কী ছিলো?

(পেশা দেখে বক্সে কোড উল্লেখ করুন)

1. কৃষক 2. কৃষি দিনমজুর 3. অকৃষি দিনমজুর 4. মিল/কারখানা শ্রমিক 5. দক্ষ শ্রমিক 6. নৌকার মাঝি 7. জেলে  
8. চাকুরীজীবী 9. ব্যবসায়ী 10. ক্ষুদ্র ব্যবসায়ী 11. গার্মেন্টস শ্রমিক 12. রিক্সা/ভ্যান চালক 13. ভিক্ষুক  
14. গৃহিণী/গৃহকর্মী 15. স্থায়ী চাকর/গৃহকর্মী 6. পেশাজীবী 17. মটরযান চালক (ট্রাক, বাস, লরি, ট্রাকটর, সিএনজি, ইত্যাদি) 18. কার্টুরিয়া 19. অন্যান্য ধরনের কর্মী ..... উল্লেখ করুন)

সাক্ষাতকার প্রদানের জন্য আপনাকে অনেক ধন্যবাদ।

সাক্ষাতকার গ্রহণকারীর নাম: ..... তারিখ: .....



## Occupational Injury Questionnaire

Upazila: ..... Union: ..... Mouza/Village: .....

Bari name: ..... Household # .....

ID # ..... PID # .....

Name of respondent: ..... Age: .....

Father's/Husband's name: .....

Total family members: .....

**APPENDIX B**

**Survey (English version)**

**Occupational injury questions**

1. (a) How many different jobs or economic activities (that is, work for wages, salary, profit, or family gain, in cash or in kind) have you done in the last 12 months?

Current i)  Immediate past ii)  Before immediate past iii)

**Occupational Group Codes (ICDDR,B-HDSS)**

1. Farmer 2. Agriculture day labourer 3. Non-agriculture day labourer 4. Mill/factory worker 5. Skilled labourer 6. Boatman 7. Fisherman 8. Service Holder 9. Businessman 10. Small trader 11. Garments worker 12. Rickshaw-puller/van-puller 13. Beggar 14. Household work 15. Bonded labour 16. Professional 17. Driver (truck/bus/lorry/tractor/autorickshaw), 18. Woodcutter 19. Other type \_\_\_\_\_

(b) Nature of Job (Code appropriate box) i)  ii)  iii)

**For each job, please code status in employment**

1. Employee 2. Employer 3. Own-account worker 4. Member of producers' cooperative 5. Contributing family worker 6. Worker not classifiable \_\_\_\_\_ specify

(c) How many people, including yourself (estimated), were employed (workplace/work establishment/organization) you work/worked?

i)  ii)  iii)

(d) How long you are/were involved in that work?

i)   M D ii)   M D iii)   M D

(e) How many hours in a week you work/worked in that workplace/work establishment/organization?

	Days	Hours/day
i) Previous	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
	Days	Hours/day
ii) Immediate past	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
	Days	Hours/day
iii) Before immediate past	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>

2. In the last 12 months, how many times have you been hurt in an occupational accident (that is, an unexpected event that happened at work or in connection with your work and that caused you personal injury or illness)?

Code 0 if there is none, otherwise code exact number of times  
(If there is no injury, code 00 and skip to Question No. 15)

3. (a) When did most severe (work which required most time off or if no time off, the most serious injury) accident happen? (month/year).

	Year	Month
i. Current	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
	Year	Month
ii. Immediate past	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
	Year	Month
iii. Before immediate past	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>

(If you code 3a then 3b is inapplicable and code 88)

(b) When did the injury occur?

	Year	Month
i. Current	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
	Year	Month
ii. Immediate past	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
	Year	Month
iii. Before immediate past	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>

4. What was your occupation at the time of accident in your workplace?

	Year	Month
i. Current	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
	Year	Month
ii. Immediate past	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
	Year	Month
iii. Before immediate past	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>

#### Occupational Group Codes (ICDDR,B-HDSS)

1. Farmer 2. Agriculture day labourer 3. Non-agriculture day labourer 4. Mill/factory worker 5. Skilled labourer 6. Boatman 7. Fisherman 8. Service holder 9. Businessman 10. Small trader 11. Garments worker 12. Rickshaw-puller/Van-puller 13. Beggar 14. Household work 15. Bonded labour 16. Professional 17. Driver (truck/bus/lorry/tractor/auto rickshaw) 18. Woodcutter 19. Other type

5. Where were you when the accident took place? (Code appropriate box)

i.       ii.       iii.

