HEALTH AND DEMOGRAPHIC SURVEILLANCE SYSTEM–MATLAB

VOLUME THIRTY TWO

REGISTRATION OF HEALTH AND DEMOGRAPHIC EVENTS 1999

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HEALTH AND DEMOGRAPHIC SURVEILLANCE SYSTEM - MATLAB

Volume Thirty Two

Registration of Health and Demographic Events 1999

This report was prepared by the staff of the Health and Demographic Surveillance System, Dhaka and Matlab.

ACKNOWLEDGEMENT

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SUMMARY

This report presents the vital registration data and contraceptive prevalence rates of 1999 in Matlab, Bangladesh. These data were collected by the Health and Demographic Surveillance System of the International Center for Diarrhoeal Disease Research, Bangladesh (ICDDR,B). The surveillance area is divided into a Maternal and Child Health and Family Planning (MCH-FP) intervention area and a Comparison area, which receives government services.

In 1999, fertility decreased in both areas as compared to 1998. The crude birth rate was 24.5 per 1,000 and the total fertility rate was 2.9 births per woman in the MCH-FP area and 25.9 and 3.3 respectively in the Comparison area. In the MCH-FP area, the crude death rate was 6.4 per 1,000 and in the Comparison area it was 7.4. In the MCH-FP area, infant mortality was 44.5 per 1,000 live births and in the Comparison area it was 60.8.

Child mortality between 1 to 4 years of age showed a slight decrease in the MCH-FP area, from 4.7 in 1998 to 4.1 in 1999, and in the comparison area it rose to 7.5. Under-5 mortality in the MCH-FP area was 60.0 and in the Comparison area it was 88.6. The trends in under-5 mortality are illustrated in Figure 2.1(b).

The rate of in-migration for the surveillance area increased to a level of 34.8 per 1,000 in 1999, and out-migration also increased to 48.0 per 1,000. The net out-migration was 13.2 per 1,000, thus offsetting the rate of natural increase, which amounted to 18.3 per 1,000 in 1999. The overall rate of population growth was .5 percent per annum. The marriage rate was 13.7 per 1,000 populations and the divorce rate was 98.6 per 1,000 marriages.

CHAPTER 1

INTRODUCTION

Since 1963, the International Center for Diarrhoeal Disease Research, Bangladesh (ICDDR,B), formerly the Cholera Research Laboratory, has been conducting a health-related research program near the town of Matlab, in rural Bangladesh. Matlab is located about 55 kilometers southeast of the country's capital, Dhaka (Figure 1.1). The Health and Demographic Surveillance System (HDSS), formerly Demographic Surveillance System (DSS), is one of the major components of this field program. Since 1966, the HDSS has maintained the registration of births, deaths, and migrations, in addition to carrying out periodical censuses. In 1975 the system was augmented to include marriages and divorces.

The recording of changes in household headship and household splits started in 1993. This information is gathered by Community Health Workers and Health Assistants, who visit each household in their assigned areas regularly and fill out the event registration forms. A detailed description of the DSS and its operation appears in CRL Scientific Report No. 9 (March 1978).

In October 1977, the surveillance area was reduced from 233 to 149 villages and a Maternal Child Health and Family Planning (MCH-FP) Program was initiated in 70 villages. The remaining 79 villages were treated as a Comparison area (Figure 1.2). Since the introduction of MCH-FP programme, CHWs have been collecting data on child and reproductive health. This system is known as the Record Keeping System (RKS). These changes are described in detail in the ICDDR,B Scientific Report No. 47 (May 1981). Due to river erosion 7 villages disappeared from the Comparison area in 1987, leaving 142 villages in the HDSS, Matlab.

This is the thirty second volume of a series of scientific reports of the Health and Demographic Surveillance System (Demographic Surveillance System) produced by ICDDR,B. Presented here are results obtained from the Matlab HDSS in 1999, along with brief notes and explanations of the tables.

Figure 1.1: Map of Bangladesh Showing the Study Area

Figure 1.2: Matlab Study Area Showing Villages
of Demographic Surveillance System

Legend

☐ Comparison area

— Embankment

⊕ ICDDR,B Hospital in Matlab

■ Intervention area

▧ Main river

☐ Village boundaries

GIS unit, ICDDR,B

KM

0 1 2 3 4
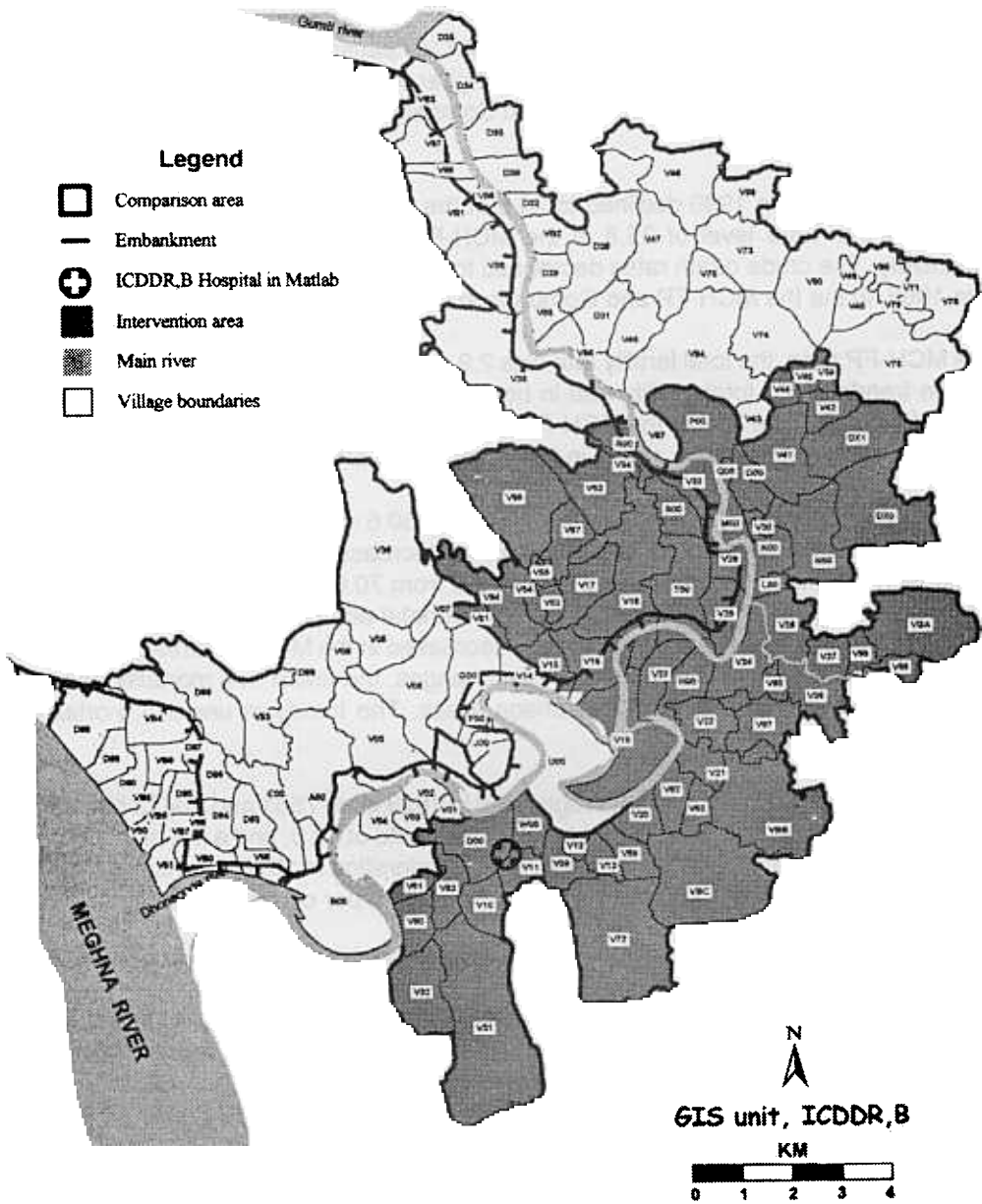
CHAPTER 2

POPULATION CHANGES

The principal vital statistics of the MCH-FP and Comparison areas separately from 1988 through 1999 are summarized in Table 2.1. Mid-year population, as well as the demographic events registered in 1999 in the MCH-FP and Comparison areas by sex are shown in Tables 2.2 through 2.5.

The crude birth rate in 1999 declined to 24.5 in the MCH-FP and 25.9 in the Comparison areas from the 1998 level of 25.8 in the MCH-FP and 28.3 in the Comparison areas respectively. The crude death rates decreased to 6.4 and 7.4 in 1999 compared to 7.0 and 8.1 in 1998 in the the MCH-FP and Comparison areas respectively.

In the MCH-FP area, the total fertility rate was 2.9 and in the Comparison area the TFR was 3.3. The trends in the total fertility rate in both areas are illustrated in Figure 2.1(a). The figure indicates that the TFR in the MCH-FP area has been stable during the last nine years, although it has been declining slowly in the Comparison area.

Infant mortality decreased in the MCH-FP area from 50.6 in 1998 to 44.6 in 1999 per 1,000 live births. This decrease was the result of a decrease in neonatal mortality. In the Comparison area infant mortality also decreased from 70.0 in 1998 to 60.8 in 1999. This decrease was the result of a decrease in both neonatal and post-neonatal mortality. Child mortality between 1 to 4 years of age slightly decreased in the MCH-FP area and increased in the comparison area. As a result of these changes, the under five mortality decreased both in the MCH-FP and in the Comparison areas. The trends in under-5 mortality are illustrated in Figure 2.1(b).

The numbers of In- and out- migrants registered in 1999 were 7561 and 10423 respectively, giving an In-migration rate of 34.8, and out-migration rate of 48.0, and a net migration rate of 13.2 thousand population leaving the area. The net migration in 1999 was higher than 1998. The overall rate of population growth was reduced to 0.5 per cent per annum.

Tables 2.3, 2.4, and 2.5 show the age and sex distributions for the whole study area, the MCH-FP and Comparison areas, and for the four blocks of the MCH-FP area. The age-sex distribution for the whole study area is illustrated by the population pyramid shown in Figure 2.2.

The decline of fertility in the area in the period 1978-1999 has caused a significant change in the age structure of the population. Children under 15 years of age constituted 43.4 percent of the population at the beginning of the MCH-FP project in 1978; by 1999 this proportion had fallen to 32.6 percent.

In the Comparison area, the change in age distribution was less than that in the MCH-FP area. Children under 15 years of age in the Comparison area were 43.3 percent of the total population in 1978, falling to 39.0 percent in 1998. This difference in age distribution was due to a difference in fertility decline in the two areas.

Table 2.1: Vital Statistics of Matlab MCH-FP and Comparison Areas, 1988-1999

Vaital rates (per 1000)	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Crude birth rate												
MCH-FP area	30.9	28.4	28.3	25.4	25.4	24.7	25.9	25.2	22.4	23.7	25.8	24.5
Comparison area	40.4	36.6	37.8	32.7	31.1	29.4	29.4	27.8	26.7	26.8	28.3	25.9
Both areas	35.5	32.4	32.9	29.0	28.2	27.0	27.6	26.5	24.5	25.2	27.0	25.2
Total fertility rate**												
MCH-FP area	3.8	3.4	3.4	3.0	3.0	2.9	3.0	2.9	2.7	2.8	3.0	2.9
Comparison area	5.4	4.9	5.0	4.3	4.0	3.8	3.8	3.6	3.5	3.4	3.6	3.3
Both areas	4.5	4.1	4.1	3.6	3.5	3.3	3.4	3.2	3.0	3.1	3.3	3.1
Crude death rate												
MCH-FP area	8.7	8.0	7.6	8.1	8.3	7.7	8.0	7.3	7.6	6.6	7.0	6.4
Comparison area	11.0	9.5	9.4	10.2	9.8	10.2	9.2	8.4	7.9	8.0	8.1	7.4
Both areas	9.9	8.7	8.5	9.1	9.0	8.9	8.6	7.9	7.7	7.3	7.5	6.9
Neonatal mortality*												
MCH-FP area	42.8	46.0	47.8	47.7	49.6	42.8	36.4	30.6	39.5	33.1	36.8	25.4
Comparison area	57.7	52.7	53.3	63.2	53.3	64.5	56.4	50.3	42.1	50.0	44.0	38.6
Both areas	51.1	49.7	50.9	56.3	51.6	54.4	46.9	40.8	40.9	41.9	40.5	32.0
Post-neonatal mortality*												
MCH-FP area	38.0	28.3	27.4	32.3	30.8	20.3	27.3	20.6	26.6	16.4	13.8	19.1
Comparison area	39.0	38.0	34.1	51.7	37.0	34.8	30.8	28.3	24.8	28.6	26.0	22.2
Both areas	38.6	33.6	31.2	43.0	34.1	28.0	29.2	24.6	25.7	22.7	20.1	20.6
Infant mortality*												
MCH-FP area	80.8	74.3	75.2	80.0	80.5	63.1	63.7	51.1	66.2	49.5	50.6	44.5
Comparison area	96.6	90.7	87.5	114.9	90.2	99.3	87.2	78.6	67.0	78.6	70.0	60.8
Both areas	89.6	83.3	82.1	99.2	85.7	82.4	76.0	65.3	66.6	64.7	60.6	52.7
Child mortality (1-4 yrs)#												
MCH-FP area	7.6	6.4	5.3	7.0	5.9	5.9	5.3	6.7	6.0	4.5	4.7	4.1
Comparison area	14.4	11.5	9.3	9.1	10.4	10.0	7.0	8.4	8.0	7.0	5.8	7.5
Both areas	11.1	9.0	7.4	8.1	8.3	8.1	6.2	7.6	7.1	5.8	5.2	5.8
Under five mortality*** *												
MCH-FP area	107.4	97.5	94.8	105.7	102.0	86.1	83.6	76.7	87.9	66.7	68.3	60.0
Comparison area	146.1	131.1	120.4	146.2	127.1	135.1	113.1	109.5	96.4	104.4	91.3	88.6
Both areas	128.3	115.7	108.7	128.1	115.7	112.5	99.1	93.8	92.3	86.3	80.1	74.4
Rate of natural increase												
MCH-FP area	22.1	20.4	20.7	17.3	17.1	17.0	17.9	17.9	14.8	17.1	18.8	18.1
Comparison area	29.4	27.1	28.4	22.5	21.2	19.2	20.2	19.4	18.8	18.7	20.2	18.5
Both areas	25.7	23.6	24.4	19.9	19.1	18.1	19.1	18.6	16.8	17.9	19.5	18.3
In-migration	26.5	29.3	26.0	26.9	33.6	25.5	26.5	27.0	25.1	34.6	30.3	34.8
Out-migration	41.5	43.9	42.4	41.9	48.5	36.1	41.4	37.4	35.0	41.7	36.9	48.0
Growth (%)	1.1	0.9	0.8	0.5	0.4	0.8	0.4	0.8	0.7	1.1	1.3	0.5

*Per 1000 live births.
**Per woman.
***Calculated from life table.
#Per 1,000 children aged 1-4 years.

Figure 2.1: Trends in Fertility and Under Five Mortality by Area, 1988-1999

(a) Total Fertility Rate

MCH-FP area —▲—   Comparison area —■—

(b) Under Five Mortality Rate (per 1000 live births)

MCH-FP area —▲—   Comparison area —■—
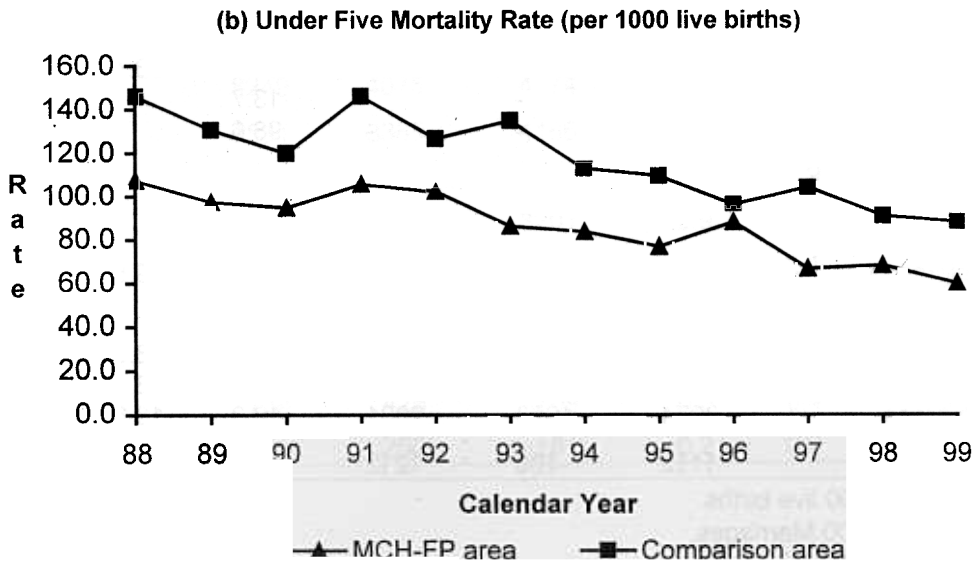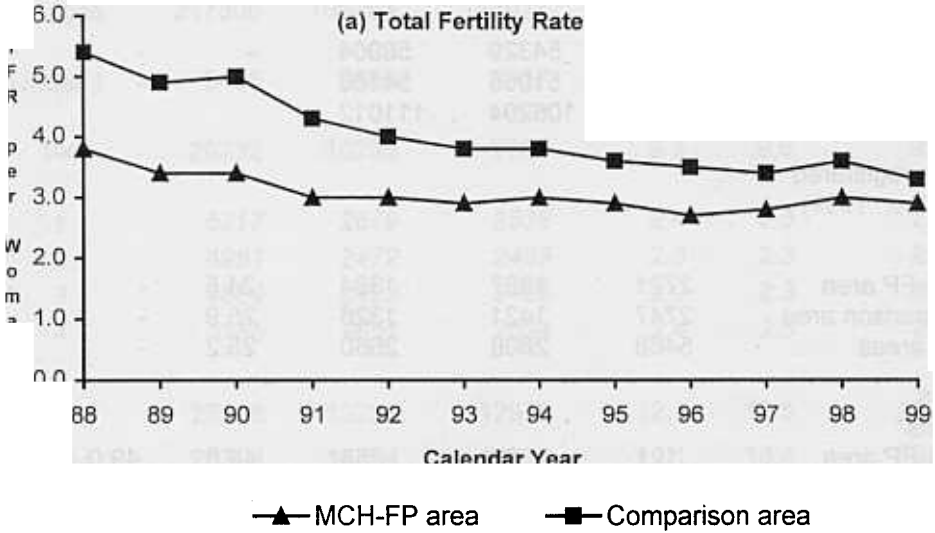
Table 2.2: Mid-year Population, Events Registered, and Population Changes in 1999

	Number			Rate per 1000		
	Total	Males	Females	Total	Males	Females
Total population as of 30 June 1999:						
MCH-FP area	111233	54329	56904	-	-	-
Comparison area	106073	51965	54108	-	-	-
Both areas	217306	106294	111012			
Events registered (Jan-Dec. 1999)						
Births:						
MCH-FP area	2721	1387	1334	24.5	-	-
Comparison area	2747	1421	1326	25.9	-	-
Both areas	5468	2808	2660	25.2	-	-
Deaths:						
-Infants*						
MCH-FP area	121	68	53	44.5	49.0	39.7
Comparison area	167	97	70	60.8	68.3	52.8
Both areas	288	165	123	52.7	58.8	46.2
-All deaths						
MCH-FP area	708	391	317	6.4	7.2	5.6
Comparison area	786	444	342	7.4	8.5	6.3
Both areas	1494	835	659	6.9	7.9	5.9
In-migration	7561	3607	3954	34.8	33.9	35.6
Out-migration	10423	5680	4743	48.0	53.4	42.7
Marriage	2981	-	-	13.7	-	-
Divorce**	294	-	-	98.6	-	-
Population change (Jan – Dec. 1999)						
Net migration	2862	2073	789	13.2	19.5	7.1
Natural increases:						
MCH-FP area	2013	996	1017	18.1	18.3	17.9
Comparison area	1961	977	984	18.5	18.8	18.2
Both areas	3974	1973	2001	18.3	18.6	18.0
Net increase	1112	-100	1212	5.1	-0.9	10.9

*Rate per 1000 live births.
**Rate per 1000 Marriages.

