Chakaria Health and Demographic Surveillance System
Focusing on the Poor and Vulnerable

Demographic Events and Safe Motherhood
Practices - 2007

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Practices - 2007

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KNOWLEDGE FOR
GLOBAL LIFESAVING SOLUTIONS

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Chakaria HDSS is a member of INDEPTH

CONTENTS

FIGURES

Introduction

Chakaria is one of the 481 *upazilas* (sub-districts) in Bangladesh. It is located between latitudes 21°34' and 21°55' North and longitudes 91°54' and 92°13' East in the southeastern coast of the Bay of Bengal. Administratively, it is under Cox's Bazar district with a population of around 416,110 in 2007. The highway from Chittagong to Cox's Bazar passes through Chakaria. The east side of Chakaria is hilly, while on the west side towards the Bay of Bengal is lowland. A map showing the location of Chakaria is presented in Figure 1.

ICDDR,B started its activities in Chakaria in 1994. The focus of the activities has been to facilitate local initiatives for the improvement of health of the villagers in general and of children, women, and the poor in particular. Thus, the activities of the project have been participatory with emphasis on empowering the people by raising awareness about health, inducing positive preventive behaviour through health education, and providing technical assistance to any health initiatives taken by the village-based indigenous self-help organizations. Some major initiatives taken by the villagers included assessment of health needs, defining actions for health, implementing them, and monitoring their implementation and outputs. Among the health-related activities, identification of volunteers for health education, mobilizing local resources for the establishment of village health posts and their management, introduction of a pre-paid family health card, and establishment of health cooperatives have been the major ones. Details of the activities of the project and the outcomes have been reported elsewhere (1;2). Health services that are currently available in the intervention and comparison areas are presented in the box below. Collection of data from sample households on a quarterly basis, referred hitherto as Chakaria Health and Demographic Surveillance System (Chakaria HDSS), has been initiated in both the areas since 1999. The primary purpose of this surveillance system is to monitor the impact of interventions with equity focus and generate relevant health, demographic and socioeconomic information for policies and programmes, and further research. This report presents data collected through the Chakaria HDSS during 2007.

Existing health services in the intervention and comparison areas, Chakaria HDSS, 2007			
Intervention area (Six unions with 119,651 population)		Comparison area (Two unions with 38,696 population)	
Healthcare facility/provider	No.	Healthcare facility/provider	No.
ICDDR,B facilitated and Community initiated		ICDDR,B facilitated and Community initiated	
Village health post	7	Village health post	0
Trained midwife	12	Trained midwife	0
Qualified physician	1	Qualified physician	0
Male paramedic	10	Male paramedic	0
Government		Government	
Union Health and Family Welfare Centre (UHFWC)	6	Union Health and Family Welfare Centre (UHFWC)	1
EPI centre	144	EPI centre	48
Rural dispensary	0	Rural dispensary	1
Family Welfare Visitor (FWV)	5	Family Welfare Visitor (FWV)	2
Sub-Assistant Community Medical Officer (SACMO)/Medical assistant	4	Sub-Assistant Community Medical Officer (SACMO)/Medical assistant	1
Family Welfare Assistant (skilled birth attendant)	3	Family Welfare Assistant (skilled birth attendant)	1
Private		Private	
Village doctor (allopathic)	159	Village doctor (allopathic)	54
Village doctor (homeopathic)	78	Village doctor (homeopathic)	24
Allopathic pharmacy	142	Allopathic pharmacy	35
Homeopathic pharmacy	13	Homeopathic pharmacy	2
Diagnostic centre	3	Diagnostic centre	0
NGO		NGO	
Health and development activities	3	Health and development activities	3

Fig 1. Map of Chakaria showing intervention and comparison areas

Bangladesh

Rajakhali

Bara Bakia

Harbang

Pekua

Baraitali

Bamobilchari

Bheola
Manik Char

Kaiarbil

Lakhyarchar

Magnama

Kakhara

Shaharbil

Pashchim
Bara Bheola

Fasiakhali

Chringa

Badarkhali

Purba
Bara
Bheola

Dulahazara

Khuntakhali

N

GIS Unit, ICDDR,B

Meters

0   2,350 4,700   9,400   14,100   18,800

Intervention area   Comparison area   Out of study area   Chakaria Upajila Boundary

Methods and Materials

The Chakaria HDSS covered 8 unions, namely Baraitali, Kayerbil, Bheola Manik Char, Paschim Boro Bheola, Shaharbil, Kakara, Harbang, and Purba Boro Bheola. Of these, the last two unions formed the comparison area, and the first 6 formed the intervention area. In 1999, 106,320 people were living in 20,252 households in the intervention area and 34,418 people were living in 6,727 households in the comparison area (3). A household is defined as blood or otherwise related group of members and unrelated individuals living in the same compound at least once a month and sharing the food from the same kitchen. A household member is considered to have migrated out if s/he has left the household and does not intend to come back within six months of the time s/he left. A person is considered to have migrated in if s/he was not previously included in the list of household members and intends to live in the household for at least once in a month for the next six months.

Although the Chakaria HDSS started in 1999 covering all the households in 8 unions, data collection was interrupted during 2001-2003. Since 2004, quarterly data collection has resumed, and data are being collected from 3,727 and 3,315 systematically randomly-chosen households in the intervention and comparison areas respectively. 26 field-trained workers collected data during 2007. The data collectors were provided with written instructions for specific questions that required added explanations.

Six supervisors supervised the data-collection process. To detect any anomalies, the supervisors re-visited 5% of the households, chosen randomly, within 2 days of data collection by the field workers. Later on, the supervisors and the relevant field workers together sorted out any inconsistencies in the collected data. All the filled-up questionnaires were manually checked for completeness and for any inconsistencies. Subsequently, computer-based data-editing procedures were applied to ensure the quality of data.

The report derived the socioeconomic status of households following the asset quintile approach. A list of assets included almirah, table/chair, mosquito bed-net, watch/clock, van/rickshaw, *choki/khat*, radio, television, and telephone. The principal component analytical technique was used for calculating weights of the assets to derive household asset index scores. The major demographic indicators and safe motherhood related practices have been tabulated for the various asset quintiles.

It should be mentioned that the number of observations in the tables presented in this report differ in some instances due to missing information for some variables.

Population and Population Changes

The population pyramid based on the sample households is presented in Figure 2. The shape of the pyramid is typical of a developing country with declining mortality and fertility. The sex ratio (male per 100 females) was 105 in 2007. The sex ratio was highest in the age group of 20-24 years among the under 50 years age-groups. Above 50 years, the sex ratio has shown an increasing trend for up to 60-64 years, after which the ratio declined (Fig. 2). The age-dependency ratio was 82 in 2007 (see Appendix A).

Fig. 2.   Male and female population by age and sex, Chakaria HDSS, 2007

HDSS=Health and Demographic Surveillance System.
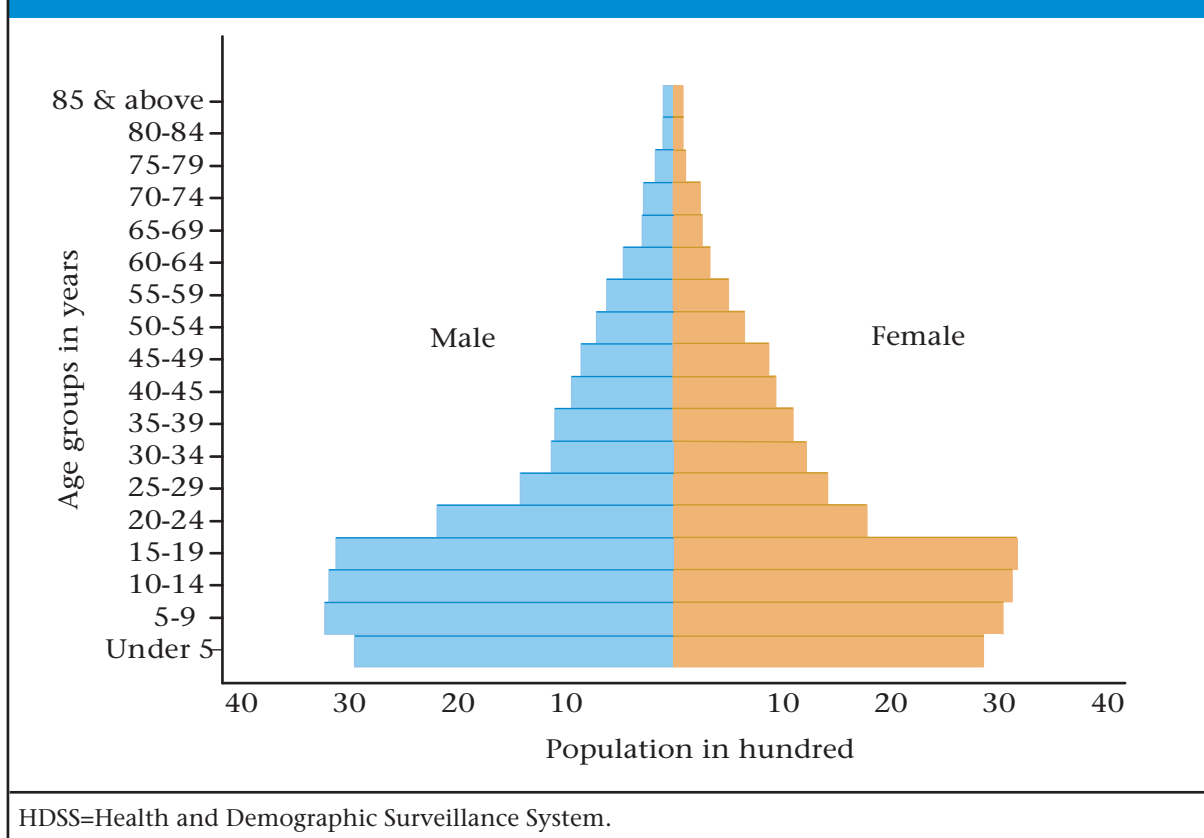
The major demographic and health indicators in the intervention and comparison areas during 1999, and 2004-2007 are presented in Table 1. A declining trend in the mortality and fertility indicators and natural rate of increase has been observed during 1999-2007. Most of the rates in Chakaria HDSS area are much higher than those in the Matlab HDSS area, another rural

field site of ICDDR,B (4). In 2007, the rate of natural increase and the annual growth rate in the surveillance area was 20.6 % and 1.3% respectively (Table 1).

5.1% of births in Chakaria were delivered at facilities (Hospital or Clinic) in 2007. The percentage of births at facilities remained similar over the last three years. 19.1% of the births were attended by Skilled Birth Attendant (SBA). There has been an increase in deliveries by SBAs from 15.3% in 2006 to 19.1% in 2007 (Table 1).

The legal age of marriage is 18 years for female and 21 years for male in Bangladesh. In 2007, 43.2% of the women married before reaching their 18th birth day. The percentage of underage female marriage decreased to 43.2% in 2007 from 49.8% in 2006. 25.6% of the males were married before the age of 21 years in 2007. The proportion of male marriages before 21 years has decreased slightly from 27.9% in 2006 to 25.6% in 2007. The percentage of underage marriage for females remained higher than males during 2004 to 2007.