1. In your usual work area 2. Somewhere else in the unit 3. In your usual work area away from the establishment/no fixed work area (e.g. for lorry driver, taxi driver, travelling salesman, construction worker) 4. On work-related travel 5. Or somewhere else \_\_\_\_\_  
\_\_\_\_\_ (specify) 6. Not known

## 6. Which body part was affected?

- i. Current
- ii. Immediate past
- iii. Before immediate past

1. Head 2. Neck 3. Back 4. Trunk or internal organs 5. Upper extremities 6. Lower extremities  
7. Whole body of multiple sites 8. Not known

## 7. What type of injury did you receive?

- i. Current
- ii. Immediate past
- iii. Before immediate past

## 8. How did the injury occur?

- i.  ii.  iii.

1. Contact with electric voltage 2. Contact with temperature extreme 3. Contact with hazardous substance 4. Drowning, buried 5. Fell or crashed into something 6. Struck by something 7. Collided with something 8. Came into contact with sharp/pointed/rough/coarse element 9. Trapped, crushed 10. Suffered acute overloading of body 11. Received bite, kick 12. Other \_\_\_\_\_ (specify)

## 9. How many others were injured in the same accident?

- i.  ii.  iii.

## 10. Did any of the injuries you received result in you being unable to work, for at least one day, apart from the day of the accident?

- i.  ii.  iii.

If Yes, code 1 in appropriate box. If No, code 2 (If the code is 2, skip to 11b)

## 11. (a) If yes, how many calendar days (were you/have you been) away from work or unable to work because of the injury?

- i.  ii.  iii.

(If Yes, 11b is inapplicable)

## (b) If not, did any of the injuries restrict your work-activities as a result of the injury although you were not absent from work?

- i.  ii.  iii.



(b) What was his/her occupation at the time of death

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**Occupational Group Codes (ICDDR,B-HDSS)**

1. Farmer 2. Agriculture day labourer 3. Non-agriculture day labourer 4. Mill/factory worker 5. Skilled labourer 6. Boatman 7. Fisherman 8. Service holder 9. Businessman 10. Small trader 11. Garments worker, 12. Rickshaw-puller/Van-puller 13. Beggar 14. Household work 15. Bonded labour 16. Professional 17. Driver (truck/bus/lorry/tractor/auto rickshaw), 18. Woodcutter, 19. Other type

THANKS FOR THE INTERVIEW

\_\_\_\_\_  
Interviewer's name

\_\_\_\_\_  
Date

## Codes used in survey responses

### Employment status

#### *Status in employment codes (ICSE-1993)*

- (a) *Employer*: A person who operates his or her own economic enterprise, or engages independently in a profession or trade, and hires one or more employees. Some countries may wish to distinguish among employers according to the number of persons they employ.
- (b) *Own-account worker*: A person who operates his or her own economic enterprise, or engages independently in a profession or trade, and hires no employees.
- (c) *Employee*: A person who works for a public or private employer and receives remuneration in wages, salary, commission, tips, piece-rates, or pay in kind.
- (d) *Unpaid family worker*: Usually a person who works without pay in an economic enterprise operated by a related person living in the same household. Where it is customary for young persons, in particular, to work without pay in an economic enterprise operated by a related person who does not live in the same household, the requirement of “living in the same household” may be eliminated. If there is a significant number of unpaid family workers in enterprises, of which the operators are members of a producers’ cooperative who are classified in category (e), these unpaid family workers should be classified in a separate subgroup.
- (e) *Member of producers’ cooperative*: A person who is an active member of a producers’ cooperative, regardless of the industry in which it is established. Where this group is not numerically important, it may be excluded from the classification, and members of producers’ cooperatives should be classified under other headings, as appropriate.
- (f) *Persons not classifiable by status*: Experienced workers whose status is unknown or inadequately described and unemployed persons not previously employed (i.e. new entrants). A separate group for new entrants may be included if information for this group is not already available elsewhere.