Table 2.3: Mid-year Population by Age and Sex, 1999

Age (years)	Number			Percent		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	217306	106294	111012	100.0	100.0	100.0
Under 1	5496	2839	2657	2.5	2.7	2.4
1-4	20232	10235	9997	9.3	9.6	9.0
1	*5217*	*2679*	*2538*	*2.4*	*2.5*	*2.3*
2	*4961*	*2472*	*2489*	*2.3*	*2.3*	*2.2*
3	*4869*	*2433*	*2436*	*2.2*	*2.3*	*2.2*
4	*5185*	*2651*	*2534*	*2.4*	*2.5*	*2.3*
5-9	26208	13238	12970	12.1	12.5	11.7
10-14	28393	14264	14129	13.1	13.4	12.7
15-19	23542	12364	11178	10.8	11.6	10.1
20-24	17950	8546	9404	8.3	8.0	8.5
25-29	15513	6980	8533	7.1	6.6	7.7
30-34	14768	6260	8508	6.8	5.9	7.7
35-39	14612	6995	7617	6.7	6.6	6.9
40-44	11326	5718	5608	5.2	5.4	5.1
45-49	8249	4075	4174	3.8	3.8	3.8
50-54	7531	3365	4166	3.5	3.2	3.8
55-59	7118	3113	4005	3.3	2.9	3.6
60-64	6221	3020	3201	2.9	2.8	2.9
65-69	4411	2227	2184	2.0	2.1	2.0
70-74	2936	1511	1425	1.4	1.4	1.3
75-79	1635	869	766	0.8	0.8	0.7
80-84	734	425	309	0.3	0.4	0.3
85+	431	250	181	0.2	0.2	0.2

Table 2.4: Mid-year Population by Age, Sex, and Area, 1999

Age (years)	MCH-FP area			Comparison area		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	111233	54329	56904	106073	51965	54108
Under 1	2724	1384	1340	2772	1455	1317
1-4	10028	5043	4985	10204	5192	5012
1	2567	1303	1264	2650	1376	1274
2	2440	1218	1222	2521	1254	1267
3	2417	1193	1224	2452	1240	1212
4	2604	1329	1275	2581	1322	1259
5-9	12387	6278	6109	13821	6960	6861
10-14	13856	6961	6895	14537	7303	7234
15-19	11894	6215	5679	11648	6149	5499
20-24	9689	4654	5035	8261	3892	4369
25-29	8302	3775	4527	7211	3205	4006
30-34	7858	3278	4580	6910	2982	3928
35-39	7747	3653	4094	6865	3342	3523
40-44	5968	3036	2932	5358	2682	2676
45-49	4437	2188	2249	3812	1887	1925
50-54	3991	1784	2207	3540	1581	1959
55-59	3772	1671	2101	3346	1442	1904
60-64	3229	1559	1670	2992	1461	1531
65-69	2288	1190	1098	2123	1037	1086
70-74	1565	809	756	1371	702	669
75-79	851	468	383	784	401	383
80-84	403	239	164	331	186	145
85+	244	144	100	187	106	81

Table 2.5: Mid-year Population in MCH-FP Area by Age, Sex, and Block, 1999

Age (years)	Block A			Block B		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	32100	15560	16540	27654	13367	14287
Under 1	827	404	423	688	345	343
1-4	2991	1511	1480	2611	1307	1304
1	783	397	386	659	331	328
2	699	355	344	639	325	314
3	713	359	354	639	304	335
4	796	400	396	674	347	327
5-9	3671	1844	1827	3195	1620	1575
10-14	4116	2080	2036	3528	1785	1743
15-19	3413	1778	1635	3022	1567	1455
20-24	2755	1230	1525	2287	1088	1199
25-29	2326	1017	1309	2039	907	1132
30-34	2390	964	1426	1863	759	1104
35-39	2246	1033	1213	1822	844	978
40-44	1746	893	853	1372	685	687
45-49	1225	630	595	1093	502	591
50-54	1181	538	643	946	389	557
55-59	978	440	538	927	397	530
60-64	844	457	387	807	377	430
65-69	574	298	276	611	329	282
70-74	427	231	196	442	219	223
75-79	207	108	99	217	130	87
80-84	120	65	55	101	68	33
85+	63	39	24	83	49	34

(continued)

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Table 2.5 (cont.): Mid-year Population in MCH-FP Area by Age, Sex and Block, 1999

Age (years)	Block C			Block D		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	28826	14311	14515	22653	11091	11562
Under 1	685	357	328	524	278	246
1-4	2507	1251	1256	1919	974	945
1	647	318	329	478	257	221
2	627	300	327	475	238	237
3	588	301	287	477	229	248
4	645	332	313	489	250	239
5-9	3052	1548	1504	2469	1266	1203
10-14	3436	1745	1691	2776	1351	1425
15-19	3137	1647	1490	2322	1223	1099
20-24	2670	1362	1308	1977	974	1003
25-29	2293	1102	1191	1644	749	895
30-34	2042	886	1156	1563	669	894
35-39	1990	972	1018	1689	804	885
40-44	1588	808	780	1262	650	612
45-49	1191	575	616	928	481	447
50-54	1025	486	539	839	371	468
55-59	1032	466	566	835	368	467
60-64	843	396	447	735	329	406
65-69	583	311	272	520	252	268
70-74	344	184	160	352	175	177
75-79	245	117	128	182	113	69
80-84	111	69	42	71	37	34
85+	52	29	23	46	27	19

Figure 2.2: Age Pyramid of the 1999 Mid-year Population
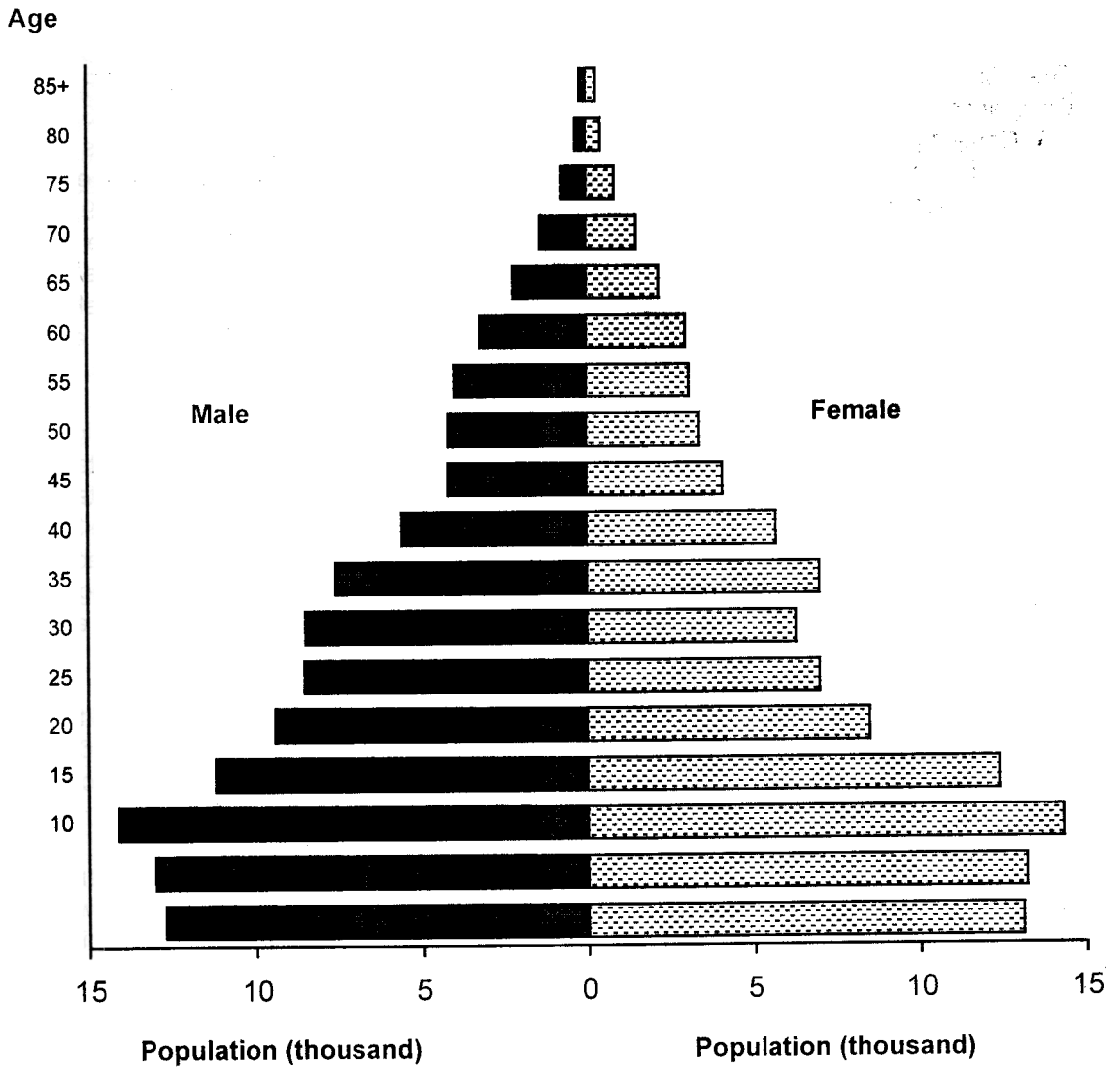
CHAPTER 3

MORTALITY

The distribution of deaths by age and sex for the whole study area, for the MCH-FP and Comparison areas, and for the four blocks of the MCH-FP area are shown in Tables 3.1 to 3.3. Of the 1494 registered deaths, 27.2 per cent occurred to children under age 5. This was slightly less than in 1998. Tables 3.4 and 3.5 show the corresponding age-sex-specific mortality rates for the study area and for the MCH-FP and Comparison areas. In 1999, the male infant mortality rate was 58.8 and female infant mortality rate was 46.2 (table 3.4) whereas in 1998, the male infant mortality rate was 54.6 and female infant mortality rate was 66.9. In 1999, the overall death rates for males and females were 7.9 and 5.9 respectively. In all the age groups death rates were higher in the Comparison area than the MCH-FP area (Table 3.5). Tables 3.6 to 3.10 show the abridged life tables derived from these rates.

Tables 3.6 and 3.7 show the basic life table parameters; the l_x values are plotted in Figure 3.1. The expectation of life at birth increased as a whole compared to 1998. The expectation of life at birth was 65.4 years for males and 68.8 for females (Table 3.7). Overall expectation of life was higher in the MCH-FP area (68.7) than in the Comparison area (65.5) (Table 3.8). The difference in the expectation of life between the two areas was more pronounced for males (3.8) than for females (2.2) (Tables 3.9 and 3.10). Expectation of life at each age in each area was higher for females than males except age 65 and over in the MCH-FP area and age 70 and over in the Comparison area (Tables 3.9 and 3.10).

The levels of adult mortality slightly increased in comparison with 1998. The probability of dying between the ages of 15 and 60 ($_{45}q_{15}$) rose from 165 per thousand in 1998, to 166 in 1999 for the study area as a whole. There was no important change in the expectation of life at age 60.

Table 3.11 and Figure 4.1 show the distribution of deaths by age and month of occurrence. Deaths of those aged five or more tend to peak in the winter months. Neonatal deaths were most frequent in July through January, undoubtly reflecting the seasonal variation in births as described in Chapter 4. Post-neonatal deaths, on the other hand, tend to have winter and summer peaks.

Tables 3.12 through 3.15 show the distributions of deaths by sex, cause and age and by MCH-FP and Comparison area. Table 3.16 gives the age-standardized mortality rates by cause of death, using the WHO "World Standard" age distribution shown in Appendix-D (WHO 1992). When compared with the corresponding figures for 1998, there was an upsurge in the female mortality from tuberculosis and nutritional causes. In the MCH-FP area the standardized rate for tuberculosis cause increased for both sexes. Comparing the MCH-FP area with the Comparison area, the main reason that the later had higher overall

mortality rates for both sexes was higher mortality from diarrhoea and respiratory infections. Other differences between the two areas varied by sex.

A striking feature of Table 3.16 as well as Tables 3.12 - 3.15 is the large number of deaths classified in the older age groups under senility, other causes of death (not elsewhere classified, and unknown). This shows that the quality of cause of death data in these age groups is still unsatisfactory. Plans are currently being formulated to change the procedure of classification of causes of death. The percentage of deaths in the age groups below 5 classified as other causes and unknown is in general small, indicating that the quality of data on causes of death in these age groups is better.

Table 3.1: Deaths by Age and Sex, 1999

Age	Both sexes	Males	Females
All ages	1494	835	659
Under 1 year	288	165	123
Under 1 month	*175*	*105*	*70*
1 - 5 months	*79*	*45*	*34*
6 - 11 months	*34*	*15*	*19*
1 - 4 years	118	52	66
1	*51*	*23*	*28*
2	*30*	*14*	*16*
3	*18*	*7*	*11*
4	*19*	*8*	*11*
5 - 9	25	13	12
10-14	10	3	7
15-19	29	9	20
20-24	18	7	11
25-29	27	18	9
30-34	20	9	11
35-39	31	19	12
40-44	24	16	8
45-49	31	25	6
50-54	57	38	19
55-59	72	42	30
60-64	135	82	53
65-69	160	91	69
70-74	138	84	54
75-79	138	73	65
80-84	96	50	46
85+	77	39	38

Table 3.2 Deaths by Area, Age and Sex, 1999

Age	MCH-FP area			Comparison area		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	708	391	317	786	444	342
Under 1 year	121	68	53	167	97	70
Under 1 month	*69*	*39*	*30*	*106*	*66*	*40*
1-5 months	*37*	*22*	*15*	*42*	*23*	*19*
6-11 months	*15*	*7*	*8*	*19*	*8*	*11*
1 - 4 years	41	16	25	77	36	41
1	*22*	*9*	*13*	*29*	*14*	*15*
2	*12*	*5*	*7*	*18*	*9*	*9*
3	*3*	*0*	*3*	*15*	*7*	*8*
4	*4*	*2*	*2*	*15*	*6*	*9*
5 - 9	11	5	6	14	8	6
14-10	3	2	1	7	1	6
15-19	15	3	12	14	6	8
20-24	13	7	6	5	1	4
25-29	12	7	5	15	10	5
30-34	9	5	4	11	4	7
35-39	13	7	6	18	12	6
40-44	10	7	3	14	9	5
45-49	16	14	2	15	11	4
50-54	33	23	10	24	15	9
55-59	36	22	14	36	20	16
60-64	56	28	28	79	54	25
65-69	90	51	39	70	40	30
70-74	75	45	30	63	39	24
75-79	61	35	26	77	38	39
80-84	49	24	25	47	26	21
85+	44	22	22	33	17	16

Table 3.3: Deaths in MCH-FP Area by Age, Sex and Block, 1999

Age	Block A			Block B		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	186	106	80	175	98	77
Under 1 year	31	18	13	29	13	16
Under 1 month	*23*	*11*	*12*	*14*	*7*	*7*
1-5 months	*8*	*7*	*1*	*9*	*4*	*5*
6-11 months	*0*	*0*	*0*	*6*	*2*	*4*
1 - 4 years	16	5	11	12	6	6
1	*9*	*4*	*5*	*6*	*4*	*2*
2	*5*	*0*	*5*	*3*	*1*	*2*
3	*1*	*0*	*1*	*1*	*0*	*1*
4	*1*	*1*	*0*	*2*	*1*	*1*
5 - 9	4	1	3	2	1	1
10-14	1	1	0	0	0	0
15-19	3	1	2	5	1	4
20-24	3	2	1	3	2	1
25-29	2	2	0	1	1	0
30-34	1	1	0	1	0	1
35-39	4	0	4	2	1	1
40-44	5	4	1	1	1	0
45-49	6	6	0	0	0	0
50-54	8	4	4	11	9	2
55-59	5	4	1	9	6	3
60-64	15	9	6	13	8	5
65-69	25	15	10	22	11	11
70-74	20	12	8	20	10	10
75-79	13	9	4	11	5	6
80-84	15	7	8	14	9	5
85+	9	5	4	19	14	5

Table 3.3 (cont.):Deaths in MCH-FP Area by Age, Sex and Block, 1999

Age	Block C			Block D		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	193	97	96	166	89	77
Under 1 year	36	22	14	25	15	10
Under 1 month	*18*	*12,*	*6*	*14*	*9*	*5*
1-5 months	*11*	*7*	*4*	*9*	*4*	*5*
6-11 months	*7*	*3*	*4*	*2*	*2*	*0*
1 - 4 years	5	1	4	8	4	4
1	*4*	*0*	*4*	*3*	*1*	*2*
2	*1*	*1*	*0*	*3*	*3*	*0*
3	*0*	*0*	*0*	*1*	*0*	*1*
4	*0*	*0*	*0*	*1*	*0*	*1*
5 - 9	1	1	0	4	2	2
10-14	0	0	0	2	1	1
15-19	3	0	3	4	1	3
20-24	5	2	3	2	1	1
25-29	3	1	2	6	3	3
30-34	3	2	1	4	2	2
35-39	2	2	0	5	4	1
40-44	1	0	1	3	2	1
45-49	7	7	0	3	1	2
50-54	8	6	2	6	4	2
55-59	11	6	5	11	6	5
60-64	18	7	11	10	4	6
65-69	23	15	8	20	10	10
70-74	14	8	6	21	15	6
75-79	16	12	4	21	9	12
80-84	14	5	9	6	3	3
85+	11	1	10	5	2	3

Table 3.4: Death Rates by Age and Sex, 1999
(per 1000 population)

Age	Both sexes	Males	Females
All ages	6.9	7.9	5.9
Under 1 year*	52.7	58.8	46.2
*Under 1 month**	*32.0*	*37.4*	*26.3*
*1 - 5 months**	*14.4*	*16.0*	*12.8*
*6 - 11 months**	*6.2*	*5.3*	*7.1*
1 - 4 years	5.8	5.1	6.6
1	*9.8*	*8.6*	*11.0*
2	*6.0*	*5.7*	*6.4*
3	*3.7*	*2.9*	*4.5*
4	*3.7*	*3.0*	*4.3*
5 - 9	1.0	1.0	0.9
10 -14	0.4	0.2	0.5
15-19	1.2	0.7	1.8
20-24	1.0	0.8	1.2
25-29	1.7	2.6	1.1
30-34	1.4	1.4	1.3
35-39	2.1	2.7	1.6
40-44	2.1	2.8	1.4
45-49	3.8	6.1	1.4
50-54	7.6	11.3	4.6
55-59	10.1	13.5	7.5
60-64	21.7	27.2	16.6
65-69	36.3	40.9	31.6
70-74	47.0	55.6	37.9
75-79	84.4	84.0	84.9
80-84	130.8	117.6	148.9
85+	178.7	156.0	209.9

*Rate per 1000 live births.