Table 1. Demographic and health indicators, Chakaria HDSS, 1999 - 2007						
Rates per 1,000	Chakaria HDSS area					Matlab HDSS area 2006
	1999	2004	2005	2006	2007	
Crude birth rate						
Intervention area	33.8	30.6	29.8	25.8	26 .9	22.9
Comparison area	33.9	28.8	27.4	25.3	27.2	22.7
Both areas	33.9	29.7	28.7	25.6	26.6	22.8
Total fertility rate*						
Intervention area	5.1	4.6	4.4	3.5	3.6	2.7
Comparison area	4.9	4.4	4.0	3.3	3.4	2.8
Both areas	5.1	4.5	4.2	3.4	3.5	2.7
Neonatal mortality**						
Intervention area	40.0	24.8	25.2	33.7	27.0	23.5
Comparison area	47.3	40.8	35.9	42.3	44.3	30.1
Both areas	41.7	31.9	31.5	37.6	34.8	26.8
Post-neonatal mortality**						
Intervention area	21.2	15.5	14.1	17.7	18.0	6.2
Comparison area	22.4	19.7	25.1	15.4	7.4	10.3
Both areas	21.4	17.4	17.4	16.6	13.3	8.2
Infant mortality rate						
Intervention area	61.2	40.3	39.3	51.4	45.0	29.7
Comparison area	69.7	60.5	61.0	57.7	51.7	40.4
Both areas	63.2	49.3	48.9	54.2	48.0	35.0
Child mortality rate (1-4 years)						
Intervention area	9.0	8.1	7.5	6.2	4.7	3.2
Comparison area	10.6	5.5	5.3	2.4	4.4	2.6
Both areas	9.4	6.9	6.5	4.5	4.6	2.9
*Per woman; **Per 1,000 live births.						

Rates per 1,000	Chakaria HDSS area					Matlab HDSS area 2006
	1999	2004	2005	2006	2007	
Crude death rate						
Intervention area	6.7	5.9	5.8	5.4	5.4	6.3
Comparison area	7.9	7.0	6.5	5.7	6.8	6.4
Both areas	7.0	6.3	6.1	5.6	6.1	6.3
Rate of natural increase						
Intervention area	27.1	24.7	24.0	20.4	21.7	16.6
Comparison area	26.0	21.8	20.8	19.6	19.2	16.3
Both areas	26.9	23.4	22.5	20.0	20.6	16.5
In-migration rate						
Intervention area	-	17.1	24.5	29.7	23.4	-
Comparison area	-	16.6	23.7	30.0	26.0	-
Both areas	-	16.9	24.1	29.9	24.6	43.5
Out-migration rate						
Intervention area	-	22.2	23.8	33.8	31.0	-
Comparison area	-	19.5	25.9	34.3	33.2	-
Both areas	-	21.0	24.8	34.0	32.0	57.3
Growth rate (%)						
Intervention area	-	2.0	2.5	1.6	1.4	-
Comparison area	-	1.9	2.0	1.5	1.3	-
Both areas	-	1.9	2.1	1.6	1.3	0.3
Facility-based delivery (%)						
Intervention area	-	6.8	6.4	6.2	3.8	-
Comparison area	-	4.4	3.8	4.5	6.8	-
Both areas	-	5.4	4.9	5.4	5.1	-
Received assistance from SBA during delivery (%)						
Intervention area	-	14.3	9.2	16.5	20.4	-
Comparison area	-	14.8	11.6	13.8	18.2	-
Both areas	-	14.5	10.3	15.3	19.1	-
Male marriage at ages under 21 years (%)						
Intervention area	-	23.4	25.6	26.3	25.2	-
Comparison area	-	23.3	23.8	29.7	26.0	-
Both areas	-	23.3	24.7	27.9	25.6	-
Female marriage at ages under 18 years (%)						
Intervention area	-	51.4	43.1	51.2	40.4	-
Comparison area	-	56.6	52.0	48.4	46.7	-
Both areas	-	53.6	47.3	49.8	43.2	-
'-' Data not available.						

CHAPTER 4

Mortality

Age-specific mortality rates by area and sex are presented in Table 2. The crude death rate for the intervention and comparison areas in Chakaria, when considered together, was 6.0 per 1,000 population in 2007. The rate was higher in the comparison area than in the intervention area. Infant mortality rate for all the villages in the intervention and comparison areas was 48.0 per 1,000 live births with a lower rate in the intervention area than in the comparison area. Child mortality rate was 4.6 per 1,000 children aged 1-4 years. The rate was slightly higher in the intervention area than in the comparison area (Table 2).

Abridged life tables for males and females are presented in Table 3. Life expectancy at birth was 67.2 years for males and 69.7 years for females. The rate of mortality of children aged less than 5 years (under-five mortality) was 63.4 per 1,000 live births in Chakaria in 2007 (Table 4). Figure 3 shows the probability of survival by sex at various age groups. Females had a higher probability of survival than males after the age of 5 years.

Table 2. Age-specific death rate (per 1,000 population) by sex, Chakaria HDSS, 2007								
Age (years)	Intervention area			Comparison area			Both areas		
	Male	Female	Both	Male	Female	Both	Male	Female	Both
<1*	37.7	53.0	45.0	56.5	46.3	51.7	46.1	50.1	48.0
1-4	5.6	3.9	4.7	3.8	5.2	4.4	4.7	4.4	4.6
5-9	1.2	1.2	1.2	1.4	0.0	0.7	1.3	0.7	1.0
10-14	0.6	0.6	0.6	1.9	1.4	1.7	1.2	0.9	1.1
15-19	2.4	0.0	1.2	2.1	0.0	1.0	2.3	0.0	1.1
20-24	2.4	0.9	1.7	0.9	6.8	3.6	1.7	3.6	2.6
25-29	2.4	1.3	1.8	2.7	1.5	2.1	2.6	1.4	2.0
30-34	0.0	0.0	0.0	2.1	3.7	2.9	0.9	1.7	1.3
35-39	3.1	0.0	1.5	0.0	0.0	0.0	1.7	0.0	0.8
40-44	2.0	2.0	2.0	9.8	6.9	8.3	5.4	4.3	4.8
45-49	0.0	0.0	0.0	8.9	2.3	5.6	4.4	1.1	2.8
50-54	8.1	2.8	5.5	3.0	8.5	5.9	5.7	5.6	5.7
55-59	15.1	22.7	18.5	25.3	11.6	19.1	20.1	17.2	18.8
60-64	15.6	10.2	13.2	37.0	20.3	30.2	25.4	14.5	20.8
65-69	35.7	23.8	30.6	19.9	32.0	25.4	28.2	27.9	28.1
70-74	32.7	40.3	36.1	31.5	29.4	30.6	32.1	35.4	33.6
75-79	49.0	27.4	40.0	73.5	32.3	53.8	58.8	29.6	45.9
80-84	170.2	108.7	139.8	83.3	108.1	94.1	126.3	108.4	118.0
85+	70.2	187.5	112.4	258.1	162.8	202.7	136.4	173.3	153.4
All	6.0	4.8	5.4	7.6	6.0	6.8	6.7	5.3	6.0

*Per 1,000 live births; HDSS=Health and Demographic Surveillance System.

Table 3. Abridged Life Table by sex, Chakaria HDSS, 2007

Age (years)	Male					Female				
	$_nm_x$	$_nq_x$	l_x	$_nL_x$	e_x	$_nm_x$	$_nq_x$	l_x	$_nL_x$	e_x
0	0.0461	0.0461	100,000	96,312	67.2	0.0501	0.0501	100,000	95,993	69.7
1	0.0047	0.0188	95,390	378,185	69.4	0.0044	0.0176	94,991	376,831	72.4
5	0.0014	0.0069	93,595	466,488	66.7	0.0007	0.0034	93,323	465,890	69.6
10	0.0012	0.0060	92,950	463,463	62.2	0.0009	0.0047	93,008	464,040	64.9
15	0.0023	0.0113	92,392	459,545	57.5	0.0000	0.0000	92,574	462,860	60.1
20	0.0017	0.0085	91,346	454,928	53.2	0.0036	0.0177	92,570	459,063	55.2
25	0.0026	0.0127	90,565	450,168	48.6	0.0014	0.0068	90,931	453,222	51.1
30	0.0009	0.0046	89,414	446,129	44.2	0.0017	0.0085	90,309	449,772	46.4
35	0.0017	0.0084	89,006	443,312	39.4	0.0000	0.0000	89,540	447,688	41.8
40	0.0054	0.0268	88,261	435,823	34.7	0.0043	0.0211	89,535	443,303	36.8
45	0.0044	0.0216	85,892	425,173	30.6	0.0011	0.0057	87,643	437,060	32.5
50	0.0057	0.0283	84,037	414,679	26.2	0.0056	0.0278	87,142	430,104	27.7
55	0.0201	0.0958	81,657	389,951	21.9	0.0172	0.0827	84,719	407,212	23.4
60	0.0254	0.1197	73,834	348,359	18.9	0.0145	0.0701	77,712	375,854	20.3
65	0.0282	0.1323	64,997	304,688	16.1	0.0279	0.1308	72,264	339,008	16.6
70	0.0321	0.1493	56,400	262,047	13.2	0.0354	0.1633	62,810	289,687	13.7
75	0.0588	0.2574	47,977	209,944	10.0	0.0296	0.1385	52,556	245,578	10.9
80	0.1263	0.4770	35,628	134,543	7.6	0.1084	0.4255	45,279	177,688	7.2
85	0.1364	1.0000	18,633	136,641	7.3	0.1733	1.0000	26,012	150,068	5.8

HDSS=Health and Demographic Surveillance System.

The Abridged Life Table is constructed applying the Greville's method illustrated in "The Methods and Materials of Demography", edited by Jacob S. Siegel and David A. Swanson, Second edition; Elsevier Academic Press, 2004: 301-40.

$_nm_x$ = Central mortality rate
$_nq_x$ = Probability of dying between the ages x and x+n
$_nq_x$ = $_nm_x/[(1/n) + {}_nm_x\{1/2+n/12({}_nm_x-\log_e c)\}]$; $\log_e c = 0.095$
l_x = Survivors to exact age x
$_nL_x$ = Numbers of years lived by the total of the cohort of 100,000 births in the interval
   $L_0 = 0.20l_0 + 0.80l_1$, $L_{85+} = l_{85+}/m_{85+}$
e_x = Life expectancy at age x

Fig. 3. Probability of survival by age and sex, Chakaria HDSS, 2007
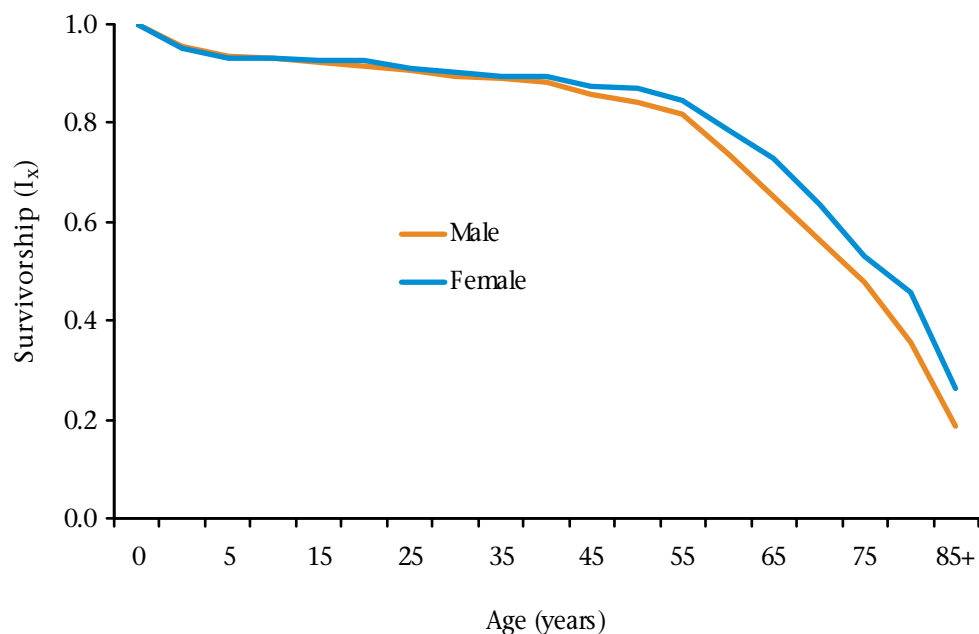
HDSS=Health and Demographic Surveillance System.