#### *Type of injury (based on ICD-10)*

- a. Superficial injury
  - a. Abrasions, blisters (non-thermal), contusions, puncture wounds (with major open wounds), insect bites (non-venemous)
  - b. Open wounds (including cuts, laceration puncture wounds (with penetrating foreign body), animal bites)
- b. Fracture
  - a. Closed fractures
  - b. Open fractures
  - c. Other fractures (dislocated, displaced)
- c. Dislocation, sprain, strain
  - a. (including avulsions, lacerations, sprains, strains, traumatic haemarthroses, ruptures, subluxations and tears of joints and ligaments)
  - b. Dislocations and subluxations
  - c. Sprains and strains
- d. Amputation
  - a. (including traumatic enucleation of the eye)

- e. Concussion, internal injury
  - a. (including blast injuries, bruises, concussion, crushing lacerations, traumatic haematoma, punctures, ruptures and tears of internal organs)
- f. Burn, corrosion, scald
  - a. Burns (thermal) (including from electrical heating appliances, electricity, flames, friction, hot air and hot gases, hot objects, lighting, radiation)
  - b. Chemical burns (corrosions)
  - c. Scalds
- g. Acute poisoning or infection
  - a. Acute poisonings (acute effects of the injection, ingestion, absorption or inhalation of toxic, corrosive or caustic substances, including toxic effects of contact with venomous animals)
  - b. Infections (including intestinal infectious diseases, specified zoonoses, protozoal diseases, viral diseases, mycoses)
- h. Other (specify)
  - a. Effects of radiation
  - b. Effects of heat and light
  - c. Effects of air pressure and water pressure
  - d. Asphyxiation
  - e. Effects of maltreatment (including physical abuse, psychological abuse)
  - f. Effects of lightning (shock from lightning, stuck by lightning not otherwise specified)
  - g. Drowning and non-fatal submersion
  - h. Effects of noise and vibration (including acute hearing loss)
  - i. Effects of electric current (electrocution, shock from electric current)
  - j. Other (specify)

#### *Mode of injury*

- a. Contact with electric voltage  
Person came into contact with electricity and received shock or burn
- b. Contact with temperature extreme  
Person experienced extreme hot or cold without necessarily having come into contact with an object or touching something
- c. Contact with hazardous substance  
Person came into contact with some kind of chemical or biological substance (gas, liquid, solid, powder) that may have been inhaled through the nose or mouth (e.g. fumes, gas, dust), or ingested by eating or drinking, or was exposed to (e.g. by splashing) and suffered through eye or skin contact with it
- d. Drowning, buried  
Person was prevented from taking in oxygen by immersion in a liquid, or buried under or enveloped by a substance (solid or gas)
- e. Fell or crashed into something  
Person was moving either horizontally (on the same level) or vertically (up or down) and object causing the injury (onto which the person fell or crashed) was stationary



- f. Struck by something  
Person was stationary and the object was moving (e.g. flying through the air, falling from a height, running or rolling along the ground, suspended and swinging like a pendulum, or on a spring)
- g. Collided with something  
Both the person and the object were moving in the same or opposite directions)
- h. Came into contact with sharp/pointed/rough/coarse element  
Neither the person nor the object were in motion; the person was injured because a knife or tool, etc. slipped
- i. Trapped, crushed  
Person was caught in or squeezed by something moveable, or squashed under something or crushed between objects; it was this force (weight, size, pressure, speed) of the object that caused the injury
- j. Suffered acute overloading of body  
Person suffered severe overloading of muscles, joints, and organs or tissue due to excessive turning movements, external physical agents (noise, radiation, friction) or trauma (shock)
- k. Received bite, kick  
Person was bitten, hit or kicked by a human being or animal, or stung by a poisonous insect or fish
- l. Other (specify)

## Case studies

To help the reader understand the nature of occupational injury in Mirsarai, we present six case studies that describe the injury event and its treatment and impact on the victim and their families.

### 1. Road traffic accident

Mr. Sujit Datta is 45 years old. He is a resident of Gopalpur village under Durgapur union. His spouse is a housewife. He has a son and two daughters. In addition to his family, he also takes care of his parents and four brothers and four sisters. He served as a driver in the Middle East and was serving as a bus driver since 1991 on the Chittagong-Sylhet route and Baroiyarhat-Feni and on the Dhaka-Chittagong Highway.