Table 3.5 Death Rates by Area, Age and Sex, 1999
(per 1000 population)

Age	MCH-FP area			Comparison area		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	6.4	7.2	5.6	7.4	8.5	6.3
Under 1 year	44.5	49.0	39.7	60.8	68.3	52.8
Under 1 month	*25.4*	*28.1*	*22.5*	*38.6*	*46.4*	*30.2*
1-5 months	*13.6*	*15.9*	*11.2*	*15.3*	*16.2*	*14.3*
6-11 months	*5.5*	*5.0*	*6.0*	*6.9*	*5.6*	*8.3*
1 - 4 years	4.1	3.2	5.0	7.5	6.9	8.2
1	*8.6*	*6.9*	*10.3*	*10.9*	*10.2*	*11.8*
2	*4.9*	*4.1*	*5.7*	*7.1*	*7.2*	*7.1*
3	*1.2*	*0.0*	*2.5*	*6.1*	*5.6*	*6.6*
4	*1.5*	*1.5*	*1.6*	*5.8*	*4.5*	*7 1*
5 - 9	0.9	0.8	1.0	1.0	1.1	0.9
10-14	0.2	0.3	0.1	0.5	0.1	0.8
15-19	1.3	0.5	2.1	1.2	1.0	1.5
20-24	1.3	1.5	1.2	0.6	0.3	0.9
25-29	1.4	1.9	1.1	2.1	3.1	1.2
30-34	1.1	1.5	0.9	1.6	1.3	1.8
35-39	1.7	1.9	1.5	2.6	3.6	1 7
40-44	1.7	2.3	1.0	2.6	3.4	1.9
45-49	3.6	6.4	0.9	3.9	5.8	2.1
50-54	8.3	12.9	4.5	6.8	9.5	4.6
55-59	9.5	13.2	6.7	10.8	13.9	8.4
60-64	17.3	18.0	16.8	26.4	37.0	16.3
65-69	39.3	42.9	35.5	33.0	38.6	27.6
70-74	47.9	55.6	39.7	46.0	55.6	35.9
75-79	71.7	74.8	67.9	98.2	94.8	101.8
80-84	121.6	100.4	152.4	142.0	139.8	144.8
85+	180.3	152.8	220.0	176.5	160.4	197.5

*Rate per 1000 live births

Table 3.6: Abridged Life Table, 1999

Age (years)	$_nq_x$	l_x	L_x	e^o_x
0	52.7	100000	96187	67.1
1	9.7	94733	94189	69.8
2	6	93811	93529	69.5
3	3.7	93246	93074	68.9
4	3.7	92902	92732	68.2
5	4.8	92562	461794	67.4
10	1.8	92121	460233	62.7
15	6.1	91959	458495	57.9
20	5	91394	455919	53.3
25	8.7	90937	452869	48.4
30	6.8	90149	449343	43.8
35	10.6	89541	445522	39.1
40	10.5	88595	440822	34.5
45	18.6	87661	434534	29.9
50	37.2	86028	422725	25.4
55	49.4	82829	404635	21.2
60	103.2	78736	374598	17.2
65	167	70607	325004	13.9
70	211.2	58818	264277	11.1
75	349	46396	191855	8.4
80	489.2	30203	112973	6.6
85+	1000	15427	86352	5.6

Figure 3.1: Probability of Survival from Birth to Age (x) by Sex, 1999
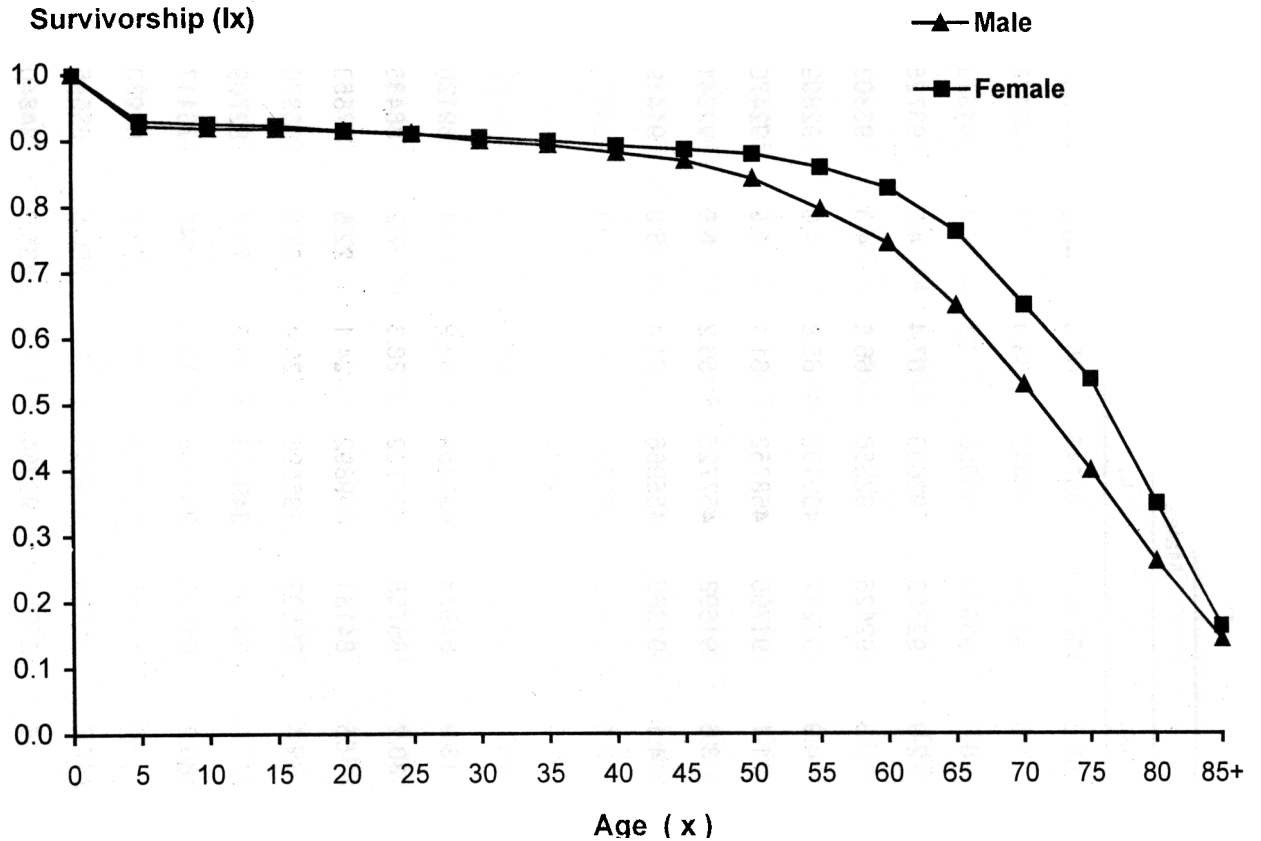
Table 3.7: Abridged Life Tables by Sex, 1999

Age (years)	Males				Females			
	nq_x	l_x	L_x	e^o_x	nq_x	l_x	L_x	e^o_x
0	58.8	100000	95746	65.4	46.2	100000	96652	68.8
1	8.5	94124	93649	68.4	11	95379	94758	71.1
2	5.6	93319	93056	69	6.4	94329	94027	70.9
3	2.9	92792	92659	67.4	4.5	93725	93514	70.4
4	3	92526	92386	66.6	4.3	93303	93101	69.7
5	4.9	92247	460193	65.8	4.6	92899	463504	69
10	1.1	91795	458752	61.1	2.5	92470	461821	64.3
15	3.6	91698	457725	56.2	8.9	92241	459309	59.4
20	4.1	91365	455966	51.4	5.8	91419	455866	54.9
25	12.8	90992	452268	46.6	5.3	90886	453327	50.3
30	7.2	89825	447644	42.1	6.4	90408	450695	45.5
35	13.5	89182	443132	37.4	7.8	89825	447500	40.8
40	13.9	87978	437069	32.9	7.1	89120	444139	36.1
45	30.2	86755	427702	28.3	7.2	88486	440971	31.3
50	55	84131	409892	24.1	22.6	87853	434680	26.5
55	65.4	79502	385396	20.4	36.8	85870	422024	22.1
60	127.6	74303	349153	16.6	79.7	82709	398141	17.8
65	186.2	64822	295306	13.6	147	76117	354094	14.1
70	245	52756	232523	11.2	173.8	64930	197780	11.1
75	347.7	39829	164844	8.9	350.5	53645	221611	7.9
80	452.6	25961	99954	7.4	535.9	34840	125426	5.8
85+	1000	14222	91168	6.4	1000	16168	77013	4.8

Table 3.8: Abridged Life Tables by Area, 1999

Age (years)	MCH-FP area				Comparison area			
	$_nq_x$		L_x	e^o_x	$_nq_x$		L_x	e^o_x
0	44.5	100000	96780	68.7	60.8	100000	95599	65.5
1	8.5	95553	95072	70.9	10.9	93921	93317	68.8
2	4.9	94738	94505	70.5	7.1	92898	92568	68.5
3	1.2	94273	94214	69.8	6.1	92237	91956	68
4	1.5	94156	94084	68.9	5.8	91675	91409	67.4
5	4.4	94011	469097	68	5.1	91144	454657	66.8
10	1.1	93595	467741	63.3	2.4	90683	452913	62.1
15	6.3	93494	466113	58.4	6	90465	451075	57.3
20	6.7	92906	463096	53.7	3	89923	448988	52.6
25	7.2	92284	459889	49.1	10.4	89651	446115	47.8
30	5.7	91620	456892	44.4	7.9	88723	441993	43.2
35	8.4	91096	453726	39.7	13	88019	437450	38.6
40	8.3	90335	449936	35	13	86872	431759	34
45	17.9	89581	444205	30.3	19.5	85744	424859	29.4
50	40.6	87979	431619	25.8	33.4	84072	413863	25
55	46.7	84410	412901	21.7	52.5	81267	396419	20.7
60	83.3	80470	386668	17.7	124.3	77001	362450	16.7
65	179.8	73764	337197	14	152.9	67431	312713	13.7
70	214.9	60500	271273	11.5	207	5712˙	257257	10.8
75	304.8	47499	202002	9	394.1	45299	181750	7.9
80	463.8	33020	125962	6.8	518.6	27449	100259	6.4
85+	1000	17704	98179	5.5	1000	13213	74871	5.7

Table 3.9: Abridged Life Tables for MCH-FP Area by Sex, 1999

Age (years)	Males				Females			
	$_nq_x$	l_x	L_x	e^o_x	$_nq_x$	l_x	L_x	e^o_x
0	49	100000	96450	67.3	39.7	100000	97124	69.9
1	6.9	95097	94711	69.8	10.2	96027	95447	71.8
2	4.1	94443	94249	69.3	5.7	95044	94773	71.6
3	0	94056	94056	68.6	2.4	94501	94386	71
4	1.5	94056	93985	67.6	1.6	94270	94196	70.1
5	4	93914	468712	66.7	4.9	94122	469549	69.2
10	1.4	93541	467396	61.9	0.7	93661	468149	64.6
15	2.4	93407	466515	57	10.5	93593	465697	59.6
20	7.5	93182	464298	52.1	5.9	92609	461778	55.2
25	9.2	92483	460447	47.5	5.5	92059	459126	50.5
30	7.6	91629	456542	42.9	4.4	91552	456840	45.8
35	9.5	90933	452665	38.2	7.3	91153	454230	41
40	11.5	90066	447946	33.6	5.1	90487	451372	36.3
45	31.5	89033	438665	28.9	4.4	90025	449206	31.4
50	62.6	86226	418562	24.8	22.4	89626	443484	26.6
55	63.9	80830	392122	21.3	32.8	87616	431424	22.1
60	86.2	75667	363080	17.5	80.7	84742	407732	17.8
65	194.4	69146	313592	13.9	163.8	77905	359211	14.1
70	245.1	55707	245512	11.7	181.3	65147	297572	11.4
75	315.9	42050	177604	9.6	291.1	53338	228747	8.3
80	401	28768	114871	7.9	544.7	37810	135098	5.6
85+	1000	17233	112795	6.5	1000	17215	78252	4.5

Table 3.10: Abridged Life Tables for Comparison Area by Sex, 1999

Age (years)	Males				Females			
	$_nq_x$	I_x	L_x	e^o_x	$_nq_x$		L_x	e^o_x
0	68.3	100000	95058	63.5	52.8	100000	96178	67.7
1	10.1	93174	92617	67.1	11.7	94721	94067	70.4
2	7.2	92231	91901	66.8	7.1	93612	93281	70.3
3	5.6	91571	91313	66.2	6.6	92950	92644	69.8
4	4.5	91055	90849	65.6	7.1	92338	92009	69.2
5	5.7	90643	452018	64.9	4.4	91680	457479	68.7
10	0.7	90124	450476	60.3	4.1	91280	455530	64
15	4.9	90062	449299	55.3	7.2	90902	452992	59.3
20	1.3	89623	447852	50.6	5.7	90243	450030	54.7
25	15.5	89508	444341	45.6	5	89728	447612	50
30	6.7	88122	439252	41.3	8.9	89281	444580	45.2
35	17.8	87533	434064	36.6	8.5	88489	440715	40.6
40	16.6	85974	426566	32.2	9.3	87738	436810	35.9
45	28.8	84543	417087	27.7	10.3	86922	432539	31.2
50	46.4	82111	401708	23.4	22.7	86024	425598	26.5
55	67.2	78300	379240	19.4	41.2	84068	412305	22.1
60	169.9	73040	335683	15.6	78.6	80604	388209	17.9
65	176.6	60633	277650	13.3	129.7	74264	348599	14.2
70	244.9	49923	220058	10.6	165.3	64635	297782	10.9
75	383.1	37698	152393	8.2	405.4	53952	214773	7.6
80	513	23257	85345	6.7	525.8	32082	16483	6
85+	1000	11327	70625	6.2	1000	15212	77010	5.1

Table 3.11: Deaths by Age and Month, 1999

Month	All ages	Age at death			
		Under 1 month	1-11 months	1-4 years	5 years & above
January	172	18	12	13	129
February	110	7	10	8	85
March	116	8	10	5	93
April	114	15	9	7	83
May	129	3	13	11	102
June	101	6	14	11	70
July	121	17	13	6	85
August	107	24	5	13	65
September	106	17	4	11	74
October	132	26	5	14	87
November	130	16	9	11	94
December	156	18	9	8	121

Table 3.12: Male Deaths by Cause and Age, 1999

Cause	All ages	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
DIARRHOEAL																				
Diarrhoeal	54	18	7	1	0	0	0	2	0	0	1	0	2	1	2	5	5	4	5	1
Dysentery	7	1	0	1	1	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0
INFECTIOUS																				
Tuberculosis	27	0	0	0	0	0	0	3	0	0	2	1	3	1	5	8	2	1	1	0
Tetanus (non-neonatal)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other infectious	15	2	2	2	0	2	0	0	0	0	0	0	1	1	0	1	1	2	0	1
MALIGNANT NEOPLASM	52	1	1	1	1	0	0	2	0	3	3	4	3	4	11	5	7	5	1	0
NUTRITIONAL	10	3	1	0	0	0	0	0	0	1	0	1	0	1	1	0	0	0	0	2
CARDIO-VASCULAR	80	0	0	0	0	0	1	1	1	3	0	3	6	7	7	16	10	10	10	5
RESPIRATORY																				
ARI, pneum, Influenza	66	40	4	0	0	0	0	0	0	2	0	0	0	3	2	4	4	3	2	2
COPD*	65	0	0	0	0	0	0	1	0	2	3	2	3	6	14	10	6	9	4	5
GASTRO-INTESTINAL	52	2	1	1	0	0	1	0	1	1	5	4	5	2	10	5	9	4	0	1
DIRECT OBSTETRIC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEONATAL																				
Tetanus (neonatal)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other neonatal	87	87	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ACCIDENTS, INJURIES																				
Suicide	8	0	0	0	0	2	1	1	2	1	0	0	0	1	0	0	0	0	0	0
Homicide	7	1	0	0	0	2	1	2	1	0	0	0	0	0	0	0	0	0	0	0
Drowning	35	0	30	1	0	0	0	0	0	1	0	0	0	0	0	1	1	1	0	0
Other accidents, etc.	13	0	0	0	0	2	1	1	1	1	0	1	1	1	0	1	0	1	1	1
OTHER AND UNSPECIFIED																				
Senility	95	0	0	0	0	0	0	0	0	0	0	0	0	0	3	5	22	24	19	17
Other causes n.e.c.**	116	3	3	6	1	1	1	4	2	1	2	5	7	9	14	24	15	8	6	4
Unknown	46	7	3	0	0	0	1	1	1	3	0	4	7	4	8	5	1	1	0	0
Total	835	165	52	13	3	9	7	18	9	19	16	25	38	42	82	91	84	73	50	39

*Chronic obstructive pulmonary disease.
**Not elsewhere classified.