Table 4 presents under-5 mortality rates by household asset quintiles. Under-5 mortality rate was inversely correlated with household asset scores. The mortality rate of children from the lowest quintile was nearly twice that of children from the highest quintile.

Table 4. Under-5 mortality rate per 1,000 live births by asset quintile, Chakaria HDSS, 2007

Asset quintile	Number of birth	Number of deaths	Under-5 mortality rate
Lowest	200	17	85.0
Second	282	14	49.6
Medium	204	15	73.5
Fourth	234	17	72.6
Highest	279	13	46.6
All	1,199	76	63.4

HDSS=Health and Demographic Surveillance System.

Causes of death

Causes of death were recorded as reported by the informed household members. A physician classified the reported causes of death with medical synonyms. Table 5 presents the number of deaths from various causes in the year 2004-2007. Asthma , neoplasm, respiratory infections, senility, stroke, various conditions during neonatal period, accidents, cardiovascular other than stroke and hypertension, diarrheal diseases and hepatitis were the 10 leading causes of death in Chakaria in 2007.

Table 5. Causes of death, Chakaria HDSS, 2004-07								
Rank	2004		2005		2006		2007	
	Cause	No. of deaths	Cause	No. of deaths	Cause	No. of deaths	Cause	No. of deaths
1	Respiratory infections	39	Stroke	29	Stroke	31	Asthma/ Bronchitis	30
2	Senility	30	Respiratory infections	28	Senility	28	Neoplasm (Benign and Malignant)	29
3	Asthma/ Bronchitis	26	Senility	28	Asthma/ Bronchitis	26	Respiratory infections	26
4	Neonatal (Premature and LBW, Birth asphyxia, Birth trauma, Sepsis and infection	17	Neoplasm (Benign and Malignant)	23	Respiratory infections	26	Senility	25
5	Diarrheal disease	15	Asthma/ Bronchitis	19	Neoplasm (Benign and Malignant)	21	Stroke	25
6	Hepatitis	14	Neonatal (Premature and LBW, Birth asphyxia, Bone trauma, Sepsis and infection)	14	Neonatal (Premature and LBW, Birth asphyxia, Birth trauma, Sepsis and infection)	15	Neonatal (Premature and LBW, Birth asphyxia, Birth trauma, Sepsis and infection)	24
7	Neoplasm (Benign and Malignant)	14	Drowning	12	Drowning	11	Accident	16
8	Cardiovascular other than stroke and hypertension	14	Accident	10	Hepatitis	7	Cardiovascular other than stroke and hypertension	11
9	Stroke	12	Cardiovascular other than stroke and hypertension	8	Accident	6	Diarrheal Diseases	9

Rank	2004		2005		2006		2007	
	Cause	No. of deaths	Cause	No. of deaths	Cause	No. of deaths	Cause	No. of deaths
10	Accident	11	Nutritional	7	Diarrheal diseases	6	Hepatitis	9
11	Malaria	8	Diarrheal diseases	6	Diabetes	3	Drowning	8
12	Drowning	8	Hepatitis	6	Hypertension	3	Nutritional diseases	5
13	Nutritional	7	Tuberculosis	4	Malaria	3	Diabetes	3
14	Homicide	7	Typhoid	4	Cardiovascular other than stroke and hypertension	3	Hypertension	3
15	Hypertension	6	Urinary	4	Urinary diseases	3	Urinary diseases	3
16	Diabetes	5	Rabies	3	Rabies	3	Epilepsy	2
17	Urinary diseases	5	Maternal death	3	Tuberculosis	3	Malaria	2
18	Typhoid	2	Diabetes	3	Burn	2	Maternal death	2
19	Digestive disease	2	Hypertension	3	Digestive diseases	2	Suicide	2
20	Maternal death	1	Homicide	3	Nutritional diseases	2	Tuberculosis	2
21	Suicide	1	Burn	2	Congenital anomalies	1	Typhoid	2
22	Unknown	36	Malaria	1	Leprosy	1	Dysentery	1
23			Congenital anomalies	1	Tetanus	1	Digestive disease	1
24			Digestive disease	1	Unknown	42	Homicide	1
25			Suicide	1			Rabies	1
26			Snake bite	1			Unknown	32
27			Epilepsy	1				
			Unknown	46				
Total		280		271		249		274

HDSS=Health and Demographic Surveillance System.

Fertility

The crude birth rate in 2007 was 26.6 per 1,000 population, which was higher than the rate in 2006 (25.6 per 1000 population) (Table 1). Total fertility rates per woman also showed a downward trend during 1999-2007 with a value of 3.5 in 2007 (Table 1). The fertility rate was highest among women of age-group of 20-29 years (Fig. 4 and Table 6).

Table 6. Age-specific fertility rate per 1,000 wome aged 15-49 years, Chakaria HDSS, 2007

Age (years)	Intervention area			Comparison area			Both areas		
	No. of females	No. of births	Birth rate	No. of females	No. of births	Birth rate	No. of females	No. of births	Birth rate
15-19	1,652	154	93.2	1,493	159	106.5	3,145	313	99.5
20-24	1,073	222	206.9	888	142	159.9	1,961	364	185.6
25-29	798	148	185.5	660	120	181.8	1,458	268	183.8
30-34	634	78	123.0	535	76	142.1	1,169	154	131.7
35-39	656	45	68.6	576	37	64.2	1,232	82	66.6
40-44	504	14	27.8	433	7	16.2	937	21	22.4
45-49	431	5	11.6	442	1	2.3	873	6	6.9
Total	5,748	666		5027	542		10,775	1,208	
TFR		3,583			3,365				3,483

TFR=Total fertility rate per 1,000 women; HDSS=Health and Demographic Surveillance System.

Fig. 4. Age-specific fertility rate, Chakaria HDSS, 2007

HDSS=Health and Demographic Surveillance System.
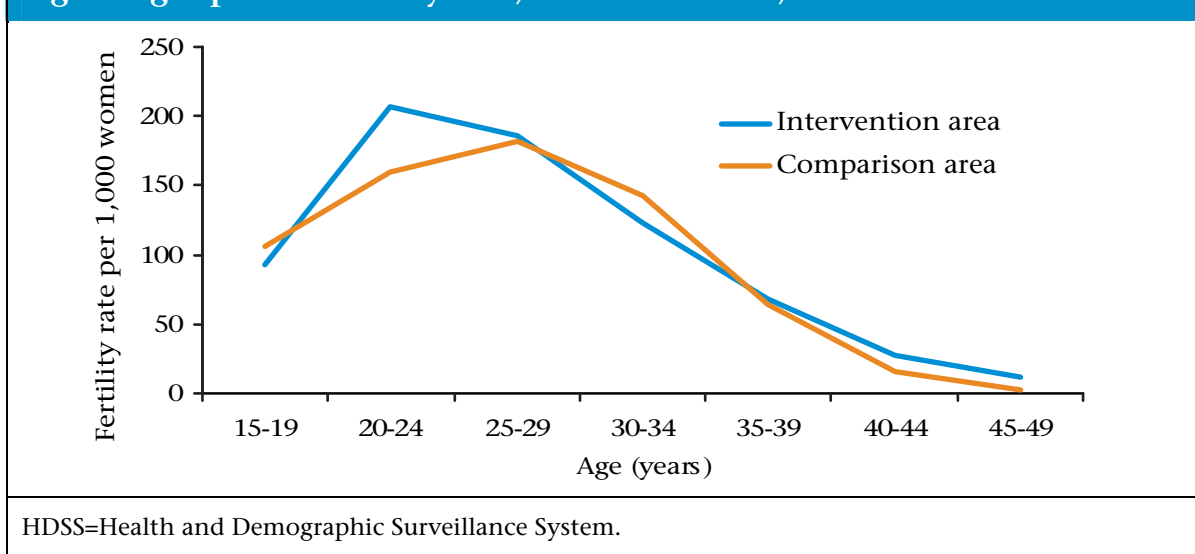
Table 7. Crude birth rate per 1,000 population by asset quintile, Chakaria HDSS, 2007			
Asset quintile	Midyear population	Number of births	Birthrate
Lowest	8,085	210	26.0
Second	8,540	265	31.0
Medium	9,007	211	23.4
Fourth	9,465	236	24.9
Highest	10,238	286	27.9
All	45,335	1,208	26.6
HDSS=Health and Demographic Surveillance System.			

Table 7 presents the crude birth rates by household asset quintiles. The crude birth rate showed a 'U' shaped relationship with household socioeconomic status measured by asset quintiles.

Of the pregnancies in Chakaria in 2007, 6.5% of 1,338 were terminated prematurely and spontaneously, 2.8% were terminated through induction, and 2.3% resulted in stillbirths (Table 8).

Table 8. Pregnancy outcome, Chakaria HDSS, 2007						
Pregnancy outcome	Intervention area		Comparison area		Both areas	
	No.	%	No.	%	No.	%
Spontaneous abortion	45	6.2	42	6.9	87	6.5
Induced abortion	17	2.3	21	3.4	38	2.8
Stillbirth	17	2.3	14	2.3	31	2.3
Live birth*	649	89.1	533	87.4	1,182	88.3
Total number of pregnancies	728	100.0	610	100.0	1,338	100.0
*Multiple live births included. HDSS=Health and Demographic Surveillance System.						

Distribution of births and deaths by month did not show any distinct seasonal pattern (Fig. 5). The seasonal patterns of birth and death were similar in the intervention and comparison areas (Fig. 6 and 7) except in the first and last month only.

Fig. 5. Number of births and deaths by month, Chakaria HDSS, 2007
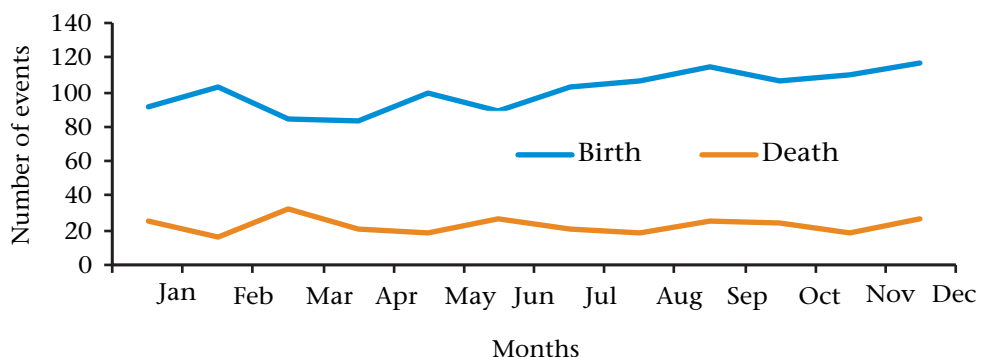
HDSS=Health and Demographic Surveillance System.