On 27 February 2008, he was carrying a bridal party from Aburhat to Chandpur on the Dhaka-Chittagong highway. On the following morning, while returning back to Aburhat with the same bridal party, his bus skidded when he allowed another bus from behind to overtake and rammed into two trees. The steering wheel of his bus broke, and he was trapped with the steering wheel of the bus. Although none of the passengers of the bus was injured, he was severely injured and remained unconscious for some time. The lower portion of the body from his waist down was numb. Both of his knees were injured but accrued multiple fractures in his right knee. He bled severely from his both knees. He was crying for help to pull him out from the driving seat. The assistant of the bus received minor injury. He and his assistant were shifted to a clinic near Comilla town by an auto-rickshaw. There was no doctor at that early morning. A paramedic bandaged both the knees. Then he reached the Mirsarai Upazila Health Complex (UHC) by an auto-rickshaw. The doctor of the UHC referred him to the Chittagong Medical College Hospital (CMCH). He reached the CMCH in an ambulance at 3.00 pm. A surgery was conducted from 5 to 7 pm. After surgery, the bleeding from his knees continued. A rod has been used for joining the bones of his right knee. He stayed in the CMCH for 27 days. After release from the CMCH, he made follow-up visits four days a week. After a month, he visited hospital 2-3 times every two weeks, then once every three months. He has spent almost Tk 100,000 for his treatment. After one year, he will have to go for another surgery/operation to remove the rod from his leg. He was unable to walk for the last eight months, and he used crutches for walking. Now, he can walk well without a crutch.

Mr. Sujit spent a large portion of his accumulated savings for his treatment. He received some financial support from his father and father-in-law. He also borrowed money from his well-wishers to cover his treatment-related expenditure. He was unable to drive a bus for about 10 months; so, his economic condition is very miserable. His family members passed many days without a meal. Due to his last accident, the bus owners don't want to give him a bus to drive. At present, he is in debt, and there is no peace in his family. Again he has begun to driving a bus. He feels weak and can't drive more than three hours. If he drives for a long time, his body trembles, and his palpitation increases. He feels pain while walking and seems to feel mentally weak. He feels that he may become a patient of heart disease. At present, he has no cash to start a small business or do any alternative work.

### 2. Consequence of road traffic accident

Md. Sobuj Mia aged 24 years, is a resident of Hajishorai village under Durgapur union. He is unmarried. His father is a farmer, and he cultivates other's land as a share-cropper and looks after his own cattle. He has been employed with the Power Supply Division of the Security Department of the Power Development Board in Chittagong since December 2004. Since he was not a permanent

employee, he works as an electrician after office hours to support his income of small salary of contractual job and support the family.

On 25 September 2009 at 5 pm of Friday, he was going to Halishar by a rickshaw after his office duties. His rickshaw was hit by a city bus, he fell down on the road, and a running auto-rickshaw ran over his two legs. The bone of his right ankle was displaced, and there was bleeding from the left toe due to injury. He could not stand or walk. He felt that he would not be able to walk forever. Within a short time, there was a big crowd around the place of occurrence. Some passerby shifted him out of the busy road. In this situation, he was crying due to pain and frightened. After that, he called one of his office colleagues by mobile phone, and the colleague came very quickly. He went to the private Chittagong Metropolitan Hospital (CMH) with his colleague and underwent treatment of orthopaedics. The orthopaedics provided first-aid and advised for an x-ray of his both ankles based on the x-ray report, his two ankles were reset. He was put on plaster on his both legs and necessary medication. The physicians suggested him for follow-up within one week of treatment. He stayed in his relative's house for one week which was very close to the CMH. During the treatment period, he had to come to the CMH for follow-up treatment three days a week. Now, he goes to the CMH every month for follow-up treatment and advice. He has already spent approximately Tk 30,000 from his accumulated savings for his treatment. He had to borrow money from his relatives and close well-wishers and to maintain treatment-related expenditure. An officer of the PDB provided him with some financial support. His family suffered major difficulties due to his accident. He passed those days with difficulties. By being the eldest son and the only earning member of his family, there was none to help him. He could not contribute money to serve his family for many days.

He went to the office after one week of the accident but could not perform his duty and sat down in the office premises without work. He requested one of his colleagues to do his duty so that he could get his salary. He requested the high officials, supervisors, and his colleagues to help him on this ground. At present, his health is well but feels pain while walking or moving. He always feels uneasy and unable to move freely. He also feels weak and believes it was caused due to heavy bleeding from the body during that accident. He cannot perform heavy work. He has joined his duties on 7 November 2009. The orthopedics advised him for light exercise. He now takes calcium and vitamins to maintain flow of blood in veins and sub-veins. He wishes that he will recover and perform his duties same as before.