Table 3.13: Female Deaths by Cause and Age, 1999

Cause	All ages	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
DIARRHOEAL																				
Diarrhoeal	65	12	14	2	0	2	2	0	0	0	0	0	0	4	5	5	3	8	5	3
Dysentery	11	1	3	1	1	0	0	0	0	0	0	0	0	0	0	2	1	1	1	0
INFECTIOUS																				
Tuberculosis	16	0	0	0	0	0	2	0	0	1	0	0	1	1	3	6	2	0	0	0
Tetanus (non-neonatal)	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other infectious	20	4	3	1	1	0	0	2	0	2	0	0	2	0	3	0	2	0	0	0
MALIGNANT NEOPLASM	20	0	1	0	1	1	1	0	0	1	1	0	4	0	5	3	1	1	0	0
NUTRITIONAL	22	10	5	1	0	0	0	0	1	0	0	0	0	2	1	0	0	1	1	0
CARDIO-VASCULAR	74	0	0	1	0	0	0	0	1	0	0	1	3	11	8	15	12	11	7	4
RESPIRATORY																				
ARI, pneum. influenza	39	27	3	1	0	0	0	0	0	0	0	0	0	1	1	1	1	3	1	0
COPD*	39	0	3	0	0	0	1	1	0	2	3	0	2	1	6	7	4	5	2	2
GASTRO-INTESTINAL	14	2	0	0	0	0	0	0	0	1	0	1	2	1	0	2	3	0	2	0
DIRECT OBSTETRIC	10	0	0	0	0	3	2	0	3	1	1	0	0	0	0	0	0	0	0	0
NEONATAL																				
Tetanus (neonatal)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other neonatal	55	55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ACCIDENTS, INJURIES																				
Suicide	12	0	0	0	0	7	1	3	0	0	0	0	0	0	1	0	0	0	0	0
Homicide	3	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Drowning	26	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Other accidents, etc.	14	1	0	1	0	5	0	0	1	1	0	0	0	1	2	1	0	0	0	1
OTHER AND UNSPECIFIED																				
Senility	92	0	0	0	0	0	0	0	0	0	0	0	0	0	5	12	13	22	21	19
Other causes n.e.c.**	88	1	5	2	2	2	0	0	4	3	1	4	4	4	9	10	10	13	5	9
Unknown	38	9	4	2	1	0	1	2	1	0	2	0	1	4	4	5	2	0	0	0
Total	659	123	66	12	7	20	11	9	11	12	8	6	19	30	53	69	54	65	46	38

*Chronic obstructive pulmonary disease
**Not elsewhere classified.

Table 3.14: Male Deaths by Cause, Age, and Area, 1999

Cause	All ages		<1		1-4		5-14		15-44		45-64		65-84		85+	
	M	C	M	C	M	C	M	C	M	C	M	C	M	C	M	C
DIARRHOEAL																
Diarrhoeal	18	36	8	10	2	5	0	1	1	2	0	5	6	13	1	0
Dysentery	5	2	1	0	0	0	1	1	0	0	1	0	2	1	0	0
INFECTIOUS																
Tuberculosis	14	13	0	0	0	0	0	0	1	4	5	5	8	4	0	0
Tetanus (non-neonatal)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other infectious	7	8	2	0	0	2	1	1	1	1	1	1	2	2	0	1
MALIGNANT NEOPLASM	30	22	1	0	0	1	1	1	5	3	14	8	9	9	0	0
NUTRITIONAL	6	4	2	1	0	1	0	0	0	1	2	1	0	0	2	0
CARDIO-VASCULAR	46	34	0	0	0	0	0	0	3	3	11	12	27	19	5	0
RESPIRATORY																
ARI, pneum, influenza	20	46	14	26	2	2	0	0	0	2	1	4	2	11	1	1
COPD*	30	35	0	0	0	0	0	0	2	4	9	16	16	13	3	2
GASTRO-INTESTINAL	18	34	1	1	0	1	0	1	2	6	6	15	9	9	0	1
DIRECT OBSTETRIC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEONATAL																
Tetanus (neonatal)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other neonatal	33	54	33	54	0	0	0	0	0	0	0	0	0	0	0	0
ACCIDENTS, INJURIES																
Suicide	6	2	0	0	0	0	0	0	5	2	1	0	0	0	0	0
Homicide	5	2	1	0	0	0	0	0	4	2	0	0	0	0	0	0
Drowning	12	23	0	0	11	19	0	1	0	1	0	0	1	2	0	0
Other accidents. etc.	7	6	0	0	0	0	0	0	2	4	3	0	1	2	1	0
OTHER AND UNSPECIFIED																
Senility	54	41	0	0	0	0	0	0	0	0	4	4	43	27	7	10
Other causes n.e.c.**	55	61	2	1	0	3	4	3	5	6	16	19	26	27	2	2
Unknown	25	21	3	4	1	2	0	0	5	1	13	10	3	4	0	0
Total	391	444	68	97	16	36	7	9	36	42	87	100	155	143	22	17

*Chronic obstructive pulmonary disease. M: MCH-FP area, C: Comparison area.

**Not elsewhere classified.

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Table 3.15: Female Deaths by Cause, Age, and Area, 1999

Cause	All ages		<1		1-4		5-14		15-44		45-64		65-84		85+	
	M	C	M	C	M	C	M	C	M	C	M	C	M	C	M	C
DIARRHOEAL																
Diarrhoeal	29	36	4	8	5	9	2	0	3	1	6	3	8	13	1	2
Dysentery	3	8	0	1	0	3	0	2	0	0	0	0	3	2	0	0
INFECTIOUS																
Tuberculosis	10	6	0	0	0	0	0	0	2	1	2	3	6	2	0	0
Tetanus (non-neonatal)	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Other infectious	9	11	2	2	1	2	0	2	2	2	3	2	1	1	0	0
MALIGNANT NEOPLASM	11	9	0	0	0	1	0	1	4	0	5	4	2	3	0	0
NUTRITIONAL	10	12	4	6	2	3	1	0	0	1	2	1	1	1	0	0
CARDIO-VASCULAR	33	41	0	0	0	0	1	0	0	1	7	16	23	22	2	2
RESPIRATORY																
ARI, pneum, influenza	16	23	12	15	1	2	1	0	0	0	0	2	2	4	0	0
COPD*	21	18	0	0	1	2	0	0	3	4	5	4	11	7	1	1
GASTRO-INTESTINAL	5	9	1	1	0	0	0	0	0	1	1	3	3	4	0	0
DIRECT OBSTETRIC	4	6	0	0	0	0	0	0	4	6	0	0	0	0	0	0
NEONATAL																
Tetanus (neonatal)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other neonatal	26	29	26	29	0	0	0	0	0	0	0	0	0	0	0	0
ACCIDENTS, INJURIES																
Suicide	6	6	0	0	0	0	0	0	6	5	0	1	0	0	0	0
Homicide	1	2	0	1	0	0	0	0	1	1	0	0	0	0	0	0
Drowning	11	15	0	0	10	15	0	0	0	0	0	0	1	0	0	0
Other accidents, etc.	11	3	1	0	0	0	0	1	5	2	3	0	1	0	1	0
OTHER AND UNSPECIFIED																
Senility	54	38	0	0	0	0	0	0	0	0	3	2	39	29	12	7
Other causes n.e.c.**	43	45	0	1	3	2	2	2	3	7	12	9	18	20	5	4
Unknown	14	24	3	6	2	2	0	3	3	3	5	4	1	6	0	0
Total	317	342	53	70	25	41	7	12	36	35	54	54	120	114	22	16

*Chronic obstructive pulmonary disease.   M: MCH-FP area, C: Comparison area
**Not elsewhere classified.

Table 3.16: Age-standardized Mortality Rates by Cause of Death,1999
(per 100,000 population)*

Cause of death	Males		Females	
	MCH-FP area	Comparison area	MCH-FP area	Comparison area
Diarrhoea	33.25	67.46	63.25	90.63
Dysentery	9.14	(3.41)	(8.31)	16.07
Tuberculosis	26.86	25.26	23.72	14.22
Tetanus (non-neonatal)	(0)	(0)	(0)	(1.42)
Other Infectious	12.91	14.72	17.26	21.34
Malignant neoplasms	58.20	42.13	21.60	20.65
Nutritional	11.26	(7.70)	19.08	23.77
Cardio-vascular	86.60	65.25	88.50	113.37
ARI, pneumonia, influenza	37.11	85.82	31.06	47.80
COPD**	56.89	67.79	51.84	46.76
Gastro-intestinal	34.51	65.79	12.00	21.92
Direct obstetric			(6.83)	11.47
Neonatal tetanus	(0)	(0)	(0)	(0)
Other neonatal	60.99	99.81	47.94	54.41
Suicide	11.63	(3.83)	10.25	11.72
Homicide	9.52	(3.83)	(1.71)	(3.79)
Drowning	22.59	43.01	21.29	27.63
Other accidents	13.55	11.35	23.87	(5.25)
Senility	99.44	75.21	175.68	133.54
Other causes n.e.c.***	103.59	115.73	111.65	125.07
Unknown	49.13	40.90	26.36	51.07
Total	737.19	839.00	762.20	841.90

*Age distribution of standard population is given in Appendix D.
**Chronic obstructive pulmonary disease.
***Not elsewhere classified.
( ) : Less than 5 deaths.

CHAPTER 4

FERTILITY

Table 4.1 shows the number of pregnancies and their outcomes in 1999. Compared with 1998, the number of live births fell overall by 357 or 6.1 percent. The decline occurred in both areas, being of the order of 3.4 per cent in the MCH-FP area, and 8.4 per cent in the Comparison area. In the study area as a whole, 87.0 percent of pregnancies resulted in a live birth, a proportion that remains remarkably constant from year to year.

Table 4.2 and Figure 4.1 show the distribution of pregnancies by outcome, and live births by sex and month of occurrence. The data show the usual marked seasonal variation of births, peaking in October-December. The sex ratio of the live births was 106 males per 100 females.

Table 4.3 shows the age-specific fertility rates for the study area, together with the total fertility rate, general fertility rate, and gross and net reproduction rates. Table 4.4 shows the corresponding rates for the MCH-FP and Comparison areas, which are also illustrated in Figure 4.2. Table 4.5 shows the rates for the four blocks of the MCH-FP area.

Table 4.6 shows the distribution of births by mother's age and live birth order, and Table 4.7 shows the age-order-specific fertility rates derived from these figures. The totals of the order-specific rates represent the components by birth order of the total fertility rates. Just as the TFR represents the average number of children borne by a woman who has children at the current rates, the total for birth order N represents the proportion of women who would have at least N children.

Thus the tables highlight the differences between the MCH-FP and Comparison areas. There is comparatively little difference between the two areas for birth orders 1 to 3, but thereafter they widen dramatically: for birth orders 6 to 8 the comparison area rates are twice as high as those of the MCH-FP area, and for birth order 9 and more, they are more than three times as great.

Table 4.1: Number and Rates of Pregnancy Outcomes by Type and Area, 1999

Type of pregnancy outcome	Both areas		MCH-FP area		Comp. area	
	No.	Rate	No.	Rate	No.	Rate
Total pregnancies*	6202	112.7	3007	103.3	3195	123.2
Live birth pregnancies**	5418	873.6	2697	896.9	2721	851.6
Foetal wastage**	1381	222.7	548	182.2	833	260.7
Early (miscarriage)***	597	96.3	238	79.1	359	112.4
Induced	274	44.2	86	28.6	188	58.8
Spontaneous	323	52.1	152	50.5	171	53.5
Late (stillbirths)	187	30.2	72	23.9	115	36.0
Multiple birth pregnancies	66		31		35	
Live birth pregnancies	63		30		33	
Three live births	1		0		1	
Two live births	48		24		24	
One live birth	14		6		8	
Still birth pregnancies	1		0		1	
Two still births	1		0		1	
Miscarriage pregnancies	2		1		1	

*Rate per 1000 women of age 15-49 years.
**Ratio per 1000 total pregnancies.
***Less than 28 weeks.

Table 4.2: Pregnancy Outcomes by Month, 1999

Months	All	Pregnancy outcome				No. of live born children			
		Miscarriage		Still birth	Live birth*	Both sexes	Males	Females	Ratio
		Induced	Spon.						
All months	6202	274	323	187	5418	5468	2808	2660	1.056
January	575	20	19	17	519	526	253	273	0.927
February	433	24	21	13	375	376	201	175	1.149
March	479	27	32	12	408	411	205	206	0.995
April	470	23	32	8	407	410	226	184	1.228
May	385	19	29	17	320	322	168	154	1.091
June	377	24	28	5	320	329	168	161	1.043
July	398	33	25	11	329	335	173	162	1.068
August	482	28	33	19	402	408	214	194	103
September	552	20	27	11	494	498	257	241	1.066
October	751	22	34	24	671	675	359	316	1.136
November	678	19	20	29	610	612	309	303	1.020
December	622	15	23	21	563	566	275	291	0.945

*For any multiple birth pregnancy, the outcome is recorded as live birth, if at least one of the issues is live born.

Figure 4 1   Number of Births and Deaths by Month 1999
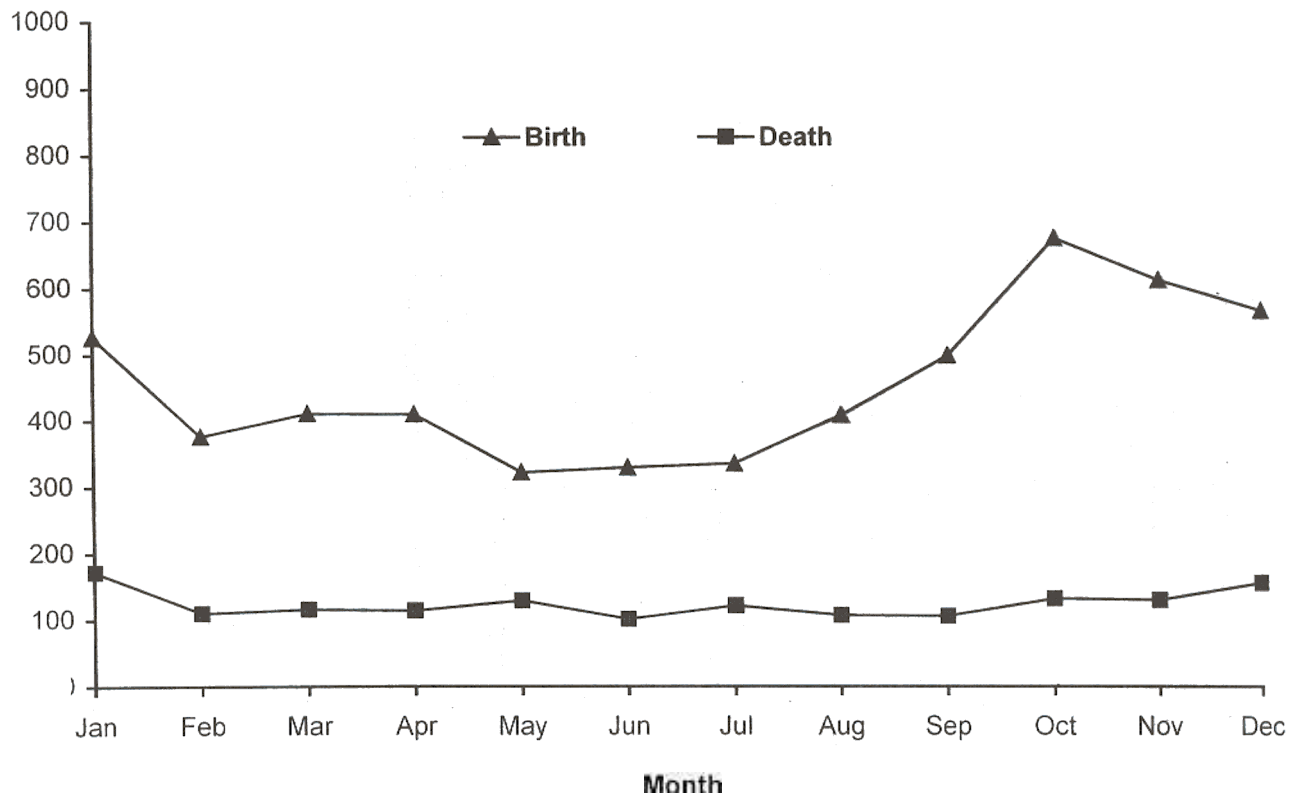
Table 4.3: Age-specific Fertility Rates and Indices, 1999

Age (years)	Number of live birth	Number of women	ASFR (per 10000)
All ages	5468	55022	99.4
15-19*	629	11178	56.3
20-24	1679	9404	178.5
25-29	1567	8533	183.6
30-34	1086	8508	127.6
35-39	417	7617	54.7
40-44	81	5608	14.4
45-49**	9	4174	2.2

Total Fertility Rate (TFR)	=	3087
General Fertility Rate (GFR)	=	99
Gross Reproduction Rate (GRR)	=	1507
Net Reproduction Rate (NRR)	=	1364

*Births to mothers under age 15 were included in this group
**Births to mothers age 50 and above were included in this group.

Table 4.4: Age-specific Fertility Rates and Indices by Area, 1999

Age (years)	MCH-FP area			Comparison area		
	Births		Rate	Births	Women	Rate
All ages	2721	29096	93.5	2747	25926	106.0
15-19*	301	5679	53.0	328	5499	59.6
20-24	825	5035	163.9	854	4369	195.5
25-29	778	4527	171.9	789	4006	197.0
30-34	572	4580	124.9	514	3928	130.9
35-39	203	4094	49.6	214	3523	60.7
40-44	36	2932	12.3	45	2676	16.8
45-49**	6	2249	2.7	3	1925	1.6
TFR	=	2891	TFR	=	3310	
GFR	=	94	GFR	=	106	
GRR	=	1419	GRR	=	1605	
NRR	=	1303	NRR	=	1437	

*Births to mothers under age 15 were included in this group.
**Births to mothers age 50 and above were included in this group.