Fig. 6. Number of births and deaths by month, intervention area, Chakaria HDSS, 2007
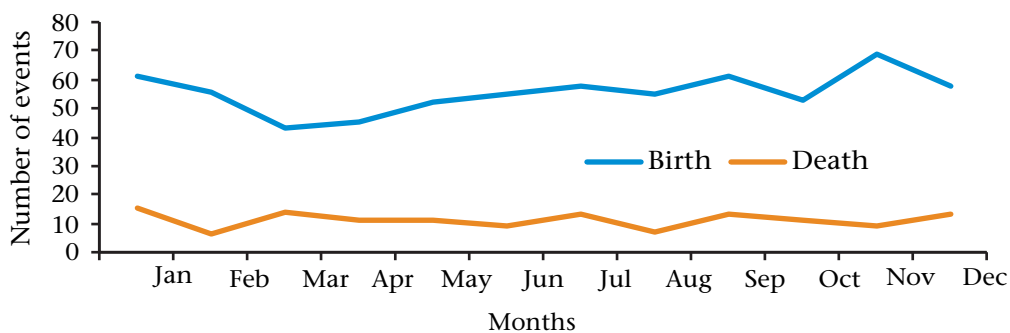
HDSS=Health and Demographic Surveillance System.

Fig. 7. Number of births and deaths by month, comparison area, Chakaria HDSS, 2007
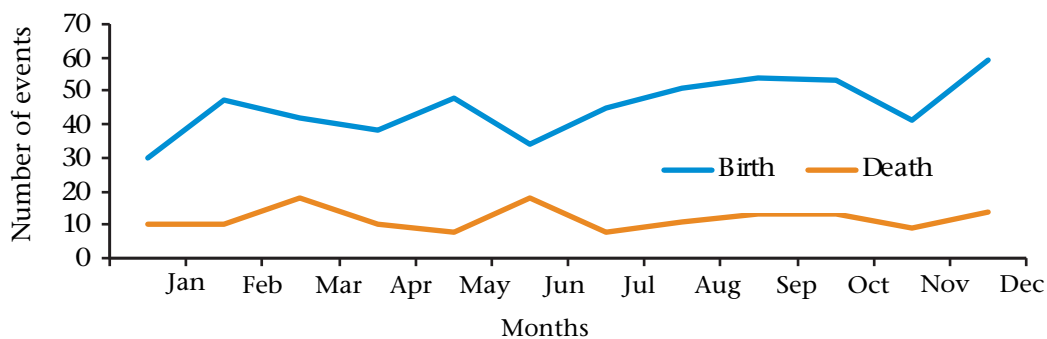
HDSS=Health and Demographic Surveillance System.

CHAPTER 6

Migration

In 2007, the rate of out-migration was higher (32.0 per 1,000 population) than that of in-migration (24.6 per 1,000 population) (Table 9). The rates were lower than in 2006. Monthly data on migration are presented in Tables 10, 11 and 12. Data showed that the number of in-migrants was lower than that of out-migrants during 2007 in both the areas. The migration rate was higher for females than males (Appendix G). The number of migrants among the males and females was highest in January.

Table 9. Migration rate per 1,000 population by asset quintile, Chakaria HDSS, 2007

Asset quintile	Mid-year population	In-migration rate	Out-migration rate
Lowest	8,085	14.8	21.9
Second	8,540	16.3	24.6
Medium	9,007	24.0	31.0
Fourth	9,465	30.2	38.0
Highest	10,238	34.8	41.5
All	45,335	24.6	32.0

HDSS=Health and Demographic Surveillance System.

Table 10. Number of migrants by sex and month, Chakaria HDSS, 2007

Month	In-migration			Out-migration		
	Male	Female	Both	Male	Female	Both
January	69	80	149	89	104	193
February	42	61	103	41	83	124
March	36	58	94	48	86	134
April	32	77	109	56	92	148
May	23	64	87	51	92	143
June	30	64	94	52	73	125
July	24	37	61	51	63	114
August	27	53	80	58	54	112
September	39	42	81	39	49	88
October	40	49	89	45	50	95
November	32	42	74	27	34	61
December	37	59	96	41	73	114
All	431	686	1,117	598	853	1,451

HDSS=Health and Demographic Surveillance System.

Table 11. Number of migrants by sex and month, intervention area, Chakaria HDSS, 2007

Month	In-migration			Out-migration		
	Male	Female	Both	Male	Female	Both
January	44	33	77	45	57	102
February	23	34	57	18	37	55
March	18	31	49	27	37	64
April	9	32	41	28	45	73
May	8	23	31	26	32	58
June	15	35	50	39	41	80
July	16	19	35	34	52	86
August	12	24	36	30	27	57
September	24	22	46	27	30	57
October	24	22	46	16	24	40
November	15	22	37	15	16	31
December	24	46	70	21	36	57
All	232	343	575	326	434	760

HDSS=Health and Demographic Surveillance System.

Table 12. Number of migrants by sex and month, comparison area, Chakaria HDSS, 2007

Month	In-migration			Out-migration		
	Male	Female	Both	Male	Female	Both
January	25	47	72	44	47	91
February	19	27	46	23	46	69
March	18	27	45	21	49	70
April	23	45	68	28	47	75
May	15	41	56	25	60	85
June	15	29	44	13	32	45
July	8	18	26	17	11	28
August	15	30	45	28	27	55
September	15	20	35	12	19	31
October	16	27	43	29	26	55
November	17	20	37	12	18	30
December	13	13	26	20	37	57
All	199	343	542	272	419	691

HDSS=Health and Demographic Surveillance System.

Origin and destination of migrants

During 2007, 4.9% of 1,114 in-migrants moved into Chakaria HDSS households from outside of Bangladesh whereas 12.5% of 1,442 out-migrants moved out of Bangladesh from Chakaria HDSS area. The proportion of migrants that moved out of Bangladesh was higher than the proportion of migrants that moved into Bangladesh. Overall, the rates of movement of people to and from Chakaria were similar (Table 13).

Table 13. Origin and destination of migrants by sex, Chakaria HDSS, 2007						
	In-migration			Out-migration		
Origin or destination	Male (%)	Female (%)	Both (%)	Male (%)	Female (%)	Both (%)
Inside Bangladesh	88.1	99.4	95.1	70.2	99.5	87.5
Outside Bangladesh	11.9	0.6	4.9	29.8	0.5	12.5
Total	100.0	100.0	100.0	100.0	100.0	100.0
Total number of migrants	430	684	1,114	592	850	1,442
Inside Chakaria	65.4	75.1	71.6	74.0	79.4	77.5
Outside Chakaria	34.6	24.9	28.4	26.0	20.6	22.5
Total	100.0	100.0	100.0	100.0	100.0	100.0
Total number of migrants	361	643	1,004	423	772	1,195
Inside HDSS area	62.4	63.9	63.4	68.3	64.8	66.0
Outside HDSS area	37.6	36.1	36.6	31.7	35.2	34.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Total number of migrants	330	601	931	398	732	1,130
HDSS=Health and Demographic Surveillance System.						

Reasons for migration

Table 14 presents the reasons of migration by sex. 44.5% of the migrants moved due to family-related issues - mostly marriage, followed by housing (33.5%), work (19.0%), and education (3.0%). Reasons for moving for males were different from those of females. 35.4% of male in-migrants moved due to work related issues whereas only 3.5% of the females moved due to that reason. On the other hand, 61.9% of female in-migrants moved due to family related issues - mostly marriage, while only 12.6% of males moved due to family related reasons (Table 14). The reasons of movement for out-migration were similar to the reasons for in-migration.

Table 14. Reasons for migration, Chakaria HDSS, 2007

Reasons for migration	In-migration			Out-migration		
	Male (%)	Female (%)	Both (%)	Male (%)	Female (%)	Both (%)
Family-related	12.6	61.9	44.9	10.5	65.2	44.5
Work-related	35.4	3.5	14.5	43.5	4.0	19.0
Housing-related	43.2	30.5	34.9	41.9	28.4	33.5
Education	8.7	4.1	5.7	4.1	2.4	3.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Total number of migrants	333	630	963	485	796	1,281

HDSS=Health and Demographic Surveillance System.

Marriage

In total, 819 marriages took place in the surveillance households in Chakaria during 2007. The highest number of marriages took place in April and the lowest in October. The number of marriages showed a downward trend from April to November (Fig. 8).

Table 15 presents singulate mean age at marriage (SMAM) and median age at first marriage. The SMAM was 27 years for males and 20 years for females. The SMAM in 2007 remained same as of 2006 for males and females. The median ages at first marriage was 27 for males and 20 years for females. Both the indicators showed a positive association with socioeconomic status for males. For females, no such association was found.

Asset quintile	Male		Female	
	SMAM*	Median age at first marriage*	SMAM	Median age at first marriage
Lowest	24.5	24.6	19.8	19.3
Second	24.6	24.4	20.8	18.9
Medium	27.4	27.2	20.9	20.0
Fourth	27.5	27.3	20.9	19.7
Highest	28.2	27.8	20.6	19.5
All	26.8	26.6	20.4	19.5

Table 15. Age at marriage by sex, Chakaria HDSS, 2007

HDSS=Health and Demographic Surveillance System.
SMAM= Singulate mean age at marriage

* The SMAM and median age at marriage are calculated by applying indirect methods illustrated in "The Methods and Materials of Demography", edited by Jacob S. Siegel and David A. Swanson, Second edition; Elsevier Academic Press, 2004: 196-202.

Fig. 8. Number of marriages by month, Chakaria HDSS, 2007

HDSS=Health and Demographic Surveillance System.
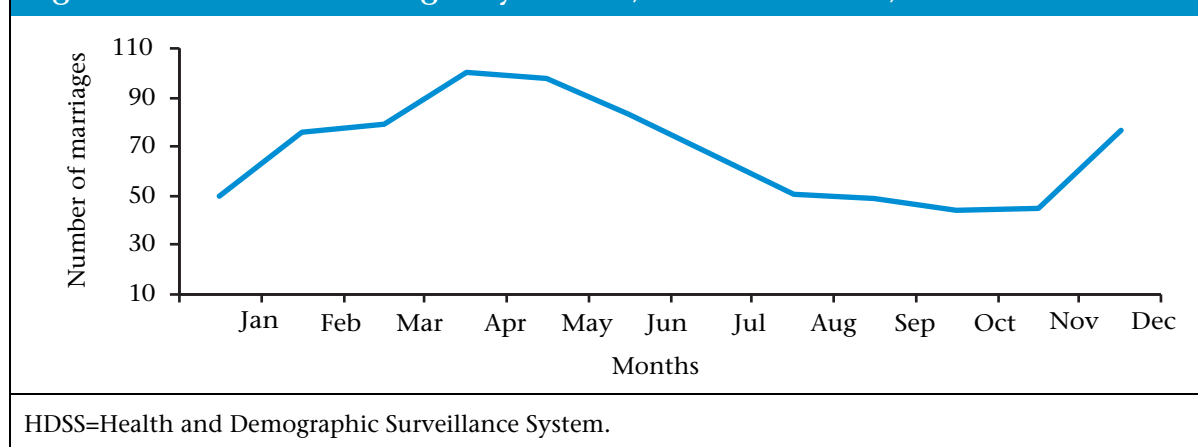
Safe Motherhood Practices

The health-related activities of ICDDR,B in Chakaria included facilitation of provision of safe motherhood services (e.g. antenatal care, postnatal care, and delivery services) by the trained midwives who were based in the seven village health posts that had been established and managed by the villagers since the late nineties. The services provided by these midwives were not strictly restricted to the intervention area. The women from the comparison area also availed their services to some extent. Apart from this, the physicians employed by ICDDR,B with financial support from the community, also provided healthcare services once a week to the villagers from these village health posts.