### 3. Small traders

Saleh Ahmed, aged 48 years, lives at Mobarokghona. He has two sons and two daughters. His elder son lives at United Arab Emirates (UAE) for the last 17 months for his job. The friend of his elder son borrowed money to buy work permit of UAE which is to be returned in two years by installment. Mr. Ahmed has three brothers. His elder brother is paralyzed due to stroke. He is responsible for maintaining this joint family. He runs his paternal betel nut and fruits business in Banglabazar for which he borrowed money from his relatives and obtained loans from Proshika and Banglabazar Unnayan Samity. He stays in his shop from 8 am to 12 noon. He has to repay his loan biweekly and installment monthly from the profit of his business. His current investment for his business is Tk 50,000.

In February 2009, he went to Mohipal under Feni district for buying fruits. After buying fruits, he started for Bariyarhat on an overloaded truck to save money. After crossing the Chagolnaiya Muhuri Bridge, the truck had a collision with another lorry. After collision, he fell down on the left side of the road with his goods, along with some other passengers and was injured in his

right chest. The injury occurred inside his body; so, he could not understand the severity of pain immediately and returned home by another transport. In the night, he felt the pain, which was increasing, could not move his right hand, and felt sweating and problem of breathing. His chest pain increased in the midnight and occurred subluxation and tears. On the following day, he consulted a village doctor at Banglabazar who prescribed some medicines and gave advice. The village doctor treated him for a month but he could not get any comfort. After that, he visited an MBBS doctor at Bariyarhat, who referred him to a chest specialist at Feni. The chest specialist treated him for 15 days but did not get better. During the treatment period, he could not work with his right hand and used his left hand for light work. In this way, he passed two months and by taking pain killers. Finally, he was admitted to Dr. Nurunnabi's clinic in Chittagong and underwent a surgery. After surgery, he stayed in the clinic for three days. He was released from the clinic and was advised to take complete bed rest for 15 days. He spent Tk 30,000-35,000 as treatment-related cost from the business capital. He was unable to work for about a month. He tried to maintain his business by deploying a person but due to lack of supervision he lost a large portion of his business capital.

At present, he leads a simple life and passes his days with great difficulties. His family members are very anxious for him. He now suffers many health-related problems, such as pain in the chest, cannot do heavy work, unable to shout, and feels weak. But he does not inform/share his health-related problems with family members because they are likely to be mentally disheartened. He is the only earning member of his family. He again borrowed money from NGO and has been continuing his business.

#### 4. Sever injury in a sawmill

Mr. Abu Taher, aged 42 years, lives in Purbomayani village under Mayani union. He is the eldest member in the family. All his brothers and sisters have their own family. He never went to a school. His father worked as a labourer in ship. His father had 48 decimal cultivatable lands, which were sold to cover expenditure for the treatment of his father.

Taher has three sons and a daughter. His spouse is a housewife. His elder son is working at a carpenter's shop as an apprentice. His two sons and a daughter are students of a local primary school. He is mainly a non-agricultural day labourer since the last 10 years, he used to carry chopped trees in pieces and loads these in a three-wheeler engine vehicle, known as Nosimon, to take these to a saw mill owned by Mofiz. He also cuts trees in pieces, loads and unloads these in and from the Nosimon and brings these to the saw mill. The saw mill remains closed in the rainy season for one or two months due to the shortage of trees. When the saw mill remains closed, Taher has to find other types of work on a daily basis.

On Thursday of February 2009 (cannot remember the date) at 12 noon, he went to Sheikhpara of Sitakundo to bring timber. He took a big piece of timber on his shoulder to put it on the engine van but slipped resulting in falling the end part of the timber piece on his right chest and waist, and then he fell down to earth. He was having severed pain inside his body and felt numbness of chest bone and waist and was fainted. His co-workers were wondering what to do seeing him unconscious and carried him using a three-wheeler auto-rickshaw to Sitakundo Upazila Health Complex (UHC). The doctor of the health complex pushed him some injections as a first aid. He got his sense back at 3 pm on hospital bed. Although he was lying on the bed but could not move due to intolerable pain. He could move from left or right on the bed but could not move his right hand and right chest and felt quite heavy, with pain in chest and waist. In the mean time, the x-ray of his chest and waist was completed. The doctor examined his x-ray report and prescribed