Figure 4.2: Age-specific Fertility Rates by Area, 1999
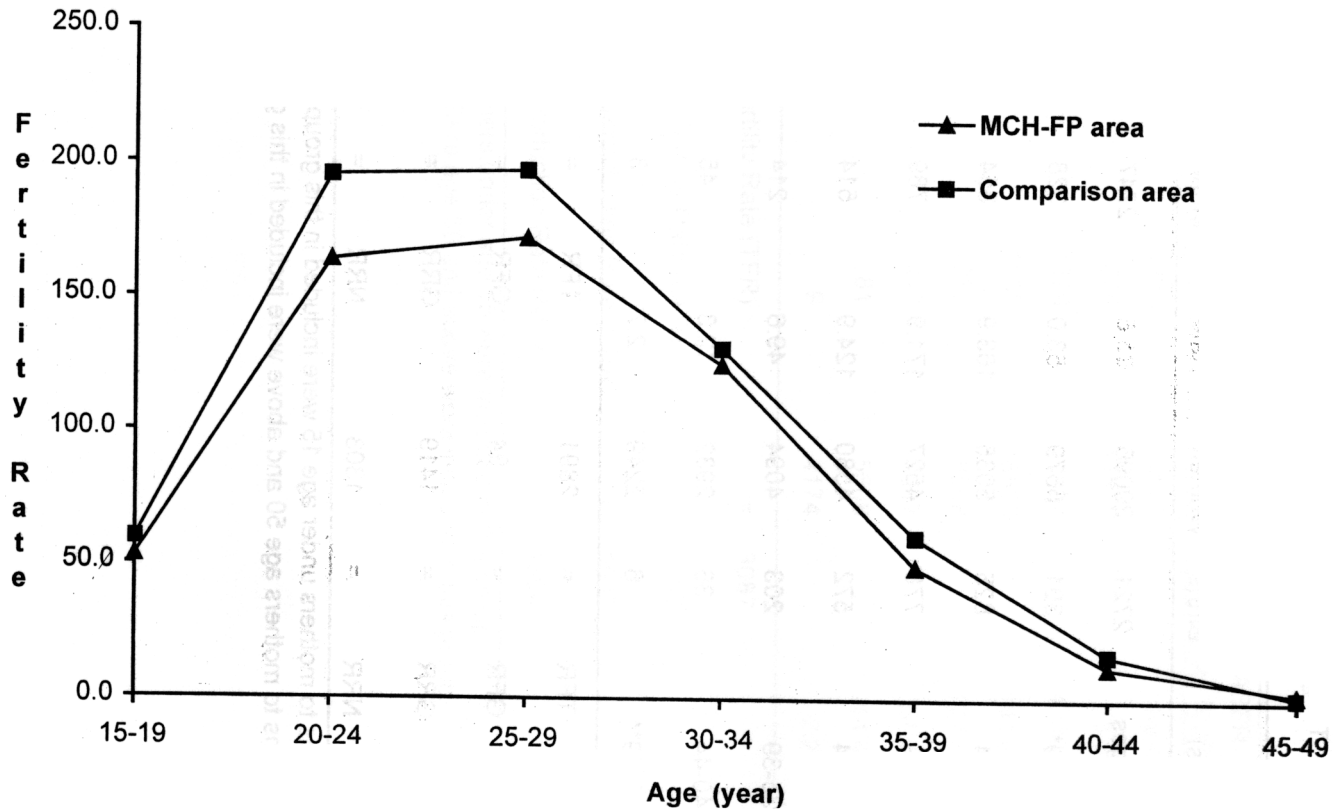
Table 4.5: Age-specific Fertility Rates and Indices for MCH-FP
Area by Block, 1999

Age (years)	Block A			Block B		
	Births	Women	Rate	Births	Women	Rate
All ages	772	8556	90.2	708	7146	99.1
15-19*	68	1635	41.6	85	1455	58.4
20-24	237	1525	155.4	214	1199	178.5
25-29	227	1309	173.4	207	1132	182.9
30-34	171	1426	119.9	145	1104	131.3
35-39	60	1213	49.5	44	978	45.0
40-44	6	853	7.0	12	687	17.5
45-49**	3	595	5.0	1	591	1.7
TFR	=	2759		TFR	=	3076
GFR	=	90		GFR	=	99
GRR	=	1356		GRR	=	1528

Table 4.5 (cont.): Age-specific Fertility Rates and Indices for MCH-FP Area by Block, 1999

Age (years)	Block C			Block D		
	Births	Women	Rate	Births	Women	Rate
All ages	711	7559	92.7	530	5835	94.4
15-19*	98	1490	65.8	50	1099	45.5
20-24	213	1308	162.8	161	1003	160.5
25-29	200	1191	167.9	144	895	160.9
30-34	144	1156	124.6	112	894	125.3
35-39	44	1018	43.2	55	885	62.1
40-44	11	780	14.1	7	612	11.4
45-49**	1	616	1.6	1	447	2.2
TFR =		2900		TFR =		2840
GFR =		94		GFR =		91
GRR =		1421		GRR =		1382

*Births to mothers under age 15 were included in this group.
**Births to mothers age 50 and above were included in this group.

Table 4.6: Births by Mother's Age, Live-birth Order and Area, 1999

Age (years)	Total women	Total births	Live-birth order									
			1	2	3	4	5	6	7	8	9	10+
Both areas												
<15	14129	4	4	0	0	0	0	0	0	0	0	0
15-19	11178	625	567	51	7	0	0	0	0	0	0	0
20-24	9404	1679	835	659	164	18	3	0	0	0	0	0
25-29	8533	1567	191	480	545	248	78	17	8	0	0	0
30-34	8508	1086	33	88	298	315	208	93	36	8	4	3
35-39	7617	417	6	13	44	78	76	87	62	29	10	12
40-44	5608	81	0	0	3	9	12	25	12	7	5	8
45-49	4174	9	0	0	0	0	1	0	1	3	2	2
MCH-FP area												
<15	6895	2	2	0	0	0	0	0	0	0	0	0
15-19	5679	299	282	16	1	0	0	0	0	0	0	0
20-24	5035	825	446	312	62	3	2	0	0	0	0	0
25-29	4527	778	103	267	288	96	16	4	4	0	0	0
30-34	4580	572	22	58	196	158	84	36	14	3		0
35-39	4094	203	3	7	32	48	39	36	22	10	3	3
40-44	2932	36	0	0	2	6	6	13	8	0	0	1
45-49	2249	6	0	0	0	0	1	0	0	2	1	2
Comparison area												
<15	7234	2	2	0	0	0	0	0	0	0	0	0
15-19	5499	326	285	35	6	0	0	0	0	0	0	0
20-24	4369	854	389	347	102	15	1	0	0	0	0	0
25-29	4006	789	88	213	257	152	62	13	4	0	0	0
30-34	3928	514	11	30	102	157	124	57	22	5	3	3
35-39	3523	214	3	6	12	30	37	51	40	19	7	9
40-44	2676	45	0	0	1	3	6	12	4	7	5	7
45-49	1925	3	0	0	0	0	0	0	1	1	1	0

Table 4.7: Age-order-specific Fertility Rates by Area, 1999

Age (years)	Total	Live-birth order									
		1	2	3	4	5	6	7	8	9	10+
Both areas											
<15	0.0003	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15-19	0.0559	0.0507	0.0046	0.0006	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20-24	0.1785	0.0888	0.0701	0.0174	0.0019	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000
25-29	0.1836	0.0224	0.0563	0.0639	0.0291	0.0091	0.0020	0.0009	0.0000	0.0000	0.0000
30-34	0.1276	0.0039	0.0103	0.0350	0.0370	0.0244	0.0109	0.0042	0.0009	0.0005	0.0004
35-39	0.0547	0.0008	0.0017	0.0058	0.0102	0.0100	0.0114	0.0081	0.0038	0.0013	0.0016
40-44	0.0144	0.0000	0.0000	0.0005	0.0016	0.0021	0.0045	0.0021	0.0012	0.0009	0.0014
45-49	0.0022	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0002	0.0007	0.0005	0.0005
Total	3.0868	0.8342	0.7147	0.6164	0.3992	0.2313	0.144	0.0784	0.0336	0.0158	0.0192
MCH-FP area											
<15	0.0003	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15-19	0.0527	0.0497	0.0028	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20-24	0.1639	0.0886	0.062	0.0123	0.0006	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000
25-29	0.1719	0.0228	0.059	0.0636	0.0212	0.0035	0.0009	0.0009	0.0000	0.0000	0.0000
30-34	0.1249	0.0048	0.0127	0.0428	0.0345	0.0183	0.0079	0.0031	0.0007	0.0002	0.0000
35-39	0.0496	0.0007	0.0017	0.0078	0.0117	0.0095	0.0088	0.0054	0.0024	0.0007	0.0007
40-44	0.0123	0.0000	0.0000	0.0007	0.0020	0.0020	0.0044	0.0027	0.0000	0.0000	0.0003
45-49	0.0027	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	0.0009	0.0004	0.0009
Total	2.8904	0.8341	0.6907	0.6370	0.3504	0.1714	0.1099	0.0602	0.0199	0.0070	0.0098
Comparison are											
<15	0.0003	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15-19	0.0593	0.0518	0.0064	0.0011	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20-24	0.1955	0.0890	0.0794	0.0233	0.0034	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000
25-29	0.1970	0.0220	0.0532	0.0642	0.0379	0.0155	0.0032	0.0010	0.0000	0.0000	0.0000
30-34	0.1309	0.0028	0.0076	0.026	0.0400	0.0316	0.0145	0.0056	0.0013	0.0008	0.0008
35-39	0.0607	0.0009	0.0017	0.0034	0.0085	0.0105	0.0145	0.0114	0.0054	0.002	0.0026
40-44	0.0168	0.0000	0.0000	0.0004	0.0011	0.0022	0.0045	0.0015	0.0026	0.0019	0.0026
45-49	0.0016	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0005	0.0005	0.0000
Total	3.3098	0.8338	0.7415	0.5917	0.4549	0.3001	0.1836	0.0998	0.0490	0.0257	0.0297

CHAPTER 5

MARRIAGE AND DIVORCE

The number of marriages registered in 1999 was 2,981, giving a crude marriage rate of 13.7 per thousand. These figures show an increase over those of 1998.

Tables 5.1 and 5.2 show the distribution of grooms and brides by age at marriage and previous marital status. The mean ages at marriage -- 27.4 and 19.8 for all grooms and brides respectively; 26.5 and 19.2 for those marrying for the first time -- is almost similar to those of 1998. In general there appears to be a rise in age at marriage of females in Matlab. The mean age has been over 18 for every year since 1984, while prior to that date it was consistently below that age.

Table 5.3 shows marriage rates by age and sex and clearly shows that some changes occurred compared to 1998. Marriages increased for both men and women in all the age groups except among men aged 405+ years old. Table 5.4 presents data on a cross-tabulation of marriages by groom's and bride's age.

Table 5.5 shows that divorces numbered 294 in 1999, which constituted an increase from the 1998 figure of 277. In general, the incidence of divorce in Matlab appears to have fallen. The number of divorces was more than 500 each year during 1978-81. Since 1981 this figure has been less than 500. Table 5.5 also presents data on the number of divorces by partner's age, indicating that the peak ages of divorce for men were 25-29, compared to 20-24 for women.

Table 5.6 and Figure 5.1 show the distribution of marriages and divorces by month. There has been no strong seasonal pattern for marriages or divorces in 1999.

Table 5.7 gives data on divorces by marriage duration, age and sex. The largest percentage of divorces occurs among couples married 12-23 months.

It may be noted that the HDSS definitions specify that if either partner in a marriage has been resident in the study area, the marriage should be registered. Thus if a bride from the study area marries a groom from outside the area, the marriage will be included in the marriage statistics but because of her move out of the area, all her subsequent childbearing goes unrecorded by the DSS. This leads to an imbalance between the numbers of marriages and the numbers of births, and caution is needed if, for any reason, the two data sets have to be related.

Table 5.1: Groom's Age at Marriage by Previous Marital Status, 1999

Age (years)	All grooms		Previous marital status							
			Single		Married		Divorced		Widowed	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
All ages	2981	100.0	2598	100.0	74	100.0	225	100.0	84	100.0
15-19	158	5.3	148	5.7	2	2.7	8	3.6	0	0.0
20-24	770	25.8	722	27.8	9	12.2	34	15.1	5	6.0
25-29	1222	41.0	1123	43.2	21	28.4	66	29.3	12	14.3
30-34	571	19.2	477	18.4	17	23.0	60	26.7	17	20.2
35-39	173	5.8	112	4.3	13	17.6	36	16.0	12	14.3
40-44	37	1.2	15	0.6	3	4.1	11	4.9	8	9.5
45-49	22	0.7	0	0.0	3	4.1	6	2.7	13	15.5
50-54	8	0.3	1	0.0	2	2.7	1	0.4	4	4.8
55-59	8	0.3	0	0.0	2	2.7	1	0.4	5	6.0
60-64	5	0.2	0	0.0	0	0.0	2	0.9	3	3.6
65+	7	0.2	0	0.0	2	2.7	0	0.0	5	6.0
Median age*	27.0		26.0		31.0		30.0		38.5	
Mean age*	27.4		26.5		33.3		30.7		40.4	
Standard dev.*	6.1		4.6		10.5		7.4		12.9	

*Mean, median, and standard deviation were calculated from ungrouped age data.

Table 5.2: Bride's Age at Marriage by Previous Marital Status, 1999

| Age (years) | All brides | | Previous marital status | | | | | |
| | | | Single | | Divorced | | Widowed | |
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
All ages	2981	100.0	2700	100.0	252	100.0	29	100.0
10-14	115	3.9	115	4.3	0	0.0	0	0.0
15-19	1608	53.9	1565	58.0	42	16.7	1	3.4
20-24	927	31.1	821	30.4	102	40.5	4	13.8
25-29	245	8.2	178	6.6	60	23.8	7	24.1
30-34	49	1.6	14	0.5	29	11.5	6	20.7
35-39	23	0.8	5	0.2	14	5.6	4	13.8
40-44	10	0.3	1	0.0	4	1.6	5	17.2
45-49	3	0.1	1	0.0	1	0.4	1	3.4
50-54	1	0.0	0	0.0	0	0.0	1	3.4
55-59	0	0.0	0	0.0	0	0.0	0	0.0
60-64	0	0.0	0	0.0	0	0.0	0	0.0
65+	0	0.0	0	0.0	0	0.0	0	0.0
Median age*	19.0		19.0		24.0		32.0	
Mean age*	19.8		19.2		24.8		32.7	
Standard deviation*	4.3		3.4		5.8		9.2	

*Mean, median, and standard deviation were calculated from ungrouped age data.

Table 5.3: Marriage Rates by Age and Sex, 1999

Age (years)	Males			Females		
	Marriages	Population	Rate*	Marriages	Population	Rate*
10-14	0	14264	0.0	115	14129	8.1
15-19	158	12364	12.8	1608	11178	143.9
20-24	770	8546	90.1	927	9404	98.6
25-29	1222	6980	175.1	245	8533	28.7
30-34	571	6260	91.2	49	8508	5.8
35-39	173	6995	24.7	23	7617	3.0
40-44	37	5718	6.5	10	5608	1.8
45+	50	18855	2.7	4	20411	0.2
All ages	2981	79982	37.3	2981	85388	34.9

*Rates per 1000 population irrespective of previous marital status.

Table 5.4: Number of Marriages by Groom's and Bride's Age at
Marriage, 1999

Groom's age (years)	All	Bride's age (years)							
		10-14	15-19	20-24	25-29	30-34	35-39	40-44	45+
All ages	2981	115	1608	927	245	49	23	10	4
10-14	0	0	0	0	0	0	0	0	0
15-19	158	23	104	25	5	1	0	0	0
20-24	770	37	534	180	14	3	1	1	0
25-29	1222	42	676	415	83	5	1	0	0
30-34	571	12	231	224	96	8	0	0	0
35-39	173	1	53	74	26	12	5	1	1
40-44	37	0	8	7	8	9	3	2	0
45-49	22	0	1	0	8	6	5	2	0
50-54	8	0	1	2	1	2	2	0	0
55-59	8	0	0	0	3	1	1	2	1
60-64	5	0	0	0	0	2	3	0	0
65+	7	0	0	0	1	0	2	2	2

Table 5.5: Number of Divorces by Partners' Age at Divorce, 1999

| Male's age (years) | All | Female's age (years) | | | | | | | | |
		10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50+
All ages	294	4	83	111	49	25	14	5	2	1
10-14	0	0	0	0	0	0	0	0	0	0
15-19	11	0	7	1	3	0	0	0	0	0
20-24	60	1	32	24	3	0	0	0	0	0
25-29	87	2	28	43	9	5	0	0	0	0
30-34	63	1	11	24	20	5	2	0	0	0
35-39	38	0	4	15	9	7	3	0	0	0
40-44	16	0	1	4	1	6	3	1	0	0
45-49	7	0	0	0	3	0	3	1	0	0
50-54	2	0	0	0	0	0	0	1	1	0
55-59	3	0	0	0	0	0	3	0	0	0
60-64	4	0	0	0	1	1	0	1	1	0
65+	3	0	0	0	0	1	0	1	0	1

Table 5.6: Marriages and Divorces by Month, 1999

Month	Marriage		Divorce	
	Number	Percent	Number	Percent
January	251	8.4	28	9.5
February	226	7.6	19	6.5
March	245	8.2	20	6.8
April	302	10.1	30	10.2
May	233	7.8	24	8.2
June	254	8.5	35	11.9
July	294	9.9	26	8.8
August	272	9.1	33	11.2
September	249	8.4	25	8.5
October	265	8.9	14	4.8
November	204	6.8	26	8:8
December	186	6.2	14	4.8
Total	2981	100.0	294	100.0

Figure 5.1: Marriages and Divorces by Month, 1999
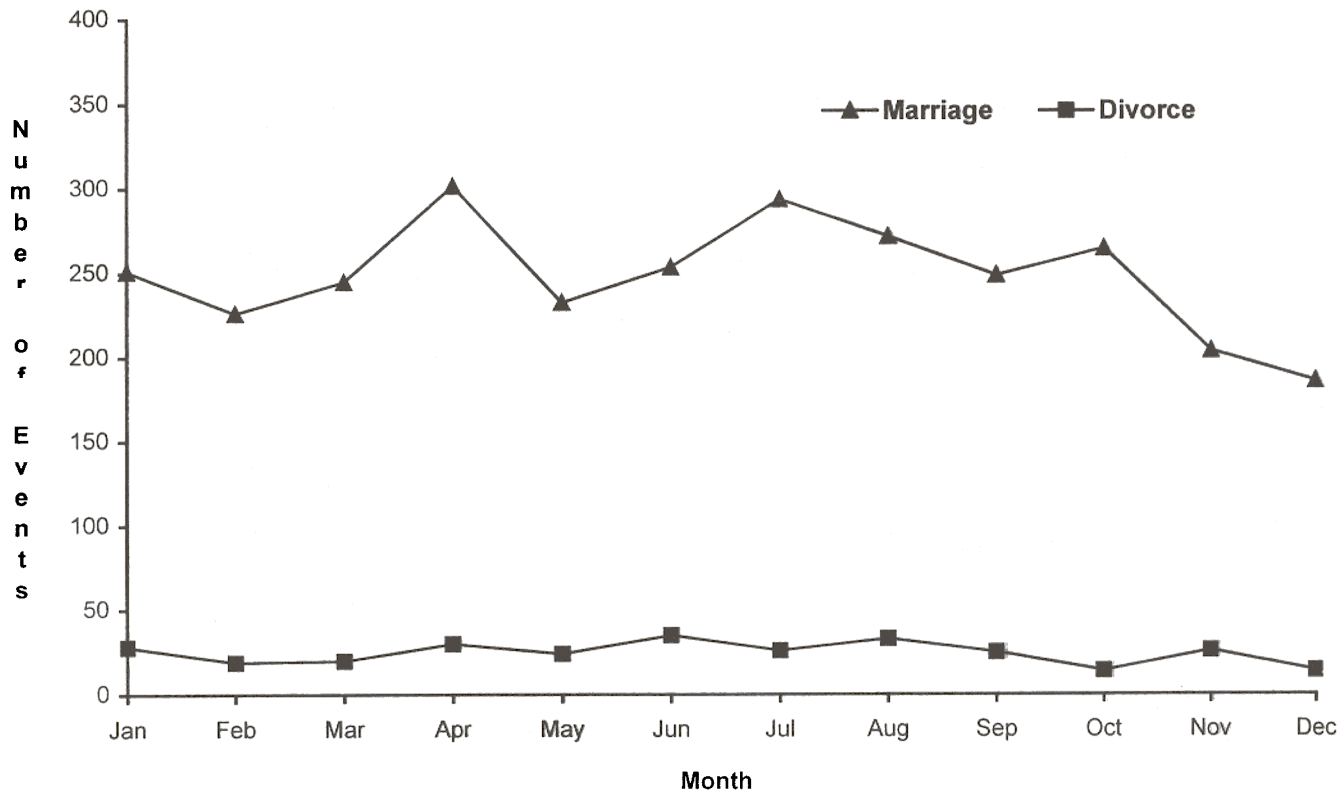
Table 5.7: Number of Divorces by Sex, Age, and Duration of Marriage, 1999

Age at divorce	All duration		Duration of marriage (months)														
			Under 6		6-11		12-23		24-35		36-47		48-59		60+	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
All ages	294	294	45	45	39	39	82	82	32	32	22	22	12	12	62	62
Under 20	11	87	3	23	3	14	4	35	1	10	0	4	0	0	0	1
20-24	60	111	10	16	5	19	28	31	8	16	5	13	2	5	2	11
25-29	87	49	17	2	16	4	23	10	13	4	8	2	3	1	7	26
30-34	63	25	6	2	9	1	15	4	5	2	6	2	1	3	21	11
35-39	38	14	4	1	6	1	7	1	2	0	1	0	3	2	15	9
40-49	23	7	3	1	0	0	2	1	3	0	2	1	1	1	12	3
50+	12	1	2	0	0	0	3	0	0	0	0	0	2	0	5	1

CHAPTER 6

MIGRATION

An "out-migrant" is defined as a person originally listed on a DSS census as a resident, or a person who became a resident after the census by birth or immigration, who subsequently moved out of the surveillance (HDSS) area permanently. Likewise, an "in-migrant" is an individual not recorded in the last census who has permanently moved into the surveillance area. Those who stay in the area continuously for at least six months in a year or come home at least once a month to stay overnight are treated as permanent residents. It may be noted that these definitions refer to the surveillance area as a whole. People who move from the Comparison area into the MCH-FP area, or vice versa, do not feature in the tables which show the numbers of migrants in the two areas.