At present, the Upazila Health Complex of the government and two private hospitals provide healthcare services at the headquarters of Chakaria. At the union level, 6 Union Health and Family Welfare Centres (UHFWCs) of the government and 7 village health posts which were initiated by the community members provide healthcare services in the intervention area. At the same level, one UHFWC and one Rural Dispensary (RD) of the government provide health services in the comparison area. The Family Development Services and Research (FDSR), an NGO, also provides healthcare services both in intervention and comparison areas.

Use of antenatal care services

During 2007, 64.9% of 1,208 pregnant women in Chakaria received at least one antenatal check-up (ANC). The percentage of women receiving at least one ANC was higher in the intervention area (67.3%) than in the comparison area (61.7%). The women in the intervention area received services from various sources. Among these sources, the trained midwives have been consulted by most in the intervention area, followed by the nurses/doctors and the Family Welfare Visitors (FWVs). On the other hand, the dominant source of services in the comparison area was the nurses/doctors, followed by the trained midwives and the Family Welfare Visitors (FWVs) (Table 16).

The use of ANC was very inequitable in both the intervention and the comparison areas. Of the various sources, services from nurse and doctor has been the most inequitable (Table 16).

Area	Asset quintile	Received any ANC (%)	Midwife* (%)	FWV* (%)	Nurse/ doctor* (%)	FDSR/ CMH* (%)	None (%)	No. of women
Intervention area	Lowest	59.5	48.3	8.6	5.2	1.7	40.5	122
	Second	58.8	42.6	11.0	10.3	3.7	41.2	146
	Middle	69.4	40.8	12.2	20.4	8.2	30.6	111
	Fourth	72.1	42.6	14.8	25.4	9.8	27.9	130
	Highest	76.9	33.6	10.4	35.8	9.7	23.1	157
	Total	67.3	41.4	11.4	19.6	6.6	32.7	666
Comparison area	Lowest	42.5	17.5	10.0	5.0	18.8	57.5	88
	Second	53.2	19.3	20.2	12.8	11.9	46.8	119
	Middle	62.0	19.0	12.7	29.1	7.6	38.0	101
	Fourth	65.9	18.8	14.1	27.1	20.0	34.1	105
	Highest	81.3	17.8	18.7	48.6	15.0	18.7	129
	Total	61.7	18.5	15.7	25.2	14.6	38.3	542
Both areas	Lowest	52.6	35.7	9.2	5.1	8.7	47.4	210
	Second	56.3	32.2	15.1	11.4	7.3	43.7	265
	Middle	66.1	31.1	12.4	24.3	7.9	33.9	212
	Fourth	69.6	32.9	14.5	26.1	14.0	30.4	235
	Highest	78.8	26.6	14.1	41.5	12.0	21.2	286
	Total	64.9	31.5	13.2	22.0	10.0	35.1	1,208

*Multiple responses recorded.
ANC=Antenatal care.
FWV=Family welfare visitor.
FDSR=Family Development Services and Research.
CMH= Christian Memorial Hospital.
HDSS=Health and Demographic Surveillance System.

Use of postnatal care services

It was observed that only 40.9% of the pregnant women received at least one postnatal care (PNC) during 2007. This percentage was similar in the intervention area (41.4%) and the comparison area (40.1%). The nurses, doctors and midwifes were the dominant sources for PNC in both the areas, and the utilization of services was characterized by large inequities (Table 17).

Table 17. Postnatal care by type of sources and asset quintile, Chakaria HDSS, 2007

Area	Asset quintile	Received any PNC (%)	Midwife* (%)	FWV* (%)	Nurse/ doctor* (%)	FDSR/ CMH* (%)	None (%)	No. of women
Intervention area	Lowest	37.9	19.8	0.9	12.1	0.0	37.9	122
	Second	35.3	15.4	0.7	14.0	0.0	35.3	146
	Middle	45.9	20.4	2.0	21.4	0.0	45.9	111
	Fourth	40.2	13.1	4.9	24.6	0.8	40.2	130
	Highest	48.5	16.4	0.7	32.1	0.7	48.5	157
	Total	41.4	16.8	1.8	21.0	0.3	58.6	666
Comparison area	Lowest	37.5	12.5	1.3	16.3	2.5	37.5	88
	Second	31.5	3.7	0.9	15.7	3.7	31.5	119
	Middle	42.5	10.0	0.0	26.3	1.3	42.5	101
	Fourth	46.5	8.1	3.5	25.6	2.3	46.5	105
	Highest	43.9	11.2	1.9	28.0	0.0	43.9	129
	Total	40.1	8.9	1.5	22.3	2.0	59.9	542
Both areas	Lowest	37.8	24.0	1.0	13.8	1.0	62.2	210
	Second	33.6	18.9	0.8	14.8	1.6	66.4	265
	Middle	44.4	34.8	1.1	23.6	0.6	55.6	212
	Fourth	42.8	24.0	4.3	25.0	1.4	57.2	235
	Highest	46.5	32.8	1.2	30.3	0.4	53.5	286
	Total	40.9	26.6	1.7	21.6	1.0	59.1	1,208

*Multiple responses recorded.
PNC=Postnatal care.
FWV=Family welfare visitor.
FDSR= Family Development Services and Research.
CMH= Christian Memorial Hospital.
HDSS=Health and Demographic Surveillance System.

Assistance during delivery

In Chakaria, the traditional birth attendants (TBAs) were more popular than the skilled birth attendants (SBAs) for assisting deliveries. Eighty one percent of 1,208 deliveries in Chakaria were assisted by the TBAs as opposed to 19% of the deliveries assisted by the SBAs (e.g. nurses/doctors, FWVs, midwives). The percentage of deliveries assisted by the TBAs was slightly higher in the comparison area (81.8%) than the intervention area (79.6%) (Table 18).

Despite the fact that the services provided by the midwives of the Chakaria project were also available to some parts of the comparison area, the use of these trained midwives was higher in the intervention area compared to the comparison area (13.3% vs. 6.8%) (Table 18). At the same time, the overall use of SBAs that comprised nurses, doctors, FWVs, and midwives was slightly higher in the intervention area (20.5%) than the comparison area (18.2%) (Table 18). The use rate of nurse/doctors by the women from the highest quintile was much higher than those by women from the lowest quintiles.

Table 18. Assistance during delivery by asset quintile, Chakaria HDSS, 2007						
Area	Asset quintile	Midwife (%)	FWV (%)	Nurse/doctor (%)	TBA (%)	No. of women
Intervention area	Lowest	15.6	0.0	0.8	83.6	122
	Second	12.6	0.7	3.5	83.2	146
	Middle	13.5	0.0	9.9	76.6	111
	Fourth	10.9	3.9	7.0	78.3	130
	Highest	14.1	0.6	9.0	76.3	157
	Total	13.3	1.1	6.1	79.6	666
Comparison area	Lowest	8.1	1.2	2.3	88.4	88
	Second	0.9	0.0	3.4	95.7	119
	Middle	7.2	3.1	15.5	74.2	101
	Fourth	7.7	1.9	11.5	78.8	105
	Highest	10.6	1.6	15.4	72.4	129
	Total	6.8	1.5	9.9	81.8	542
Both areas	Lowest	12.5	0.5	1.4	85.6	210
	Second	7.3	0.4	3.5	88.8	265
	Middle	10.6	1.4	12.5	75.5	212
	Fourth	9.4	3.0	9.0	78.5	235
	Highest	12.5	1.1	11.8	74.6	286
	Total	10.4	1.3	7.7	80.6	1,208

FWV=Family Welfare Visitor.
TBA=Traditional Birth Attendants.
HDSS=Health and Demographic Surveillance System.

Place of delivery

94.9 percent of the deliveries took place at home. Only 5.1% of 1,208 deliveries took place either at hospitals or at clinics. The percentage of deliveries taking place at the hospitals was slightly higher in the comparison area (6.8%) compared to the intervention area (3.8%) (Table 19). The women from the households in the highest asset quintile had a much higher rate of facility based delivery than those from the lowest quintile.

Table 19. Place of delivery by asset quintile, Chakaria HDSS, 2007				
Area	Asset quintile	Hospital/Clinic (%)	Home (%)	No. of women (%)
Intervention area	Lowest	0.8	99.2	122
	Second	1.4	98.6	146
	Middle	6.3	93.7	111
	Fourth	5.4	94.6	130
	Highest	5.1	94.9	157
	Total	3.8	96.2	666
Comparison area	Lowest	1.1	98.9	88
	Second	1.7	98.3	119
	Middle	12.9	87.1	101
	Fourth	9.5	90.5	105
	Highest	8.5	91.5	129
	Total	6.8	93.2	542
Both areas	Lowest	1.0	99.0	210
	Second	1.5	98.5	265
	Middle	9.4	90.6	212
	Fourth	7.2	92.8	235
	Highest	6.6	93.4	286
	Total	5.1	94.9	1,208
HDSS=Health and Demographic Surveillance System.				

Table 20 shows caesarean-section delivery by household asset quintile in 2007. Caesarean-section delivery accounted for 3.0% of the deliveries in the Chakaria HDSS area in 2007. Although the number of caesarean sections was small, the number of women with caesarean sections from the highest quintile was 6 times the number of women from the lowest quintile.

Table 20. Proportion of caesarean-section delivery by asset quintile, Chakaria HDSS, 2007			
Asset quintile	No. of caesarean-section delivery	Caesarean-section delivery (%)	Total number of deliveries
Lowest	2	1.0	210
Second	6	2.3	265
Middle	8	3.9	211
Fourth	8	3.6	236
Highest	12	4.3	286
Total	36	3.0	1,208
HDSS=Health and Demographic Surveillance System.			

REFERENCES

1. Bhuiya A, Ribaux C, and Eppler P. Community-led primary healthcare initiatives: Lessons learned from a project in rural Bangladesh. In J Rohde and J Wyon (eds.) Community-Based Health Care: Lessons from Bangladesh to Boston. Boston: Management Sciences for Health. 2002. pp87-111.

2. Eppler P, Bhuiya A, and Hossain M. A Process-oriented approach to the establishment of Community-based Village Health Posts. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh, 1996. 37p.

3. Bhuiya A, Hanifi SMA, and Mahmood SS. Chakaria health and demographic surveillance system: focusing on the poor and vulnerable. Socioeconomic, Health and Demographic Profile, 1999–2000. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh, 2006. 56p. (Scientific report no. 94).

4. International Centre for Diarrhoeal Disease Research, Bangladesh. Health and Demographic Surveillance System - Matlab: Reg istration of health and demographic events 2006. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh, 2008. 77 p. (Scientific report no. 103).

Bhuiya A, Hanifi SMA, and Urni F. Chakaria health and demographic surveillance system: focusing on the poor and vulnerable. Socioeconomic, Health and Demographic Profile and Utilization of Healthcare Services - 2006. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh, 2008. 51 p. (Scientific report no. 102).

Bhuiya A., Hanifi SMA, Mahmood SS. Chakaria health and demographic surveillance system: focusing on the poor and vulnerable. Demographic profile, family-planning use, and safe motherhood practices, 2005. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh, 2007. 50 p. (Scientific report no. 100).

Bhuiya A, Hanifi SMA, Chowdhury M, Jahangir M, and Gwatkin DR. Rapid methods for monitoring the utilization of healthcare facilities by the poor: Findings from a pilot project in rural Bangladesh. FHS Working paper 2, Bangladesh series, October 2007. http://www.futurehealthsystems.org/publications/WP%202%20final.pdf.

Bhuiya A, Hanifi SMA, Roy N, Streatfield PK. Performance of the Lot Quality Assurance Sampling Method Compared to surveillance for Identifying Inadequately- performing Areas in Matlab, Bangladesh. J Health Popul Nutr 2007 March; 25(1):37-46.