additional medicines. After taking medicines, he slept at 7 pm at Sitakunda UHC for a night, and on the following day, the doctor referred him to the Chittagong Medical College Hospital (CMCH). He was carried on a three-wheeler auto-rickshaw and was admitted to the orthopaedic department. He was accompanied by his wife and relatives. Another x-ray of his chest and waist was done at the CMCH. The CMCH doctor examined two x-ray reports and told that one bone of the right chest has been broken due to injury inside his right waist and there is also clotting blood. The orthopaedics specialist pressed the broken bone of his chest to set up it on correct position. He was prescribed with lot of tablets and capsules and was advised to follow to the doctor's instructions. The doctor tried to rub/massage on right chest everyday to bring back two injured bones in right place. This way treatment continued for three or four days, and pain in the chest and waist decreased. There was no fracture in his left waist according to the x-ray report. But he felt pain in the left waist, and the pain did not go completely. After seven days he had another x-ray of his chest and waist, and he was released from the CMCH. After release from the CMCH, he could walk slowly. While undergoing treatment in the CMCH, he could not buy medicines as required in due time due to financial crisis. For the reason, the CMCH doctor released him and advised to receive follow-up treatment from an orthopaedic specialist Dr. Hashem in Sitakunda from home with an advice not to do heavy work, not to carry heavy material, and restrict movement of right side of the body. His chest pain increased in two days after returning home. So, he followed the advice of the CMCH doctor and came to Dr. Hashem. Dr. Hashem heard his health condition, examined, and checked the x-ray report. Dr. Hashem provided necessary treatment and advised him to come back to his chamber once a week. He visited Dr. Hashem five times and felt better. He has spent approximately Tk 20,000 for his treatment at the Sitakunda UHC, CMCH, and Hashem's private clinic. He has spent Tk 3,000 from his own savings. His brother-in-law, mother-in-law, and owner of the saw mill loaned him the major portion of his treatment cost. Later, he took loan from the Grameen Bank and continued to refund the borrowed amount. On the other, he has to refund the weekly bank installment, which is now another burden on him.

Since the occurrence of the incidence, he was not able to work for 90 days and had to borrow money to support family expenses. He was unable to buy three kg of rice per day to maintain his family, in addition to fish and meat once a week, and sometimes his children went hungry. His children did not want to eat rice with curry made with other vegetables and potato daily. The expense for his school-going children was affected as he could not buy khata and pencil. His wife looked after a goat he had, and it was finally sold out. Relatives, neighbours and well-wishers scolded him repeatedly for not being careful before an accident. He continued borrowing from many people and felt inferior as many of his neighbours stopped talking to him when he requested for loan from others.

At present, he performs light task, and his co-workers of the saw mill are very sympathetic. He takes pain killer medication after every two days. Dr. Hashem advised him to take pain killer medication for the rest of his life. He does not find same energy as before, feel pain to do something under pressure, does not enjoy any tasks, and feels himself like an aged man. His pain increases if he does light work, especially in the winter season. His children are growing, and he lost his ability of thinking, as there is no alternative without work. On the other hand, creditors are creating pressure to return their money. In this situation, he is passing his days with many difficulties.

## 5. Agriculture day labourer

Mr. Rezaul Kabir, aged 36 years, born at Rajapur village under Mithanala union, had an accident. He is an agricultural day labourer. He never went to school. He has three brothers and two sisters, who are married. His elder brothers are living in their father-in-law's house. Mr. Kabir is unmarried

and works as an agricultural labourer with his younger brother. His younger sister takes care of his mother and performs household work. They had 30 decimal of cultivable land but sold it for his elder sister's marriage.