Table 6.1 shows that the number of in-migrants in 1999 was 7,561 giving a crude rate of in-migration of 34.8 per thousand. Out-migrants numbered 10,423 and the out-migration rate was 48.0 per thousand. Both in-migration and out-migration rates increased over those of 1998. The net loss of migrants was 13.2 per 1,000 in 1999, which is much higher than in 1998. The numbers for the MCH-FP and Comparison areas, shown in Tables 6.2 and 6.3 by age and sex, are fairly evenly distributed between the two areas.

Table 6.4 shows the age-specific migration rates, which are illustrated in Figure 6.1. They show the bi-modal age distribution commonly found for migrant populations, with a primary peak of young adults and a secondary peak of young children moving with their parents. For males the ages of the out-migrants tended to be rather younger than those of the in-migrants, while for females the shapes of the distributions were more similar.

Tables 6.5 to 6.8 show the distributions of in- and out-migrants by age, sex and the cause of the movement. Table 6.9 and Figure 6.2 show the numbers moving in and out by month. January seems to be the preferred month for migration.

Tables 6.10 and 6.11 show the number of males and females migrating in and out of the Matlab HDSS area by location of origin or destination. For locations in Bangladesh the Division and whether the location is rural or urban are given. For numerically important origins or destinations the District is also shown. Roughly equal numbers of men and women move into and out of rural areas of Chandpur district, neighboring Matlab, probably due to marriage. There is a net loss of both men and women to urban Dhaka, primarily of young adults. There is also a net loss to India more evenly distributed across age groups. Migration to the Middle East and other Asian locations is heavily concentrated among out-migrating males age 15-44.

Table 6.1: In- and Out-migration by Age and Sex, 1999

Age (years)	In-migration			Out-migration		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	7561	3607	3954	10423	5680	4743
Under 5	1082	534	548	1132	561	571
0	344	178	166	316	150	166
1	199	101	98	234	111	123
2	200	91	109	236	128	108
3	182	94	88	163	82	81
4	157	70	87	183	90	93
5-9	695	352	343	708	354	354
10-14	550	268	282	856	437	419
15-19	1125	257	868	2076	989	1087
20-24	1139	339	800	2144	1179	965
25-29	977	533	444	1402	840	562
30-34	714	469	245	756	496	260
35-39	510	369	141	480	335	145
40-44	287	211	76	281	186	95
45-49	147	114	33	148	106	42
50-54	87	57	30	115	67	48
55-59	70	39	31	81	39	42
60-64	58	31	27	66	26	40
65+	120	34	86	178	65	113

Table 6.2: In-migration by Age, Sex, and Area, 1999

Age (years)	MCH-FP area			Comparison area		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	3875	1804	2071	3686	1803	1883
Under 5	591	284	307	491	250	241
0	*196*	*104*	*92*	*148*	*74*	*74*
1	*105*	*51*	*54*	*94*	*50*	*44*
2	*104*	*41*	*63*	*96*	*50*	*46*
3	*93*	*53*	*40*	*89*	*41*	*48*
4	*93*	*35*	*58*	*64*	*35*	*29*
5-9	369	192	177	326	160	166
10-14	279	141	138	271	127	144
15-19	524	89	435	601	168	433
20-24	586	145	441	553	194	359
25-29	496	254	242	481	279	202
30-34	387	250	137	327	219	108
35-39	281	205	76	229	164	65
40-44	147	113	34	140	98	42
45-49	66	50	16	81	64	17
50-54	38	26	12	49	31	18
55-59	38	20	18	32	19	13
60-64	24	14	10	34	17	17
65+	49	21	28	71	13	58

Table 6.3: Out-migration by Age, Sex, and Area,

Age (years)	MCH-FP area			Comparison area		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	4743	2636	2107	5680	3044	2636
Under 5	480	249	231	652	312	340
0	*132*	*56*	*76*	*184*	*94*	*90*
1	*92*	*48*	*44*	*142*	*63*	*79*
2	*99*	*59*	*40*	*137*	*69*	*68*
3	*68*	*36*	*32*	*95*	*46*	*49*
4	*89*	*50*	*39*	*94*	*40*	*54*
5-9	293	149	144	415	205	210
10-14	374	198	176	482	239	243
15-19	932	454	478	1144	535	609
20-24	1023	571	452	1121	608	513
25-29	669	403	266	733	437	296
30-34	360	240	120	396	256	140
35-39	223	145	78	257	190	67
40-44	139	95	44	142	91	51
45-49	64	45	19	84	61	23
50-54	54	34	20	61	33	28
55-59	30	13	17	51	26	25
60-64	28	10	18	38	16	22
65+	74	30	44	104	35	69

Table 6.4: Age and Sex-specific Migration Rates by Direction, 1999
(per 1000 population)

Age	Both sexes		Males		Females	
(years)	In	Out	In	Out	In	Out
All ages	34.8	48.0	33.9	53.4	35.6	42.7
Under 5	42.1	44.0	40.8	42.9	43.3	45.1
0	62.6	57.5	62.7	52.8	62.5	62.5
1	38.1	44.9	37.7	41.4	38.6	48.5
2	40.3	47.6	36.8	51.8	43.8	43.4
3	37.4	33.5	38.6	33.7	36.1	33.3
4	30.3	35.3	26.4	33.9	34.3	36.7
5-9	26.5	27.0	26.6	26.7	26.4	27.3
10-14	19.4	30.1	18.8	30.6	20.0	29.7
15-19	47.8	88.2	20.8	80.0	77.7	97.2
20-24	63.5	119.4	39.7	138.0	85.1	102.6
25-29	63.0	90.4	76.4	120.3	52.0	65.9
30-34	48.3	51.2	74.9	79.2	28.8	30.6
35-39	34.9	32.8	52.8	47.9	18.5	19.0
40-44	25.3	24.8	36.9	32.5	13.6	16.9
45-49	17.8	17.9	28.0	26.0	7.9	10.1
50-54	11.6	15.3	16.9	19.9	7.2	11.5
55-59	9.8	11.4	12.5	12.5	7.7	10.5
60-64	9.3	10.6	10.3	8.6	8.4	12.5
65+	11.8	17.5	6.4	12.3	17.7	23.2

Figure 6.1: Rate of In- and Out-migration by Sex and Age, 1999

Table 6.5: Male Out-migration by Cause of Movement and Age, 1999

Cause of movement	Total	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
								Age (years)							
All migrants	5680	561	354	437	989	1179	840	496	335	186	106	67	39	26	65
Work/Economic/Educational															
-acquired/seeking job	3145	1	4	83	597	854	655	391	266	138	82	32	22	9	11
-job completion/retirement	23	0	0	6	3	6	2	3	0	1	0	1	0	0	1
-to acquire education	364	1	18	73	106	105	47	7	2	5	0	0	0	0	0
-educ. completed/interrupt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-student lodging	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-student	8	0	0	0	2	1	3	0	1	0	0	1	0	0	0
Housing/Environmental															
-acquired/seeking new land/house	185	2	5	8	4	9	23	32	27	23	13	15	7	6	11
-river erosion	8	0	0	0	0	0	0	1	3	2	0	0	1	1	0
Marriage/Familial															
-marriage	12	0	0	0	1	6	2	1	0	1	0	1	0	0	0
-separation/divorce/widow	4	0	0	0	0	1	1	1	1	0	0	0	0	0	0
-move with or join spouse/parents	1852	553	326	265	264	184	91	50	30	13	9	12	8	8	39
-adoption	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
-family friction/breakdown	32	2	0	0	4	5	12	3	1	1	1	2	1	0	0
-health or old age care	6	0	0	0	0	3	0	0	0	0	0	0	0	2	1
Legal problems	10	1	0	0	0	2	1	3	0	2	0	1	0	0	0
Other and not stated															
-other n.e.c.*	25	1	1	2	6	2	1	4	3	0	1	2	0	0	2
-unknown or not stated	5	0	0	0	1	1	2	0	1	0	0	0	0	0	0

*Not elsewhere classified

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Table 6.6: Female Out-migration by Cause of Movement and Age, 1999

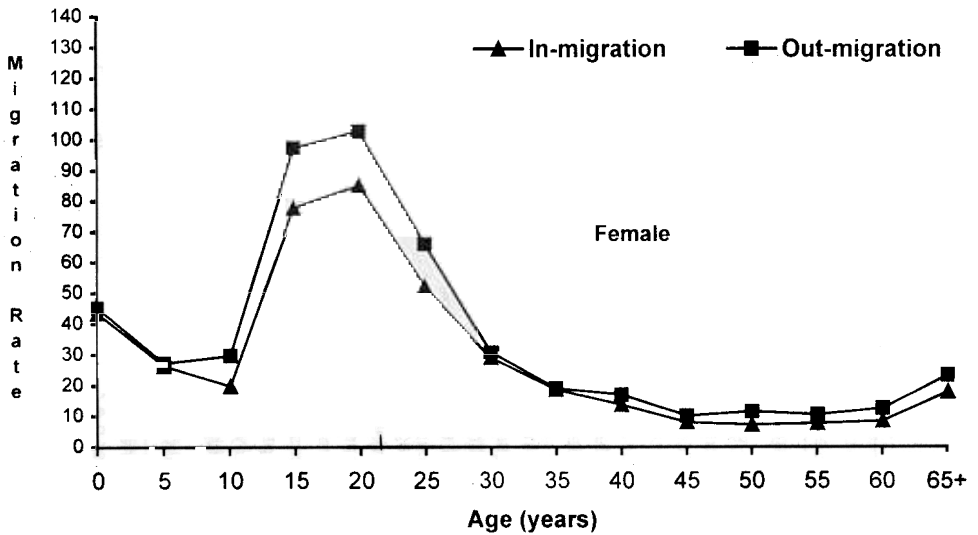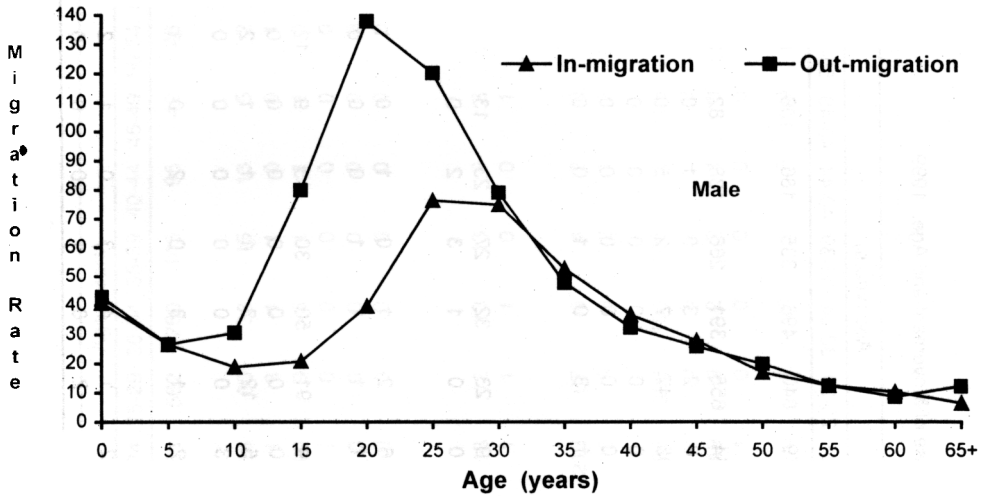| Cause of movement	Total	Age (years)													
		<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
All migrants	4743	571	354	419	1087	965	562	260	145	95	42	48	42	40	113
Work/Economic/Educational															
-acquired/seeking job	602	0	5	72	250	136	60	33	15	13	5	2	3	4	4
-job completion/retirement	22	0	2	5	7	1	3	1	1	0	0	1	0	1	0
-to acquire education	150	2	23	51	36	20	9	5	1	1	1	0	0	0	1
-educ. completed/interrupt	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
-student lodging	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-student	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Housing/Environmental															
-acquired/seeking new land/house	93	1	5	6	4	13	12	13	13	2	8	3	6	3	4
-river erosion	7	0	1	0	0	1	1	1	0	0	1	1	1	0	0
Marriage/Familial															
-marriage	640	0	0	24	321	213	67	8	4	2	0	0	1	0	0
-separation/divorce/widow	54	0	0	0	16	18	5	6	2	1	2	0	0	0	4
-move with or join spouse/parents	3094	557	317	258	439	538	396	190	105	75	25	40	30	29	95
-adoption	13	11	1	0	0	1	0	0	0	0	0	0	0	0	0
-family friction/breakdown	47	0	0	1	11	19	9	2	2	1	0	0	0	1	1
-health or old age care	6	0	0	0	0	1	0	0	0	0	0	0	0	1	4
Legal problems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other and not stated															
-other n.e.c.*	13	0	0	2	2	3	0	1	2	0	0	1	1	1	0
-unknown or not stated	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0

*Not elsewhere classified

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Table 6.7: Male In-migration by Cause of Movement and Age, 1999

Cause of movement	Total	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
All migrants	3607	534	352	268	257	339	533	469	369	211	114	57	39	31	34
Work/Economic/Educational															
-acquired/seeking job	367	0	0	9	25	49	82	80	66	29	10	9	4	2	2
-job completion/retirement	781	0	0	2	10	89	179	172	156	85	35	21	13	11	8
-to acquire education	161	1	31	56	47	15	8	0	1	1	0	0	0	0	1
-educ. completed/interrupt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-student lodging	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-student	23	0	0	0	10	3	2	2	1	0	2	0	2	0	1
Housing/Environmental															
-acquired/seeking new land/house	261	0	1	1	5	31	45	50	40	39	23	9	8	2	7
-river erosion	21	0	0	0	0	0	2	3	2	3	6	0	2	3	0
Marriage/Familial															
-marriage	10	0	0	0	0	0	1	2	3	1	1	1	1	0	0
-separation/divorce/widow	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
-move with or join spouse/parents	1900	532	319	199	162	146	199	144	90	47	30	11	9	10	12
-adoption	4	0	1	1	0	0	0	0	0	1	0	1	0	0	0
-family friction/breakdown	26	1	0	0	2	2	5	5	5	2	0	1	0	1	2
-health or old age care	33	0	0	0	3	4	8	6	0	3	4	3	0	1	1
Legal problems	5	0	0	0	0	0	1	3	1	0	0	0	0	0	0
Other and not stated															
-other n.e.c.*	12	0	0	0	3	0	1	2	4	0	0	1	0	1	0
-unknown or not stated	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0

*Not elsewhere classified

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Table 6.8: Female In-migration by Cause of Movement and Age, 1999

Cause of movement	Total	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
All migrants			343	282	868	800	444	245	141	76	33	30	31	27	
Work/Economic/Educational															
-acquired/seeking job	83	0	0	12	12	16	18	10	5	3	2	4	0	0	1
-job completion/retirement	65	0	0	5	9	14	19	6	7	4	1	0	0	0	0
-to acquire education	120	2	22	48	31	12	1	3	1	0	0	0	0	0	0
-educ. completed/interrupt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-student lodging	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-student	5	0	0	1	2	2	0	0	0	0	0	0	0	0	0
Housing/Environmental															
-acquired/seeking new land/house	75	1	0	0	2	17	9	20	9	4	2	5	3		2
-river erosion	13	0	0	0	1	2	2	1	2	3	0	1	0		1
Marriage/Familial															
-marriage	796	0	0	7	432	257	58	20	9	6	4			0	
-separation/divorce/widow	79	0	0	1	16	22	17	11	6	1	2	0	1	1	
-move with or join spouse/parents	2626	527	319	207	357	439	305	166	100	51	21	18	26	24	66
-adoption	18	16	1	1	0	0	0	0	0	0	0	0	0	0	0
-family friction/breakdown	46		1	0	6	15	11	5	2	3		0	0	0	
-health or old age care	16	0	0	0	0	1	2	0	0	0	0	0	0	1	12
Legal problems	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
Other and not stated															
-other n.e.c.*	11	1	0	0	0	3	2	3	0	1	0	1	0	0	0
-unknown or not stated	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*Not elsewhere classified

Table 6.9: In- and Out-migration by Sex and Month, 1999

Month	In-migration			Out-migration		
	Both sexes	Male	Female	Both sexes	Male	Female
January	1359	676	683	1570	876	694
February	666	326	340	857	456	401
March	680	320	360	849	436	413
April	653	301	352	919	484	435
May	619	295	324	898	483	415
June	582	283	299	987	534	453
July	547	236	311	963	516	447
August	672	341	331	1041	582	459
September	554	266	288	624	350	274
October	508	232	276	791	438	353
November	424	197	227	540	308	232
December	297	134	163	384	217	167
All months	7561	3607	3954	10423	5680	4743