Bhuiya A, Aziz A, Hanifi SMA. Reproductive and sexual health problems as perceived by women and men in a rural area of Bangladesh. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh; 1997. 24 p.

Bhuiya A, Hanifi SMA, Hossain M, Aziz A. Effects of an AIDS awareness campaign about AIDS in a remote rural area of Bangladesh. Int Q Community Health Educ 2000; 19(1): 51-63.

Bhuiya A, Ribaux C, Eppler P. Community-led primary healthcare initiatives: lessons learned from a project in rural Bangladesh. In: Rohde J, Wyon J, editors. Community-based health care: Lessons from Bangladesh to Boston. Boston: Management Sciences for Health, 2002: 87-111.

Bhuiya A, Ribaux CA. Rethinking community participation: prospects of health initiatives by indigenous self-help organizations in rural Bangladesh. Dhaka: International Centre for Diarrhoeal Disease Research Bangladesh, 1997. (Special publication no. 65). 31 p.

Bhuiya A, Sharmin T, Hanifi SMA. Nature of domestic violence against women in a rural area of Bangladesh: Implication for preventive interventions. J Health Popul Nutr 2003; 21(1): 48-54.

Bhuiya A, Yasmin F, Begum F, Rob U. Community participation in health, family planning and development programmes. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh, 1997. 53 p.

Bhuiya A. Health knowledge and behaviour in five unions of Chakaria. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh, 1996. (Special publication no. 52). 38 p.

Bhuiya A., Mahmood SS., Rana AKMM, Ahmed SM, Chowdhury AMR. A multidimensional Approach to Measure Poverty in Rural Bangladesh. J Health Popul Nutr 2007;25(2):134-145.

Choudhury KK, Hanifi SMA, Mahmood SS, Bhuiya A. Sociodemographic Characteristics of Tobacco Consumers in a Rural Area of Bangladesh. J Health Popul Nutr 2007;25(4):456-64.

Choudhury KK, Hanifi SMA, Rasheed S, Bhuiya A. Gender inequality and severe malnutrition among children in a remote rural area of Bangladesh. J Health Popul Nutr 2000;18(3):123-30.

Hanifi SMA, Bhuiya A. Family-planning services in a low-performing rural area of Bangladesh: insights from field observations. J Health Popl Nutr 2001;19(3):209-14.

Hossain SMM, Bhuiya A, Khan AR, Uhaa I. Community development and its impact on health: South Asian experience. BMJ 2004; 328:830-3.

Hossain SMM, Bhuiya A, Rasheed S. Correlates of perceived malarial episodes and treatment-seeking behavior in a malarial-endemic rural area in Bangladesh. Southeast Asian J Trop Med Public Health 2001;32(4):707-19.

Jacob S. Siegel and David A. Swanson. The Methods and Materials of Demography, Second edition. Elsevier Academic Press, 2004. pp 196-340.

Rasheed S, Hanifi SMA, Iqbal M, NN, Bhuiya A. Policy of universal salt iodization in Bangladesh: do coastal people benefit? J Health Popul Nutr 2001;19(2):66-72.

Midyear population by age and sex in the intervention and comparison areas, Chakaria, HDSS, 2007

Age (years)	Intervention area			Comparison area			Both areas		
	Male	Female	Both	Male	Female	Both	Male	Female	Both
<1	362	304	666	246	257	503	608	561	1,169
1-4	1,258	1,295	2,553	1,060	964	2,024	2,318	2,259	4,577
5-9	1,709	1,631	3,340	1,410	1,324	2,734	3,119	2,955	6,074
10-14	1,775	1,731	3,506	1,546	1,479	3,025	3,321	3,210	6,531
15-19	1,659	1,652	3,311	1,416	1,493	2,909	3,075	3,145	6,220
20-24	1,275	1,073	2,348	1,056	888	1,944	2,331	1,961	4,292
25-29	827	798	1,625	737	660	1,397	1,564	1,458	3,022
30-34	612	634	1,246	483	535	1,018	1,095	1,169	2,264
35-39	655	656	1,311	534	576	1,110	1,189	1,232	2,421
40-44	511	504	1,015	409	433	842	920	937	1,857
45-49	469	431	900	448	442	890	917	873	1,790
50-54	369	359	728	328	351	679	697	710	1,407
55-59	332	264	596	316	259	575	648	523	1,171
60-64	257	197	454	216	148	364	473	345	818
65-69	168	126	294	151	125	276	319	251	570
70-74	153	124	277	127	102	229	280	226	506
75-79	102	73	175	68	62	130	170	135	305
80-84	47	46	93	48	37	85	95	83	178
85+	57	32	89	31	43	74	88	75	163
All	12,597	11,930	24,527	10,630	10,178	20,808	23,227	22,108	45,335

Percent distribution of midyear population by age and sex in the intervention and comparison areas, Chakaria HDSS, 2007

Age (years)	Intervention area			Comparison area			Both areas		
	Male	Female	Both	Male	Female	Both	Male	Female	Both
<1	2.9	2.5	2.7	2.3	2.5	2.4	2.6	2.5	2.6
1-4	10.0	10.9	10.4	10.0	9.5	9.7	10.0	10.2	10.1
5-9	13.6	13.7	13.6	13.3	13.0	13.1	13.4	13.4	13.4
10-14	14.1	14.5	14.3	14.5	14.5	14.5	14.3	14.5	14.4
15-19	13.2	13.8	13.5	13.3	14.7	14.0	13.2	14.2	13.7
20-24	10.1	9.0	9.6	9.9	8.7	9.3	10.0	8.9	9.5
25-29	6.6	6.7	6.6	6.9	6.5	6.7	6.7	6.6	6.7
30-34	4.9	5.3	5.1	4.5	5.3	4.9	4.7	5.3	5.0
35-39	5.2	5.5	5.3	5.0	5.7	5.3	5.1	5.6	5.3
40-44	4.1	4.2	4.1	3.8	4.3	4.0	4.0	4.2	4.1
45-49	3.7	3.6	3.7	4.2	4.3	4.3	3.9	3.9	3.9
50-54	2.9	3.0	3.0	3.1	3.4	3.3	3.0	3.2	3.1
55-59	2.6	2.2	2.4	3.0	2.5	2.8	2.8	2.4	2.6
60-64	2.0	1.7	1.9	2.0	1.5	1.7	2.0	1.6	1.8
65-69	1.3	1.1	1.2	1.4	1.2	1.3	1.4	1.1	1.3
70-74	1.2	1.0	1.1	1.2	1.0	1.1	1.2	1.0	1.1
75-79	0.8	0.6	0.7	0.6	0.6	0.6	0.7	0.6	0.7
80-84	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4
85+	0.5	0.3	0.4	0.3	0.4	0.4	0.4	0.3	0.4
All	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Number of births by age of mother, Chakaria HDSS, 2007

Age (years)	Intervention area			Comparison area			Both areas		
	Male	Female	Both	Male	Female	Both	Male	Female	Both
10-14	0	2	2	2	1	3	2	3	5
15-19	74	78	152	70	86	156	144	164	308
20-24	127	95	222	76	66	142	203	161	364
25-29	69	79	148	64	56	120	133	135	268
30-34	37	41	78	44	32	76	82	72	154
35-39	27	18	45	23	14	37	50	32	82
40-44	9	5	14	3	4	7	12	9	21
45-49	1	3	4	1	0	1	2	3	5
50-54	1	0	1	0	0	0	1	0	1
55-59	0	0	0	0	0	0	0	0	0
60-64	0	0	0	0	0	0	0	0	0
65-69	0	0	0	0	0	0	0	0	0
70-74	0	0	0	0	0	0	0	0	0
75-79	0	0	0	0	0	0	0	0	0
80-84	0	0	0	0	0	0	0	0	0
85+	0	0	0	0	0	0	0	0	0
All	345	321	666	283	259	542	629	579	1,208

Number of deaths by age and sex, Chakaria HDSS, 2007

Age (years)	Intervention area			Comparison area			Both areas		
	Male	Female	Both	Male	Female	Both	Male	Female	Both
<1	13	17	30	16	12	28	29	29	58
1-4	7	5	12	4	5	9	11	10	21
5-9	2	2	4	2	0	2	4	2	6
10-14	1	1	2	3	2	5	4	3	7
15-19	4	0	4	3	0	3	7	0	7
20-24	3	1	4	1	6	7	4	7	11
25-29	2	1	3	2	1	3	4	2	6
30-34	0	0	0	1	2	3	1	2	3
35-39	2	0	2	0	0	0	2	0	2
40-44	1	1	2	4	3	7	5	4	9
45-49	0	0	0	4	1	5	4	1	5
50-54	3	1	4	1	3	4	4	4	8
55-59	5	5	10	8	3	11	13	8	21
60-64	4	2	6	8	3	11	12	5	17
65-69	6	3	9	3	4	7	9	7	16
70-74	5	5	10	4	3	7	9	8	17
75-79	5	2	7	5	2	7	10	4	14
80-84	8	5	13	4	4	8	12	9	21
85+	4	6	10	8	7	15	12	13	25
All	75	57	132	81	61	142	156	118	274

Causes of deaths by age and sex, Chakaria HDSS, 2007

Cause	All age	Age (years)					
		<1	1-4	5-14	15-49	50-59	60+
Male							
Communicable diseases							
Diarrheal	2	0	1	1	0	0	0
Dysentery	1	0	0	0	0	0	1
Tuberculosis	1	0	0	0	1	0	0
Hepatitis	5	0	1	2	1	0	1
Respiratory infections	14	11	3	0	0	0	0
Malaria	1	0	0	0	1	0	0
Typhoid	2	0	0	0	1	0	1
Maternal and neonatal conditions							
Neonatal	7	7	0	0	0	0	0
Other neonatal	6	6	0	0	0	0	0
Nutritional	1	0	1	0	0	0	0
Non–communicable diseases							
Malignant neoplasm	13	0	0	0	3	2	8
Neoplasm	7	0	0	0	2	1	4
Diabetes	2	0	0	0	0	0	2
Hypertension disease	2	0	0	0	1	1	0
Stroke	17	0	0	0	5	5	7
Other cardiovascular	7	2	0	0	1	0	4
Asthma/Bronchitis	22	0	0	0	0	5	17
Digestive disease	1	0	0	0	0	0	1
Senility	13	0	0	0	0	1	12
Epilepsy	1	0	0	0	1	0	0
Injuries							
Accident	12	0	0	3	8	0	1
Drowning	3	0	3	0	0	0	0
Suicide	1	0	0	0	0	1	0
Unknown	15	3	2	2	2	1	5
All	156	29	11	8	27	17	62
Female							
Communicable diseases							
Diarrheal	7	1	0	0	2	1	3
Tuberculosis	1	0	0	0	0	0	1
Hepatitis	4	1	0	1	2	0	0
Respiratory infection	12	9	3	0	0	0	0
Malaria	1	0	0	0	0	0	1
Rabies	1	1	0	0	0	0	0
Maternal and neonatal conditions							
Maternal death	2	0	0	0	2	0	0
Neonatal	4	4	0	0	0	0	0
Other neonatal	7	5	0	0	2	0	0
Nutritional	4	3	0	1	0	0	0
Non–communicable diseases							
Malignant neoplasm	7	0	0	0	2	2	3
Neoplasm	2	0	0	0	2	0	0
Diabetes	1	0	0	0	1	0	0
Hypertension disease	1	0	0	0	0	1	0
Stroke	8	0	0	0	0	2	6
Other cardiovascular	4	0	0	0	2	1	1
Asthma/Bronchitis	8	0	0	0	0	3	5
Other urinary	3	0	1	0	0	1	1
Senility	12	0	0	0	0	12	12
Epilepsy	1	0	0	0	0	1	1
Injuries							
Accident	4	0	0	3	0	1	0
Drowning	5	1	4	0	0	0	0
Suicide	1	0	0	0	1	0	0
Homicide	1	1	0	0	0	0	0
Unknown	17	3	2	0	0	1	11
All	118	29	10	5	16	26	45