Throughout the year, he works as an agricultural labourer. It was in December 2008, the season of paddy threshing. He was threshing paddy using his leg near to the home of Aman Uddin Bhuiyan. At 12 noon, one paddy flew and entered into his right eye from the paddy-threshing machine. He tried to take it out from his eye but unsuccessful as it entered deep in his eye. The eye was itching and watering with severe burning sensation. The pain was very intolerable, and a woman of that house tried to bring it out from his eye using her cloth (*sharee*) but failed. She suggested spraying water into the eye but the pain increased. He could not look at sun. He was screaming due to severe pain. The woman again tried to take out the paddy from his eye by pressing his eye. As a result, his eye corner was injured, and there was bleeding. He returned to his home with the help of a household member. After 3 pm, he and his uncle Mr. Shafiul Alam visited an MBBS doctor at Mirsarai, and the doctor gave some eye drop and tried to identify the paddy using a small torch light. But the physician could not find any paddy in his eye and told him that there is no paddy. He prescribed some tablets and expensive eye drop. The doctor told him that, using this medicine, he will recover and advised to wash his eye with water. Kabir used the eye drop and medicine and stayed for two hours in the doctor's chamber, and there was sign of progress. He was squeezing his eye repeatedly. His pain was increasing; so, they did not trust this treatment and went to Baraiyerhat to visit an eye specialist. Unfortunately, on that day, the specialist did not come to his chamber. So, he returned home and passed that night with great difficulties. He could not sleep due to increasing pain and felt that the night is longer than a normal night and used eye drop in every three hours.

On the following morning, he, along with his uncle, went to see Dr. Shamim Chowdhury, an eye specialist in Chittagong at his chamber. Dr. Shamim checked his eye with a lance, washed with liquid medicine, could identify the paddy into his eye, and took it out using a little surgery equipment. The specialist said that the paddy was glued on the upper lid of his eye. So, it was difficult for any general physician to identify it. The specialist washed his eye again and prescribed necessary medicines (tablet, capsule, and eye drop), with an advice not to look at the sun in open eye (directly). He also alerted that the delay in contact could have infected his eye. He advised for a follow-up visit next week. He visited twice for necessary treatment. The physician again advised him not to look at the sun directly for one month which Kabir complied. After one month, he tried to look at the sun directly.

He spent more than Tk 4,000 for his treatment. His uncle helped him with initial cost, and then his maternal uncle provided him with Tk 2,000 which he returned. During this period, he faced many difficulties. He had a calf, which was sold to return money borrowed from his younger brother about which they quarrelled. His younger brother maintained his family for two months by taking loan which was very difficult because he is a day labourer. He had no alternative and any savings. After this accident, he could not work for about two months as the doctor advised him to avoid sunlight otherwise to use black glass. His aged mother is a hypertensive patient with low pressure. They feel that she needs better food but became weaker, and her blood pressure was going down everyday. The marriage of his younger sister was delayed due to financial crisis. Everyone blamed him for the accident saying that it was his fault, and nobody wanted to lend him any money because he was unable to work during this period.

After the incident, he thought that his eye would be damaged permanently. Many people told him that if the paddy would have entered into his head through nose, he would have died. He was

frightened. Now his eye is quite well but water comes from his eye, and there is a red spot on his eye. He feels problem to look at the sun directly with his injured eye and still has little pain. He is frightened to work again due to his eye injury. He still dreams the pain in his eye. Currently, he tries to avoid threshing paddy but does it that with a black sunglass since there is no alternative.

## 6. Construction worker with severe injury leading to death

Mr. Elias born in East Mayani village of Mayani union. He was a 26-year youth. He passed class five, after then he could not continue his studies. He has two brothers and sisters. The younger sister is yet to be married. He is the father of two sons. His sons are tender-aged; they do not go to school. His parents are still alive. His father is aged 64 years and is unable to get involved in income-generating work. His mother and wife make bamboo mats for selling. There are eight members in his family. He is the only earning member in the family. They have no cultivable land.

He had been working as a construction labourer for 10 years. Initially, he had worked as an assistant labourer and has been working as a mason for the last two years. He earned Tk 8,000 in a month as a mason, and his family was dependent on his income. He works all the days of a week, and after finishing the work, he returns home in the evening with necessary household commodities.