Figure 6.2: Number of In- and Out-migration by Sex and Month, 1999
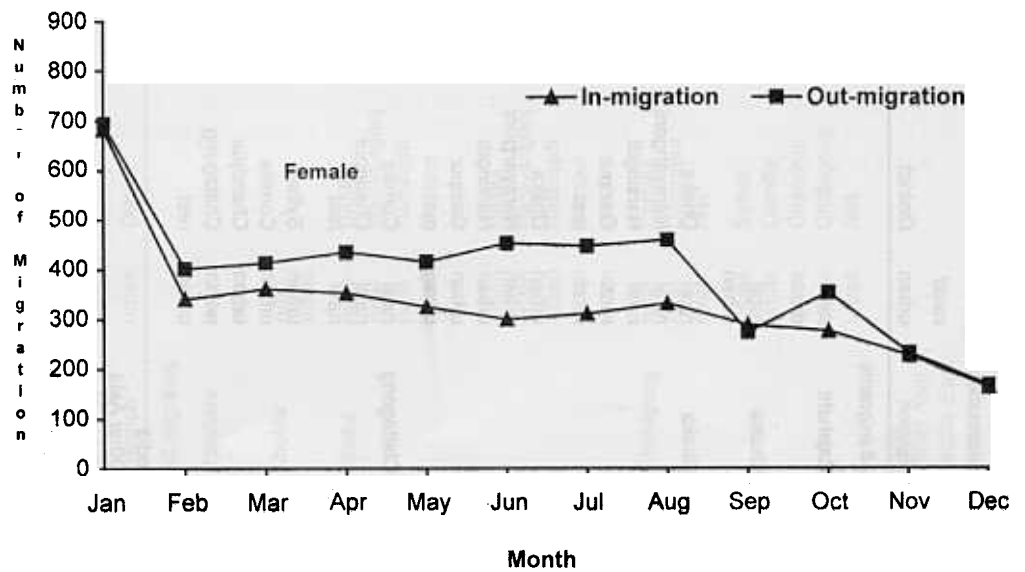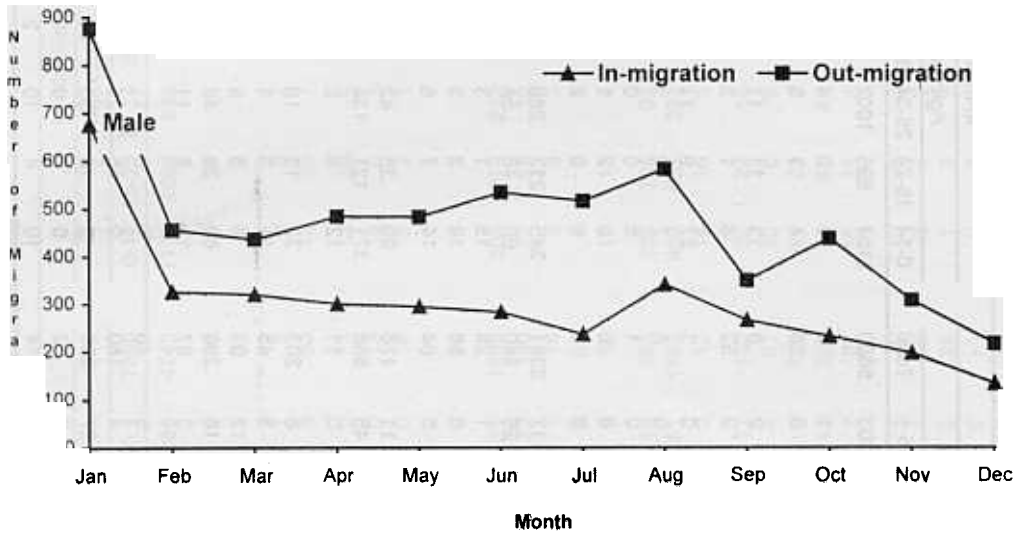
Table 6.10: Male Migration by Destination or Origin, 1999

Destination/origin			Out-migration						In-migration					
Division	rural/ urban	District	Age (years)					Total	Age (years)					Total
			0-14	15-25	25-34	35-44	45 +		0-14	15-24	25-34	35-44	45 +	
All migrants			1352	2168	1336	521	303		1154	596	1002	580	275	3607
Rajshahi	rural		2	3	1	0	1		4	0	4	4	1	13
	urban		9	8	2	4	3		4	1	5	3	1	14
Khulna	rural		3	2	0	1	2		13	11	11	5	6	46
	urban		12	27	6	5	2		8	1	3	1	2	15
Dhaka	rural	Dhaka	1	2	0	0	0		27	9	14	8	2	60
	rural	Narayangonj	2	2	2	0	0		7	2	3	2	2	16
	rural	Narsingdi	0	0	0	1	0		5	0	0	1	0	6
	rural	Gazipur	0	0	0	0	0		0	2	1	0	2	5
	rural	rest	3	0	2	3	0		6	0	2	4	2	14
	urban	Dhaka	569	1077	473	145	117		345	212	286	140	76	1059
	urban	Narayangonj	135	162	76	39	28		66	46	54	29	15	210
	urban	Narsingdi	8	13	2	4	1		15	1	3	3	2	24
	urban	Gazipur	17	18	10	7	6		10	2	3	3	1	19
	urban	rest	19	25	10	5	5		14	7	6	8	1	36
Chittagong	rural	Comilla	71	50	35	11	11		99	35	42	22	11	209
	rural	Chandpur	285	104	91	62	46		371	121	134	85	59	770
	rural	rest	7	1	2	1	0		12	8	5	3	1	29
	urban	Sylhet	66	84	34	11	8		30	13	19	7	4	73
	urban	Comilla	15	15	9	3	3		11	3	4	6	1	25
	urban	Chandpur	30	19	26	10	12		7	3	6	4	3	23
	urban	Chittagong	63	139	61	12	18		68	26	46	23	19	182
	urban	rest	15	36	8	5	3		13	8	11	8	6	46
India			15	10	7	3	5		7	8	11	1	5	32
Other Asia			0	62	84	30	4		0	55	223	142	25	445
Middle-East			2	303	389	159	27		2	18	96	66	27	209
Other			0	0	2	0	0		0	0	0	0	0	0
Unknown			3	6	4	0	1		10	4	10	2	1	27

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Table 6.11: Female Migration by Destination or Origin, 1999

Destination/origin			Out-migration						In-migration					
Division	rural/urban	District	Age (years)						Age (years)					
			0-14	15-25	25-34	35-44	45 +	Total	0-14	15-25	25-34	35-44	45 +	Total
All migrants			1344	2049	825	240	285		1173	1668	689	217	207	3954
Rajshahi	rural		1	3	1	0	1		3	4	2	0	0	9
	urban		15	4	11	2	1		6	4	1	0	2	13
Khulna	rural		4	2		1			6	8	2	0	1	17
	urban		17	18	11	2	5		10	15	7	2	7	41
Dhaka	rural	Dhaka	0	0	3	0	0		14	28	6	4	4	56
	rural	Narayangonj	3	9	1	0	0		14	6	3	4	0	27
	rural	Narsingdi	1	3	2	0	0		5	2	1	0	0	8
	rural	Gazipur	0	0	1	0	0		1	1	0	0	1	3
	rural	rest	3	4	5	0	0		4	7	1	3	0	15
	urban	Dhaka	497	688	302	91	121		305	279	212	64	64	924
	urban	Narayangonj	124	148	65	31	22		72	59	39	13	16	199
	urban	Narsingdi	7	4	3	1	1		3	9	3	3		19
	urban	Gazipur	28	18	4	9	6		5	3	4	0	2	14
	urban	rest	12	24	14	2	4		13	18	9	3		44
Chittagong	rural	Comilla	90	185	53	13	14		109	204	61	10	12	396
	rural	Chandpur	297	593	196	48	61		410	851	222	72	57	1612
	rural	rest	6	3	3	1	0		14	16	5	2	1	38
	urban	Sylhet	45	41	23	12	11		27	22	14	6	8	77
	urban	Comilla	17	26	11	3	4		10	6	9	2	0	27
	urban	Chandpur	50	69	30	8	9		17	20	3	3	1	44
	urban	Chittagong	80	161	57	7	15		80	61	49	9	6	205
	urban	rest	23	18	11	3	2		18	19	8	6	9	60
India			9	8	6	3	4		10	4	3	2	12	31
Other Asia			5	1	3	0	1		2	4	6	1	0	13
Middle-East			3	11	6	3	2		1	2	9	5	0	17
Other			0	1	0	0	0		0	0	0	0	0	0
Unknown			7	7	2	0	0		14	16	10	3	2	45

CHAPTER 7

FERTILITY REGULATION IN THE MCH-FP AREA

Since the introduction of the maternal and child health and family planning (MCH-FP) services project in the MCH-FP area in late 1977, the female community health workers (CHWs) visit every household fortnightly. Since 1999, they visit monthly. In their first visits to the households in a month, CHWs inquire about contraceptive use of currently married women aged 15-49 years, motivate couples for adopting family planning, provide contraceptives if the couple wants, and advise pregnant women for antenatal care and use of safe-delivery kit. They record family planning methods used by the couples in the previous month. In their second visit of the month to the households, they inquire about children's morbidity and health services used in the past month.

Table 7.1 shows that contraceptive use rate in the MCH-FP area is about 30 percentage points higher than in the comparison area and about 20 percentage points higher than the national-level estimate for each point of time. While contraceptive use rate is increasing in both the areas and at the national level, the rate of increase per year is higher in area where contraceptive use rate has been lower at the beginning. Table 7.2 shows the difference in contraceptive method-mix between the MCH-FP area and the national level estimates for selected years. At the national level, pill is the most widely used method, followed by female sterilization, injectable and condom while in the MCH-FP area, injectable is the most widely used method, followed by pill, female sterilization and IUD. The difference is the method-mix may reflect the impact of the MCH-FP services project in the MCH-FP area. Changes in the method-mix in the MCH-FP area during 1986-99 is shown in Table 7.3. Use of pill, injectable and condom has increased at the expense of permanent methods and IUD over the years. Contraceptive use rate increases with increase in women's age (Table 7.4). Older women are more likely to undergo tubectomy and adopt "other" (such as periodic abstinence and withdrawal) methods than younger women. Women aged 25-44 tend to use injectables more than women aged less than 25.

Table 7.1: Contraceptive Use Rate (%) of Currently Married Women Aged 15-49 by Area, 1982-1999

Year	MCH-FP area	Comparison area	National[a]
1982	36.7	-	-
1983	40.3	-	19.1
1984	46.4	15.8	-
1985	46.2	-	25.3
1986	47.4	-	-
1987	51.3	-	-
1988	52.5	-	-
1989	58.8	-	30.8
1990	60.6	27.9	-
1991	61.1	-	39.9
1992	61.1	30.2	-
1993	62.7	-	44.6
1994	65.6	-	-
1995	68.6	-	-
1996	68.1	46.9	49.2
1997	67.4	-	-
1998	68.8	-	-
1999	69.9	-	53.8

[a]Sources: CPS (Contraceptive Prevalence Survey), BFS (Bangladesh Fertility Survey) and BDHS (Bangladesh Demographic and Health Survey).

Table 7.2: Contraceptive Method-mix[a] (%) in Different Surveys

Method	CPS		BDHS		Matlab MCH-FP area	
	1989	1991	1993/94	1996/97	1989	1999
Pill	35.4	43.7	48.1	50.1	22.9	27.7
Condom	5.4	6.7	8.2	9.5	2.6	3.2
Injectable	4.5	8.7	12.3	14.9	47.5	48.7
IUD	6.7	5.6	6.1	4.3	6.7	7.4
Tubectomy	40.4	31.0	22.3	18.5	16.1	9.5
Vasectomy	7.2	4.0	3.0	2.7	0.6	0.2
Others	0.4	0.3	0.0	0.0	3.6	3.3
Total (%)	100.0	100.0	100.0	100.0	100.0	100.0

[a]Currently married women using any modern method.

Table 7.3: Contraceptive Method-mix[a] (%) in MCH-FP Area. 1986-1999

Method	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Pill	19.6	21.2	21.7	22.9	24.7	25.8	26.3	27.1	24.9	24.3	24.4	25.1	28.5	27.7
IUD	12.5	11.6	8.1	6.7	5.0	4.1	3.5	3.5	3.2	2.7	2.1	1.8	2.2	3.2
Injectable	38.7	41.1	45.8	47.5	48.8	49.1	49.6	48.4	50.7	52.5	52.4	51.0	48.1	48.7
Condom	2.9	2.9	2.6	2.6	2.2	2.3	2.6	3.0	3.8	4.6	6.0	7.4	6.8	7.4
Foam	0.8	0.5	0.6	0.5	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tubectomy	21.0	18.6	17.4	16.1	14.9	14.5	14.0	14.0	13.4	11.9	11.2	10.7	10.2	9.5
Vasectomy	0.9	0.7	0.6	0.6	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2
Others	3.6	3.4	3.2	3.1	3.4	3.4	3.5	3.7	3.7	3.7	3.6	3.7	3.9	3.3
All (%)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[a]Currently married women using any modern method.

Table 7.4. Method Specific Contraceptive Use Rate Among Currently Married Women by Age and Method in MCH-FP Area, 1999

Age group	Not using	Any method	Pill	IUD	Injectable	Condom	Tubec-tomy	Vasec-tomy	Others[a]	No. of women
<20	58.3	41.7	13.9	3.4	20.6	3.5	0.0	0.0	0.3	597
20-24	45.0	55.0	19.8	3.5	28.0	3.3	0.0	0.0	0.4	2866
25-29	38.4	61.6	20.2	2.7	34.0	4.0	0.5	0.0	0.2	3692
30-34	32.2	67.8	20.5	2.4	36.8	5.2	2.2	0.0	0.7	3816
35-39	22.7	77.3	19.7	1.8	38.8	6.5	8.2	0.1	2.2	3773
40-44	14.3	85.7	19.5	1.4	35.5	7.1	16.2	0.3	5.7	2500
45+	13.3	86.7	15.7	0.5	30.9	5.5	24.1	0.7	9.3	1874
Total	30.1	69.9	19.4	2.2	34.1	5.2	6.6	0.1	2.3	19118

[a]Others include periodic abstinence, withdrawal and other traditional methods.

CHAPTER 8

USE OF MATERNAL AND CHILD HEALTH SERVICES IN THE MCH-FP AREA

Immunization Service in the MCH-FP Area

CHWs have been responsible to provide immunization services to both pregnant women and children at the door-step and to maintain vaccination records in the MCH-FP area during 1987-99. Neonatal tetanus is a fatal disease caused by a pathogen transmitted under unhygienic conditions at childbirth. For full protection against tetanus among newborns and mothers, it is recommended that pregnant women receive two doses of the tetanus toxoid (TT) in a pregnancy. However, if a woman has been vaccinated during her previous pregnancy, she may require only one booster dose during a subsequent pregnancy. A woman requires 5 doses of TT for life-long protection. TT coverage rate is presented for women whose pregnancies terminated into live births.

WHO recommends that all children receive a BCG vaccination against tuberculosis; three doses of DPT vaccine for the prevention of diphtheria, pertussis (whooping cough), and tetanus; three doses of polio vaccine; and a vaccination against measles before their first birthday. Therefore, vaccination of children aged 12-23 months is presented to allow comparison of the results with other surveys.

Table 8.1 shows the trends in coverage rates of different vaccines among women who gave live birth and children aged 12-23 months. Coverage of TT with at least two doses has increased from 86% in 1987 to more than 98% in 1992 and since then it has remained stable. The 1999/2000 BDHS (Bangladesh Demographic and Health Survey) estimated national coverage of TT with two or more doses is 64%, which is 34 percentage points lower than in the MCH-FP area. Immunization of children with BCG (1 dose), DPT and Polio (three doses) and measles (1 dose) is almost universal in the MCH-FP area; 99% have received BCG, and 96% have received three doses of DPT and Polio and measles vaccines by 1990. The percent of fully immunized children has increased from 69% in 1987 to 94% by 1990. These figures are higher than the BDHS estimates of 91% for BCG, 72% for DPT and Polio, 71% for measles and 60% for full immunization during 1999/2000.

Table 8.2 shows TT coverage among women who gave live birth in 1999 by age and number of doses. The coverage of TT with at least two doses is 93% among women aged less than 20 and 99% among women aged 30 years or more. DPT and Polio coverage of full (three) doses has been above 98% during 1996-98 and 97% in 1999 (Table 8.3).

Child Morbidity and Service Use

Diarrhoea and pneumonia are two important causes of infant and child morbidity and mortality in Bangladesh. ICDDR,B trained CHWs for recording prevalence of diarrhoea and pneumonia along with other child health information when visiting households in the MCH-FP area monthly. They ask mothers about presence of symptoms of diarrhoea: three or more watery or loose stools per 24 hours with or without mucus or blood in children in the two weeks preceding the visit date. An episode is termed bloody diarrhoea if blood is present in stool, otherwise it is termed watery diarrhoea. For recording prevalence of pneumonia, CHWs ask mothers about symptoms suggesting pneumonia such as fever, cough and short, rapid (or difficult) breathing (or inability to suck breast if child aged less than 2 months) were present in children in the preceding one month. A pneumonia episode is termed severe if chest indrawing was present in addition to the symptoms of pneumonia; otherwise it is termed mild pneumonia. In longitudinal monthly surveys, the estimate of the period prevalence may be upward biased, for example, an episode that lasted more than 30 days is reported prevalent in two adjacent months.

Diarrhoea causes dehydration and ORS is the most simple and inexpensive tool to combat dehydration. CHWs during their home visits, provide ORS packets free of charge if they encounter any diarrhoea patients, provide treatment for minor illnesses of women and children and refer severe cases to ICDDR,B treatment sub-centres and hospital in Matlab. They also keep ORS packets with a woman of each bari[1] for free distribution. If a child has diarrhoea in the preceding two weeks, the mother is asked about number of half-litre ORS packets administered to prevent dehydration. It may be mentioned that ORS use stands for a mix-group of diarrhoea episodes – both terminated and still continuing on the visit date. For still continuing episodes, CHWs may have made home visits before ORS use has occurred (i.e., right-censoring) and thus, ORS use may be underestimated. Moreover, CHWs did not record additional fluids given from a home-made sugar, salt and water solution to combat dehydration.

Similarly, if a child had pneumonia in the past month, CHWs ask mothers in their routine home visits about most recent health actions taken to combat pneumonia. As mentioned before, health actions taken against pneumonia may also be underestimated because of right-censoring (home visit before health service use).

CHWs in their monthly home visits, record breastfeeding status of all children aged less than 5 years in the preceding month in the MCH-FP area. A child is regarded fully breastfed if he/she is not given any additional liquid foods (i.e., breast milk plus plain water), partially breastfed if he/she is given liquid, solid or mushy foods in addition to breast milk, and none if he/she is completely weaned in the past month.

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[1] A bari consists of a cluster of households, whose heads are generally related by blood or affinal connection. These households cooperate with one another to a varying degree in social events such as the marriage or funeral of a bari member.

Prevalence of Diarrhoea and ORS Use

Table 8.4 shows the prevalence of diarrhoea per 100 two-weeks of children for selected years. The prevalence shows little decline over time; from 13.2% in 1994 to 11.7% in 1998. This prevalence is higher than the 1996/97 BDHS reported prevalence of 7.6%. The prevalence is highest in the age group 6-11 months, and slightly higher for boys than for girls, and also higher for children of less educated mothers than for children of more educated mothers. Table 8.5 shows that ORS is not used for more than half of the children experiencing diarrhoea in the preceding two-weeks. Use of ORS is higher for children with watery diarrhoea than for children with bloody diarrhoea (49% as opposed to 43%). Intake of ORS use is very low in children aged less than 6 months (about 1 in 4 children is given ORS). Among children aged 6-59 months, half of them are given ORS and use is comparable across age groups. Use of ORS does not vary by sex of the child and mothers' education level. ORS use is higher for prolonged episodes than for short episodes.