Number of migrants by age and sex, Chakaria HDSS, 2007

Age (years)	Intervention area			Comparison area			Both areas		
	Male	Female	Both	Male	Female	Both	Male	Female	Both
In-migrants									
<1	3	7	10	7	4	11	10	11	21
1-4	19	19	38	23	25	48	42	44	86
5-9	26	28	54	19	19	38	45	47	92
10-14	44	28	72	18	31	49	62	59	121
15-19	39	151	190	43	158	201	82	309	391
20-24	40	56	96	24	43	67	64	99	163
25-29	28	21	49	24	17	41	52	38	90
30-34	11	5	16	17	7	24	28	12	40
35-39	11	5	16	9	2	11	20	7	27
40-44	1	3	4	3	1	4	4	4	8
45-49	3	3	6	3	4	7	6	7	13
50-54		1	1	0	3	3	0	4	4
55-59	1	5	6	4	5	9	5	10	15
60-64	1	2	3	0	4	4	1	6	7
65-69	1		1	2	7	9	3	7	10
70-74	1	3	4	0	5	5	1	8	9
75-79	1	4	5	2	4	6	3	8	11
80-84	2	1	3	0	2	2	2	3	5
85+		1	1	1	2	3	1	3	4
All	232	343	575	199	343	542	431	686	1,117
Out-migrants									
<1	8	9	17	8	11	19	16	20	36
1-4	14	17	31	17	28	45	31	45	76
5-9	21	20	41	22	13	35	43	33	76
10-14	33	37	70	39	41	80	72	78	150
15-19	81	186	267	45	170	215	126	356	482
20-24	64	91	155	54	84	138	118	175	293
25-29	41	35	76	22	30	52	63	65	128
30-34	30	11	41	23	8	31	53	19	72
35-39	8	4	12	16	1	17	24	5	29
40-44	14	2	16	7	2	9	21	4	25
45-49	1	2	3	5	4	9	6	6	12
50-54	4	0	4	3	6	9	7	6	13
55-59	0	4	4	3	7	10	3	11	14
60-64	1	3	4	1	2	3	2	5	7
65-69	2	3	5	0	2	2	2	5	7
70-74	0	4	4	3	6	9	3	10	13
75-79	3	3	6	2	1	3	5	4	9
80-84	1	1	2	1	3	4	2	4	6
85+	0	2	2	1	0	1	1	2	3
All	326	434	760	272	419	691	598	853	1,451

Migration rate per 1,000 population by age and sex, Chakaria HDSS, 2007

Age (years)	Intervention area			Comparison area			Both areas		
	Male	Female	Both	Male	Female	Both	Male	Female	Both
In-migration									
<1	8.3	23.0	15.0	28.5	15.6	21.9	16.4	19.6	18.0
1-4	15.1	14.7	14.9	21.7	25.9	23.7	18.1	19.5	18.8
5-9	15.2	17.2	16.2	13.5	14.4	13.9	14.4	15.9	15.1
10-14	24.8	16.2	20.5	11.6	21.0	16.2	18.7	18.4	18.5
15-19	23.5	91.4	57.4	30.4	105.8	69.1	26.7	98.3	62.9
20-24	31.4	52.2	40.9	22.7	48.4	34.5	27.5	50.5	38.0
25-29	33.9	26.3	30.2	32.6	25.8	29.3	33.2	26.1	29.8
30-34	18.0	7.9	12.8	35.2	13.1	23.6	25.6	10.3	17.7
35-39	16.8	7.6	12.2	16.9	3.5	9.9	16.8	5.7	11.2
40-44	2.0	6.0	3.9	7.3	2.3	4.8	4.3	4.3	4.3
45-49	6.4	7.0	6.7	6.7	9.0	7.9	6.5	8.0	7.3
50-54	0.0	2.8	1.4	0.0	8.5	4.4	0.0	5.6	2.8
55-59	3.0	18.9	10.1	12.7	19.3	15.7	7.7	19.1	12.8
60-64	3.9	10.2	6.6	0.0	27.0	11.0	2.1	17.4	8.6
65-69	6.0	0.0	3.4	13.2	56.0	32.6	9.4	27.9	17.5
70-74	6.5	24.2	14.4	0.0	49.0	21.8	3.6	35.4	17.8
75-79	9.8	54.8	28.6	29.4	64.5	46.2	17.6	59.3	36.1
80-84	42.6	21.7	32.3	0.0	54.1	23.5	21.1	36.1	28.1
85+	0.0	31.3	11.2	32.3	46.5	40.5	11.4	40.0	24.5
All	18.4	28.8	23.4	18.7	33.7	26.0	18.6	31.0	24.6
Out-migration									
<1	22.1	29.6	25.5	32.5	42.8	37.8	26.3	35.7	30.8
1-4	11.1	13.1	12.1	16.0	29.0	22.2	13.4	19.9	16.6
5-9	12.3	12.3	12.3	15.6	9.8	12.8	13.8	11.2	12.5
10-14	18.6	21.4	20.0	25.2	27.7	26.4	21.7	24.3	23.0
15-19	48.8	112.6	80.6	31.8	113.9	73.9	41.0	113.2	77.5
20-24	50.2	84.8	66.0	51.1	94.6	71.0	50.6	89.2	68.3
25-29	49.6	43.9	46.8	29.9	45.5	37.2	40.3	44.6	42.4
30-34	49.0	17.4	32.9	47.6	15.0	30.5	48.4	16.3	31.8
35-39	12.2	6.1	9.2	30.0	1.7	15.3	20.2	4.1	12.0
40-44	27.4	4.0	15.8	17.1	4.6	10.7	22.8	4.3	13.5
45-49	2.1	4.6	3.3	11.2	9.0	10.1	6.5	6.9	6.7
50-54	10.8	0.0	5.5	9.1	17.1	13.3	10.0	8.5	9.2
55-59	0.0	15.2	6.7	9.5	27.0	17.4	4.6	21.0	12.0
60-64	3.9	15.2	8.8	4.6	13.5	8.2	4.2	14.5	8.6
65-69	11.9	23.8	17.0	0.0	16.0	7.2	6.3	19.9	12.3
70-74	0.0	32.3	14.4	23.6	58.8	39.3	10.7	44.2	25.7
75-79	29.4	41.1	34.3	29.4	16.1	23.1	29.4	29.6	29.5
80-84	21.3	21.7	21.5	20.8	81.1	47.1	21.1	48.2	33.7
85+	0.0	62.5	22.5	32.3	0.0	13.5	11.4	26.7	18.4
All	25.9	36.4	31.0	25.6	41.2	33.2	25.7	38.6	32.0

Number of migrants by origin or destination, Chakaria HDSS, 2007

Origin/ Destination	All age	Age (years)										
		<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50+
In-migration												
Male												
Inside Bangladesh	379	52	43	60	80	57	36	17	12	1	6	15
Outside Bangladesh	51	0	2	1	2	7	16	11	8	3	0	1
Inside Chakaria	236	29	31	47	58	27	16	5	6	1	3	13
Outside Chakaria	125	17	8	10	19	22	22	12	8	2	2	3
Inside HDSS area	206	23	24	39	54	24	16	6	5	1	3	11
Outside HDSS area	124	19	13	17	19	17	18	10	6	2	0	3
Female												
Inside Bangladesh	680	54	47	59	306	98	38	11	7	4	7	49
Outside Bangladesh	4	1	0	0	1	1	0	1	0	0	0	0
Inside Chakaria	483	38	35	41	223	61	19	5	5	3	6	47
Outside Chakaria	160	11	12	18	68	30	14	5	1	0	0	1
Inside HDSS area	384	29	29	36	170	44	15	5	3	3	5	45
Outside HDSS area	217	14	12	20	103	42	16	4	3	0	1	2
Out-migration												
Male												
Inside Bangladesh	414	47	40	69	96	51	34	24	18	8	3	24
Outside Bangladesh	176	0	1	3	28	66	29	29	6	12	2	0
Inside Chakaria	313	38	29	55	78	36	24	13	12	5	3	20
Outside Chakaria	110	8	9	13	17	29	11	13	4	2	0	4
Inside HDSS area	272	27	24	49	71	34	21	12	12	3	3	16
Outside HDSS area	126	16	13	17	21	26	10	11	2	4	0	6
Female												
Inside Bangladesh	846	63	33	78	355	173	64	19	4	4	6	47
Outside Bangladesh	4	2	0	0	0	1	1	0	0	0	0	0
Inside Chakaria	615	50	24	60	246	123	42	14	3	4	5	44
Outside Chakaria	160	9	5	11	76	38	12	5	1	0	1	2
Inside HDSS area	474	41	20	53	171	92	32	12	2	3	5	43
Outside HDSS area	258	15	8	16	134	60	12	6	2	1	1	3

Number of in-migrants by reasons for migration, Chakaria HDSS, 2007

Reason for migration	All age	Age (years)										
		<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50+
Male												
Family-related												
To join spouse	22	1	0	2	4	4	7	1	3	0	22	0
Family friction/ breakdown	20	0	1	0	5	5	4	1	0	4	20	0
Work-related												
New job/job transfer	92	0	4	18	26	15	13	9	6	1	0	0
Other job related reasons	26	1	3	5	11	2	2	1	0	0	0	1
Housing-related												
Wanted to own home/new house	144	44	18	7	13	21	13	12	6	0	3	7
Education												
To acquire education	29	2	12	8	4	2	1	0	0	0	0	0
Reasons not reported	98	4	7	22	19	15	12	4	5	3	3	4
All	431	52	45	62	82	64	52	28	20	8	48	12
Female												
Family related												
Change in marital status	255	0	1	7	186	40	16	3	0	1	0	1
Family friction/ breakdown	135	0	0	7	73	21	4	1	1	0	4	24
Work-related												
New job/job transfer	6	1	1	0	2	1	1	0	0	0	0	0
Housing-related	16	1	3	7	1	2	0	2	0	0	0	0
Wanted to own home/new house												
Education	190	43	19	12	38	30	16	4	3	3	2	20
To acquire education												
Education completed/ interrupted	26	1	14	7	2	2	0	0	0	0	0	0
Reasons not reported	58	9	9	19	6	3	2	3	1	1	1	4
All	686	55	47	59	308	99	39	13	5	5	7	49

Number of out-migrants by reasons for migration, Chakaria HDSS, 2007

Reason for migration	All age	Age (years)										
		<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50+
Male												
Family-related												
To Join spouse	19	0	0	2	5	4	2	1	0	2	1	2
Family friction/ breakdown	32	3	1	3	4	6	5	0	2	0	1	7
Work-related												
New job/job transfer	173	0	0	12	36	50	26	24	6	13	3	3
Other work-related	36	0	2	3	13	6	7	1	2	1	0	1
Housing-related												
Wanted to own home/new house	203	42	29	34	33	22	12	11	9	3	1	7
Education												
To acquire education	20	2	7	4	7	0	0	0	0	0	0	0
Reasons not reported	115	4	14	28	30	11	16	5	2	0	0	5
All	598	51	53	86	128	99	68	42	21	19	6	25
Female												
Family-related												
To Join spouse	320	0	0	17	193	81	25	2	1	0	0	1
Family friction/breakdown	199	10	1	4	95	40	11	3	0	1	2	32
Work-related												
New job/job transfer	19	1	1	3	7	4	3	0	0	0	0	0
Other job-related reason	13	2	1	4	2	2	1	1	0	0	0	0
Housing-related												
Wanted to own home/new house	19	1	3	10	4	0	1	0	0	0	2	20
Education												
To acquire education	26	1	14	7	2	2	0	0	0	0	0	0
Reasons not reported	57	6	4	19	13	7	3	2	1	2	0	0
All	653	21	24	64	316	136	44	8	2	3	4	53