It was Tuesday, 11 August 2009. Elias was working on the roof of a one-storey building of Monu Mian, along with his four assistants, beside the north side of Abu Torab Bazar. At about 12 noon, he fell down from the roof while trying to bend the rod, and he instantly became unconscious. His assistant labourers and son of the owner of the building immediately took him to an unqualified village doctor Yeasin at the Abu Torab Bazar. Dr. Yeasin examined the patient's condition and advised, "I will not prescribe any treatment, and please take the patient to Matrika Private Hospital". He was then taken to the Matrika Hospital. The doctors of the hospital pushed him an injection and saline. But he did not regain his sense; so, his family members were frightened. Elias passed four hours in senseless condition under the doctor's observation but did not improve. The doctor referred him to the Chittagong Medical College Hospital (CMCH). His father, wife, and maternal uncle took him to the CMCH on that day. The doctors at the CMCH examined him and pushed some injections and saline. But he did not get back his sense on that night. His treatment continued based on his test report, identifying the reason for not regaining sense. On the following day, he regained his sense at 10 pm and spoke slowly to answer the attending doctor and his relatives. The doctor listened to case history from his own mouth to ascertain whether this was a case of head injury and took necessary steps for treatment. There was no follow-up on 12 August, and on 13 August at 10 am, he again became senseless and was bleeding from nose and mouth. His treatment continued during senseless condition but he could not regain his sense till night. At 11 pm, he died in the hospital, and the doctor informed them that he died due to bleeding from brain due to severe head injury.

His family spent Tk 12,000, of which Tk 3,500 was spent for ambulance. The building owner provided Tk 7,000, a local businessman, some of his co-workers provided Tk 3,000, and the family sold jewelry of his wife for Tk 5,000 during treatment.

The whole family members were dependent on him. His aged father has been ill for two years and cannot work. The death of his son made him mentally disheartened. Elias has an unmarried sister, and they could not afford to arrange her marriage ceremony due to the financial problem. The family was dependent on Hasina, wife of Elias, who borrowed money from the Grameen Bank after his death. She buys bamboo using the borrowed money for making bamboo mats. Every week she and her mother-in-law make bamboo mats, each generally selling at Tk 400, from which Tk 300 is refunded as an installment of the Grameen Bank every week. She is unable to maintain



her family with this small trade that fetch Tk 100 only. She is unable to feed her children three times a day. They have passed many days without any food. Her father is not alive, mother is a housewife, and brother is a day labourer. So, her brother cannot help his sister's family. After his death, the mother of Elias tried to work as a housemaid in another home despite her poor health. The condition of the family compelled her to do this type of work. So, they have to seek help from other people. After the death of Elias, many neighbours and relatives helped the family and gave *Jakat* money. His family passes days with great difficulties. His wife has been suffering from fever for 10 days but could not arrange money for treatment. Besides, the health facility was far away.

The future plan of his wife is that she and her children will stay with her mother-in-law because there is no alternative to go anywhere and her children are growing up but has no idea about how they will face the future.



## APPENDIX E

### Agenda for Mini-Symposium, Dhaka, Bangladesh

#### Mini-Symposium on Occupational Injury

Day: Sunday

Date: 02 May 2010

Time: 1:30 pm to 5:00 pm

Venue: HSID Conference Room, ICDDR,B (First Floor of IPH Building, Mohakhali)

Moderator: Dr. Tracey L.P. Koehlmoos

Time	Content	Facilitator/Presenter
13:30-13:40	Welcome address	Executive Director, ICDDR,B
13:40-14:00	Injury surveillance in 3 rural areas in Bangladesh: scope for occupational injury research	Dr. A.K.M. Fazlur Rahman, Executive Director, CIPRB
14:00-14:20	Occupational injury surveillance: a pilot project in ICDDR,B Mirsarai HDSS area	Dr. Hugh Davies University of British Columbia
14:20-14:40	Analysis by safety and rights of workplace deaths and injuries	Mr. David Bergman, Advisor, Safety and Rights, Dhaka
14:40-15:00	Hearing impairment prevention among power loom workers in Narshingdi—a pilot programme of CIPRB	Dr. Jahangir Hossain, Team Leader, CIPRB
15:00-15:20	Monitoring occupational injury, potential of HDSS sites of ICDDR,B	Mr. Ali Ashraf, HDSS, ICDDR,B
15:20-15:40	<b>Tea break</b>	
15:40-16:00	Prevention of accidents, cost benefit and investigation of accidents	Mr. M. Saidul Islam, ILO
16:00-16:50	Discussion: developing a framework for occupational injury surveillance in Bangladesh	Led by: Dr. Mostafa Zaman, National Professional Officer (Non-communicable Disease and Mental Health) WHO, Bangladesh
16:50-17:00	Summary and Closing	Prof Shirin Akhter, Director, NIPSOM and Mr. Shamsul Gafur Mahmud, National Professional Officer (WSH)

Report to:

Shamsul Gafur Mahmud

National Professional Officer (WSH)

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