Percentage of population by age and marital status, Chakaria HDSS, 2007

Age (years)	Married	Divorced	Abandoned	Widower/ Widow	Separated	Never married	Population
Male							
<1	0.0	0.0	0.0	0.0	0.0	100.0	608
1-4	0.0	0.0	0.0	0.0	0.0	100.0	2,317
5-9	0.0	0.0	0.0	0.0	0.0	100.0	3,119
10-14	0.1	0.0	0.0	0.0	0.0	99.9	3,320
15-19	4.0	0.1	0.0	0.0	0.0	95.8	3,075
20-24	21.5	0.3	0.1	0.1	0.0	78.0	2,331
25-29	55.2	0.4	0.1	0.1	0.0	44.2	1,564
30-34	84.0	0.2	0.1	0.2	0.1	15.4	1,095
35-39	96.0	0.4	0.2	0.4	0.1	2.9	1,189
40-44	98.5	0.1	0.2	0.4	0.0	0.8	920
45-49	98.5	0.4	0.2	0.7	0.0	0.2	917
50-54	99.0	0.1	0.0	0.7	0.0	0.1	697
55-59	97.2	0.0	0.2	2.5	0.0	0.2	648
60-64	96.2	0.0	0.0	3.8	0.0	0.0	473
65-69	92.8	0.3	0.0	6.9	0.0	0.0	319
70-74	89.6	0.0	0.4	9.3	0.0	0.7	280
75-79	85.3	0.0	0.0	14.7	0.0	0.0	170
80-84	69.5	2.1	0.0	27.4	1.1	0.0	95
85+	70.5	0.0	0.0	29.5	0.0	0.0	88
All	34.3	0.1	0.1	0.8	0.0	64.7	23,225
Female							
<1	0.0	0.0	0.0	0.0	0.0	100.0	564
1-4	0.0	0.0	0.0	0.0	0.0	100.0	2,259
5-9	0.0	0.0	0.0	0.0	0.0	100.0	2,955
10-14	1.0	0.0	0.0	0.0	0.0	99.0	3,210
15-19	29.3	0.5	0.2	0.3	0.0	69.6	3,145
20-24	67.3	1.0	1.5	0.6	0.1	29.5	1,961
25-29	88.1	1.0	2.4	1.4	0.1	6.9	1,457
30-34	92.5	1.4	2.1	2.7	0.1	1.3	1,169
35-39	89.7	1.9	1.9	5.7	0.2	0.6	1,232
40-44	87.4	0.7	1.5	9.8	0.2	0.3	937
45-49	79.6	0.6	2.7	16.8	0.1	0.1	873
50-54	68.6	1.1	2.5	27.3	0.1	0.3	710
55-59	59.8	0.8	1.1	37.7	0.2	0.4	523
60-64	48.7	0.9	1.4	48.4	0.3	0.3	345
65-69	45.0	0.4	0.8	53.8	0.0	0.0	251
70-74	22.6	0.9	1.3	74.3	0.4	0.4	226
75-79	17.0	0.0	0.7	79.3	2.2	0.7	135
80-84	9.6	0.0	0.0	90.4	0.0	0.0	83
85+	4.0	0.0	1.3	92.0	2.7	0.0	75
All	38.1	0.5	0.9	6.8	0.1	53.6	22,110

Percentage of population by age and marital status, intervention area, Chakaria HDSS, 2007

Age (years)	Married	Divorced	Abandoned	Widower/ Widow	Separated	Never married	Population
Male							
10-14	0.1	0.1	0.0	0.0	0.0	99.8	1,774
15-19	3.5	0.0	0.0	0.1	0.1	96.4	1,659
20-24	20.7	0.0	0.1	0.1	0.0	79.1	1,275
25-29	54.9	0.5	0.0	0.0	0.0	44.6	827
30-34	85.0	0.3	0.0	0.2	0.2	14.4	612
35-39	95.7	0.5	0.3	0.3	0.0	3.2	655
40-44	99.0	0.0	0.2	0.2	0.0	0.6	511
45-49	98.7	0.6	0.2	0.2	0.0	0.2	469
50-54	98.9	0.3	0.0	0.8	0.0	0.0	369
55-59	97.3	0.0	0.3	2.1	0.0	0.3	332
60-64	96.1	0.0	0.0	3.9	0.0	0.0	257
65-69	94.0	0.0	0.0	6.0	0.0	0.0	168
70-74	91.5	0.0	0.7	6.5	0.0	1.3	153
75-79	87.3	0.0	0.0	12.7	0.0	0.0	102
80-84	57.4	2.1	0.0	40.4	0.0	0.0	47
85+	64.9	0.0	0.0	35.1	0.0	0.0	57
All	34.0	0.1	0.1	0.8	0.0	65.0	12,595
Female							
10-14	1.0	0.0	0.0	0.0	0.0	99.0	1,731
15-19	28.5	0.5	0.1	0.4	0.1	70.4	1,652
20-24	68.1	1.0	1.3	0.6	0.0	29.0	1,073
25-29	88.5	0.9	2.5	1.3	0.0	6.9	798
30-34	92.6	1.3	1.9	3.0	0.0	1.3	634
35-39	90.1	2.4	2.3	4.3	0.3	0.6	656
40-44	89.7	0.6	1.8	7.5	0.2	0.2	504
45-49	81.2	0.7	2.3	15.5	0.2	0.0	431
50-54	67.1	1.1	2.5	29.0	0.0	0.3	359
55-59	62.5	1.1	1.9	34.1	0.0	0.4	264
60-64	51.8	1.5	2.0	44.7	0.0	0.0	197
65-69	46.8	0.8	1.6	50.8	0.0	0.0	126
70-74	22.6	1.6	1.6	74.2	0.0	0.0	124
75-79	16.4	0.0	0.0	82.2	1.4	0.0	73
80-84	8.7	0.0	0.0	91.3	0.0	0.0	46
85+	0.0	0.0	0.0	96.9	3.1	0.0	32
All	37.8	0.6	0.9	6.3	0.1	54.4	11,933

Percentage of population by age and marital status, comparison area, Chakaria HDSS, 2007

Age (years)	Married	Divorced	Abandoned	Widower/ Widow	Separated	Never married	Population
Male							
15-19	4.7	0.1	0.0	0.0	0.0	95.2	1,416
20-24	22.3	0.8	0.1	0.2	0.0	76.6	1,056
25-29	55.6	0.4	0.1	0.1	0.0	43.7	737
30-34	82.8	0.0	0.2	0.2	0.0	16.8	483
35-39	96.3	0.4	0.0	0.6	0.2	2.6	534
40-44	97.8	0.2	0.2	0.7	0.0	1.0	409
45-49	98.2	0.2	0.2	1.1	0.0	0.2	448
50-54	99.1	0.0	0.0	0.6	0.0	0.3	328
55-59	97.2	0.0	0.0	2.8	0.0	0.0	316
60-64	96.3	0.0	0.0	3.7	0.0	0.0	216
65-69	91.4	0.7	0.0	7.9	0.0	0.0	151
70-74	87.4	0.0	0.0	12.6	0.0	0.0	127
75-79	82.4	0.0	0.0	17.6	0.0	0.0	68
80-84	81.3	2.1	0.0	14.6	2.1	0.0	48
85+	80.6	0.0	0.0	19.4	0.0	0.0	31
All	34.6	0.2	0.0	0.8	0.0	64.4	10,630
Female							
10-14	0.9	0.0	0.0	0.0	0.0	99.1	1,479
15-19	30.3	0.4	0.2	0.3	0.0	68.8	1,493
20-24	66.3	1.0	1.7	0.7	0.2	30.1	888
25-29	87.6	1.2	2.3	1.7	0.3	7.0	659
30-34	92.3	1.5	2.4	2.2	0.2	1.3	535
35-39	89.2	1.2	1.4	7.3	0.2	0.7	576
40-44	84.8	0.9	1.2	12.5	0.2	0.5	433
45-49	78.1	0.5	3.2	18.1	0.0	0.2	442
50-54	70.1	1.1	2.6	25.6	0.3	0.3	351
55-59	57.1	0.4	0.4	41.3	0.4	0.4	259
60-64	44.6	0.0	0.7	53.4	0.7	0.7	148
65-69	43.2	0.0	0.0	56.8	0.0	0.0	125
70-74	22.5	0.0	1.0	74.5	1.0	1.0	102
75-79	17.7	0.0	1.6	75.8	3.2	1.6	62
80-84	10.8	0.0	0.0	89.2	0.0	0.0	37
85+	7.0	0.0	2.3	88.4	2.3	0.0	43
All	38.4	0.5	0.9	7.4	0.1	52.8	10,177

Chakaria HDSS project team, 2007

Name of Staff	Designation
Dhaka	
Abbas Bhuiya	Project Director
Mohammad Iqbal	Project Research Manager
SMA Hanifi	Assistant Scientist
Shehrin Shaila Mahmood	Research Investigator
Rumesa R Aziz	Research Investigator
Tania Wahed	Research Investigator
Tamanna Sharmin	Research Investigator
Farhana Urni	Statistical Officer
Md. Kashem Iqbal	Senior Administrative Officer
AZ Khan	Senior Field Research Officer
Ayesha Begum	Senior Data Management Assistant
Chakaria	
Nazma Akter	Project Health Physician
Ariful Moula	Field Research Officer
Shahidul Hoque	Senior Field Research Officer
Sharif Al Hasan	Field Research Supervisor
Sujaul Islam Mondol	Community Health Educator
Hosnera Rina	Community Health Educator
Ashish Paul	Senior Data Management Assistant
Snahashis Dutta	Field Research Assistant
Rehmat Ali	Field Assistant
Tahmina Akter	Data Management Asisstant
Minu Paul	Data Management Asisstant
Rauson Ara	Data Management Asisstant
Monjilara	Data Management Asisstant

Name of Staff	Designation
Aysha Siddiqa	Data Management Asisstant
Bappi Rani	Data Collector
Hosaina Begum	Data Collector
Kawsar Jannat	Data Collector
Mina Dhar	Data Collector
Nazma Akter	Data Collector
Noor Aysha	Data Collector
Rawnak Zahan	Data Collector
Shilpi Dey	Data Collector
Taslima Zannat	Data Collector
U Shang Prue	Data Collector
Zosna Akter	Data Collector
Monuara Begum	Data Collector
Afroza Yesmin	Data Collector
Fatema Jannat	Data Collector
Sabina Yesmin	Data Collector
Armanul Maowa Moni	Data Collector
Jesmin Akter Ranu	Data Collector
Tanzina Jannat Ara	Data Collector
Romena Begum	Data Collector
Farhana Jannat	Data Collector
Atia Nasrin Rosy	Data Collector
Setara Begum	Data Collector
Noore Jannat	Data Collector
Zannatul Ferdousi	Data Collector
Thofiqun Nahar	Data Collector
Uhlayai	Data Collector