Prevalence of Pneumonia and Service Uptake

Table 8.6 shows the prevalence of pneumonia per 100 child-months by selected socio-demographic variables and severity of illness for selected years. The prevalence is centered around 1.2%. Despite the possibility of overestimate as mentioned earlier, the prevalence appears to be underestimated in comparison with the results of an intensive study conducted in Matlab in May 1986 – April 1987. In this study, children were visited every fourth day by health interviewers to record pneumonia cases and their work was supervised regularly by a physician. A total of 117 episodes of pneumonia were recorded in 6567 child-months (contributed by 559 children aged less than 5 years in one year period), yielding the pneumonia prevalence of 1.8 per 100 child-months (Zaman, et al. 1997). The results suggest that CHWs have missed a significant proportion of pneumonia episodes in monthly surveillance.

Two-thirds of the reported pneumonia episodes are termed mild rather than severe (0.8% versus 0.4%). As expected, the lower the age the higher is the prevalence of pneumonia. The reported prevalence is a little higher for boys than for girls. Mother's education is not related to the prevalence of pneumonia in their children.

Table 8.7 shows the treatment pattern of pneumonia by socio-demographic variable and severity of illness for 1998. Severity of illness triggers choice of treatment providers. Of mild pneumonia episodes, 62% are treated by CHWs themselves, 9% by ICDDR,B treatment sub-centres or hospital in Matlab, 18% by untrained village doctors and 1% untreated. In contrast, 1.5% of the severe pneumonia were treated by CHWS, 93% by ICDDR,B sub-centres or hospital in Matlab and 5% by untrained village doctors. The results suggest that for severe illnesses, parents bypassed CHWs for well trained providers.

Age of the child influences choice of treatment provider for mild pneumonia, not for severe pneumonia. Infants with mild pneumonia are more likely to be taken to ICDDR,B

sub-centres or hospital in Matlab for treatment than their older counterparts. Sex of the child and mothers' education are not related to choice of treatment provider for children with mild or severe pneumonia.

Prevalence of Breastfeeding

Breastfeeding contains all the nutrients needed by children in the first six months of life. Numerous studies have shown the beneficial effects of breastfeeding on nutritional status, morbidity and mortality. Exclusive breastfeeding (i.e., only breast milk) is recommended during the first 4-6 months of a child's life because it provides adequate nourishment, lowers the risk of diarrhoea and prolongs duration of postpartum amenorrhoea. While supplementing breast milk before 4 months of age is discouraged, especially under unhygienic condition, lack of supplementation of breast milk after 6 months of age increases risks of malnutrition. Table 8.8 shows that almost all children (99%) are breastfed fully or partially during first year of life. The 1999-2000 BDHS reports that 98% of children are breastfed during first year of life. Full breastfeeding declines with age so that 51% are fully breastfed among infants aged 4-5 months and 30% among infants aged 6-7 months. The results indicate that supplementation of breast milk with other liquids and foods begins early in the MCH-FP area. Partial breastfeeding accounts for 22% of infants aged 2-3 months and 48% of infants aged 4-5 months. The 1999-2000 BDHS report that 58% of children aged 4-6 months are partially breastfed (breast milk plus other liquids, mush, solid foods).

Reference

Zaman K., Baqui A. H., Yunus M., Sack R. B., Bateman O. M., Chowdhury H. R. and Black R. E. (1997). Acute respiratory infections in children: a community-based longitudinal study in rural Bangladesh. *Journal of Tropical Pediatrics*; 43: 133-137.

Table 8.1: Immunization Coverage (%) in MCH-FP Area, 1987-1999

Year	TT coverage[a] during last pregnancy of women giving live birth	Vaccination coverage among children aged 12-23 months			
		BCG (1 dose)	DPT & Polio (3 doses)	Measles (1 dose)	All[b]
1987	86.1	88.4	76.1	85.2	69.3
1988	89.7	93.3	82.8	87.9	77.2
1989	91.3	94.6	88.4	92.0	84.0
1990	95.3	98.7	95.7	96.4	93.8
1991	97.1	98.6	95.6	97.0	94.1
1992	98.6	99.1	96.9	97.8	96.0
1993	98.8	99.5	97.6	98.1	96.6
1994	99.3	99.5	97.7	97.0	96.7
1995	98.8	99.3	96.8	97.0	95.0
1996	99.3	99.5	98.0	97.9	96.7
1997	98.6	99.3	98.5	98.0	97.3
1998	98.3	99.2	97.7	96.1	95.4
1999	97.7	99.0	97.7	94.8	94.1

[a]At least two doses received during latest pregnancy that terminated in a live birth.
[b]Children fully vaccinated (i.e. those who received BCG, measles and three doses of DPT and polio.

Table 8.2: TT Coverage (%) During Last Pregnancy of Women Giving Live Birth by Age and Number of Doses in MCH-FP Area, 1999

Women's age	No. of pregnant women	None	1 dose	2+ doses	Total (%)
Less 20	174	2.3	4.6	93.1	100.0
20 –29	1546	0.9	2.0	97.1	100.0
30+	946	0.1	0.4	99.5	100.0
All ages	2666	0.7	1.6	97.7	100.0

Table 8.3: DPT and Polio Coverage (%) Among Children Aged 12-23 Months by Number of Doses in MCH-FP Area, 1996-1999

| Year | No. of children | Number of doses received | | | | |
		None	1 dose	2 doses	3 doses	Total (%)
	2566	0.6	0.2	0.3	98.9	100.0
	2281	0.7	0.1	0.3	98.9	100.0
	2485	0.6	0.4	0.5	98.5	100.0
1999	2578	1.4	0.6	1.1	96.9	100.0

Table 8.4: Two Weekly Prevalence[a] (%) of Childhood Diarrhoea by Socio-demographic Characteristics for Selected Years in MCH-FP Area

Socio-demographic characteristics	Watery Diarrhoea			Bloody Diarrhoea			Either			BDHS[b]
	1994	1995	1998	1994	1995	1998	1994	1995	1998	1996/97
Age of children (in months)										
<6	4.8	5.1	4.8	0.5	0.4	0.4	5.3	5.5	5.2	4.2
6-11	15.4	15.9	15.7	0.9	1.0	1.0	16.3	16.9	16.6	14.0
12-23	16.0	14.3	13.9	1.0	1.2	1.1	16.9	15.4	15.0	11.6
24-35	12.8	10.8	11.5	1.3	1.3	1.6	14.1	12.1	13.1	7.6
36-47	12.1	10.4	9.9	1.1	1.1	1.1	13.2	11.5	11.0	6.3
48-59	10.3	8.5	8.0	0.7	0.6	0.7	11.0	9.1	8.7	3.9
Sex										
Male	12.9	11.4	11.2	1.0	1.1	1.1	13.9	12.4	12.2	7.5
Female	11.6	10.5	10.2	0.9	0.9	1.0	12.5	11.4	11.2	7.8
Mother's education										
No education	12.5	10.8	10.9	0.9	0.9	1.1	13.4	11.8	12.0	6.9
Primary incomplete	12.4	11.7	11.1	1.1	1.0	1.0	13.5	12.7	12.1	10.1
Primary complete	12.2	11.1	11.2	0.9	1.0	1.1	13.1	12.2	12.3	6.9
Secondary+	11.3	10.7	9.5	1.0	0.9	0.9	12.3	11.5	10.4	8.1
All (%)	12.3	11.0	10.7	1.0	1.0	1.0	13.2	11.9	11.7	7.6
No. of diarrhoea episodes[c]	18,212	16,072	15,797	1,432	1,402	1,545	19,644	17,474	17,342	5,654

[a]Whether or not diarrhoea episode started or ended within the two-week period .

[b]Percent of children experiencing diarrhoea in past two weeks irrespective of date of onset.

[c]Equivalent to number of two-week periods of observation in which children had had diarrhoea.

Table 8.5: Percent Distribution of Diarrhoea Episodes Occurred in Under Five Children by No. of $^1/_2$ Litre ORS[a] Packets Used to Manage Diarrhoea by Socio-demographic Characteristics in MCH-FP Area, 1996

Socio-demographic characteristics	Watery diarrhoea					Bloody diarrhoea				
	Number of ½ litre ORS packets					Number of ½ litre ORS packets				
	None	1-3	4-6	7+	Total (%)	None	1-3	4-6	7+	Total (%)
Child's age (in months)										
<6	71.8	24.3	3.0	0.9	100.0	74.6	25.4	0.0	0.0	100.0
6-11	51.9	41.4	5.4	1.3	100.0	65.7	28.2	3.4	2.7	100.0
12-23	49.0	44.6	5.3	1.1	100.0	54.6	37.4	6.7	1.3	100.0
24-35	49.8	44.9	4.3	1.0	100.0	53.7	40.9	5.2	0.2	100.0
36-47	50.3	44.3	4.8	0.6	100.0	56.1	38.9	4.1	0.9	100.0
48-59	49.1	45.4	5.0	0.5	100.0	56.4	39.1	4.5	0.0	100.0
Sex										
Male	49.8	43.8	5.3	1.1	100.0	54.8	39.2	4.9	1.1	100.0
Female	52.0	42.9	4.4	0.8	100.0	58.8	36.1	4.7	0.4	100.0
Mother's education										
No education	51.3	43.7	4.2	0.8	100.0	57.6	38.1	3.8	0.5	100.0
Primary incomplete	52.0	42.7	4.8	0.5	100.0	58.5	35.0	6.5	0.0	100.0
Primary complete	51.0	43.4	4.4	1.2	100.0	50.4	42.9	5.8	0.9	100.0
Secondary+	48.6	42.8	7.2	1.4	100.0	58.0	34.3	5.6	2.1	100.0
Duration of diarrhea (in days)										
1-3	53.9	43.3	2.3	0.5	100.0	63.4	32.7	3.2	0.7	100.0
4-6	48.7	44.3	6.3	0.7	100.0	58.2	37.6	3.5	0.7	100.0
7+	46.7	42.5	8.8	2.0	100.0	52.3	40.5	6.4	0.8	100.0
All (%)	50.8	43.4	4.9	0.9	100.0	56.7	37.7	4.8	0.8	100.0
No. of diarrhoea episodes[b]	8,036	6,848	768	145	15,797	877	582	74	12	1,545

[a]Oral rehydration solution.
[b]Equivalent to number of two-week periods of observation in which children had had diarrhoea.

Table 8.6: Monthly Prevalence[a] (%) of Pneumonia in Under Five Children by Socio-demographic Characteristics for Selected Years in MCH-FP Area

Socio-demographic characteristics	Mild			Severe			Either		
	1994		1998	1994		1998	1994		1998
Child's age (in months)									
<6	1.9	1.5	1.4	1.7	1.3	1.7	3.6	2.8	3.1
6-11	2.2	1.6	1.7	1.1	0.8	0.9	3.4	2.4	2.6
12-23	1.4	1.3	1.3	0.7	0.5	0.6	2.1	1.9	1.9
24-35	0.7	0.7	0.6	0.3	0.3	0.2	1.0	1.0	0.8
36-47	0.3	0.4	0.3	0.1	0.1	0.1	0.5	0.5	0.4
48-59	0.2	0.1	0.2	0.0	0.1	0.0	0.2	0.2	0.2
Sex									
Male	1.0	0.9	0.9	0.6	0.6	0.5	1.6	1.5	1.4
Female	0.8	0.7	0.7	0.4	0.3	0.4	1.2	1.0	1.0
Mother's education									
No education	1.0	0.8	0.8	0.5	0.4	0.4	1.5	1.2	1.3
Primary incomplete	0.9	0.9	0.8	0.5	0.5	0.6	1.4	1.4	1.4
Primary complete	0.8	0.9	0.8	0.5	0.4	0.4	1.3	1.3	1.2
Secondary+	0.9	0.7	0.6	0.6	0.5	0.4	1.5	1.2	1.0
All (in %)	0.9	0.8	0.8	0.5	0.4	0.4	1.4	1.2	1.2
No. of pneumonia episodes[b]	1,382	1,197	1,144	768	614	662	2,151	1,811	1,806

[a]Percent of child-months with reported pneumonia irrespective of date of onset.
[b]Equivalent to number of months of observation in which children had experienced pneumonia.

Table 8.7: Percent Distribution of Type of Treatment Used for Mild and Severe Pneumonia Which Occurred in Under Five Children by Socio-demographic Characteristics in MCH-FP Area, 1998

Socio-demographic characteristics	Mild					Severe				
	No treatment	ICDDR,B CHWs	ICDDR,B facilities	Village doctors	Total	No treatment	ICDDR,B CHWs	ICDDR,B facilities	Village doctors	Total
Child's age (in months)										
<6	-	65.6	18.8	15.6	100.0	0.3	0.7	96.3	2.7	100.0
6-11	0.5	71.8	14.1	13.6	100.0	-	2.0	92.0	6.0	100.0
12-23	2.0	72.9	7.6	17.5	100.0	-	1.7	92.1	6.1	100.0
24-35	0.7	72.9	3.5	22.9	100.0	1.1	2.2	91.1	5.6	100.0
36-47	4.4	77.9	2.9	14.7	100.0	-	2.0	93.9	4.1	100.0
48-59	-	54.3	5.7	40.0	100.0	-	-	90.9	9.1	100.0
Sex										
Male	0.6	72.5	10.3	16.6	100.0	-	1.2	94.1	4.7	100.0
Female	2.0	69.2	9.4	19.3	100.0	0.5	1.9	92.6	5.0	100.0
Mother's education										
No education	1.2	74.3	8.1	16.5	100.0	0.4	1.8	92.5	5.3	100.0
Primary incomplete	1.7	72.5	14.2	11.7	100.0	-	2.5	93.9	3.7	100.0
Primary complete	1.4	67.6	8.6	22.3	100.0	-	-	98.1	1.9	100.0
Secondary+	0.7	62.2	14.2	23.0	100.0	-	0.6	92.9	6.5	100.0
All (%)	1.2	71.1	9.3	17.8	100.0	0.2	1.5	93.5	4.8	100.0
No.of pneum. episodes[a]	11	657	91	163	916	2	13	832	43	890

[a]Equivalent to number of months of observation in which children had experienced pneumonia.

Table 8.8: Breastfeeding Status During First 24 Months of
Life of Children Born in MCH-FP Area, 1994

Age of children (in months)	Breastfeeding status			Total	No. of children at the end of age period
	Full	Partial	None		
0-1	91.3	7.1	1.6	100	2,887
2-3	76.5	22.4	1.1	100	2,882
4-5	51.3	48.0	0.7	100	2,872
6-7	30.3	69.3	0.4	100	2,821
8-9	13.3	86.0	0.8	100	2,649
10-11	7.1	91.8	1.1	100	2,550
12-13	4.9	94.1	1.0	100	2,494
14-15	4.3	94.2	1.5	100	2,469
16-17	4.3	94.2	1.6	100	2,432
18-19	4.3	93.9	1.8	100	2,394
20-21	4.1	93.9	2.0	100	2,039
22-23	3.5	93.7	2.7	100	1,565

Appendix A

Names and Codes of Villages in the HDSS Area, 1999

MCH-FP area

Village code	Village name	Village code	Village name
Block A:			
D	Charmukundi	V59	Doshpara
W	Kaladi	V60	Suvankardi
V10	Dhakirgaon	V61	Munsabdi
V11	Nabakalash	V62	Shilmondi
V31	Dighaldi	V72	Upadi
V32	Mobarakdi		
Block B			
H	Lamchari	V26	Narayanpur
V12	Bhangerpar	V56	Palipara
V13	Baburpara	V82	Dhanarpar
V19	Lakshmipur	V83	Padmapal
V20	Dagorpur	V85	Bhanurpara
V21	Khadergaon	V87	Hurmaisha
V22	Beloti	VB12	Nagda
V23	Baluchar	VB13	Naogaon
V24	Machuakhal		
Block C			
K	Shahpur	V40	Masunda
L	Tatkhana	V41	Paton
M	Char Nayergaon	V42	Adhara (South)
N	Aswinpur	V43	Kanachak
O	Nayergaon	V44	Panchdona
P	Titerkandi	V64	Kawadi
Q	Char Shibpur	V86	Adhara
V27	Panchghoria	V88	Datikara
V28	Khidirpur	VB11	Mehron
V30	Harion	D100	Barogaon
V39	Gobindapur	D101	Naojan
Block D:			
R	Nandalalpur	V52	Nayakandi
S	Tatua	V54	Balakandi
T	Amuakanda	V55	Induria
V15	Bhati Rasulpur	V57	Baluchar
V16	Binandapur	V63	Islamabad (East)
V17	Hatighata		
V18	Torkey	V67	Majlishpur
V25	Char Pathalia	V81	Sonaterkandi
V29	Shibpur(South)	V84	Shanbajkandi
V33	Shibpur(North)	V89	Islamabad (Middle)
V34	Satparia		

Comparison area

Village code	Village name	Village code	Village name
A	Uddamdi	V78	Soladana
B	Charmasua	V79	Pitambordi
C	Sarderkandi	V80	Daribond
F	Sepoykandi	V90	Narinda
G	Thatalia	V95	Baluchar
J	Char Harigope	V96	Rampur
U	Baispur	V97	Dhanagoda
V01	Kadamtali	V98	Santoshpur
V02	Nilokhi	V99	Baluakandi
V03	Char Nilokhi	VB1	Taltoli
V04	Char Pathalia	VB2	Sree Rayerchar
V05	Gazipur	VB3	Rayerkandi
V06	Fatepur	VB4	Ramdaspur
V07	Nayakandi	VB5	Thakurpara
V08	Goalbhar	VB6	Sarkerpara
V09	Naburkandi	VB7	Mirpur
V14	Enayetnagar	VB8	Farazikandi
V35	Durgapur	VB9**	Ramanathgonj
V36	Ludhua	VB10	South Rampur
V37**	Charputia	D28	Bazarkhola
V38	Galimkha	D29	Kirtonkhola
V45	Bakchar	D30	Banuakandi
V46	Silinda	D31	Harina Bazarkhola
V47	Tulatali		
V48	Gangkandi	D32	Khalisha
V49	Harina Bhabanipara	D33	Nayanagar
		D34	Saidkharkandi
V50	Bakharpur	D35	Mollah Kandi
V51	Induriakandi	D88	Sankibhanga
		D89	Sankibhanga Namapara
V53	Chhoto Haldia		
V58**	Mohishmari	D90	Zahirabaj
V65	Nayachar	D91**	North Joypur
V66	Thatalia	D92**	West Joypur
V68	Sobahan	D93	Maizkandi
V69**	Naobangha	D94	Hazipur
V70**	South Joypur	D95	Tapaderpara
V71	Khamarpara	D96	Rampur
V73	Sadardia	D97	Nayakandi
V74	Ketundia	D98	Bara Haldia
V75	Mukundia	D99	Mandertoli
V76	Chosoi		

*Division by block applies only to the MCH-FFP area.
**Lost due to river erosion in 1988.

Appendix B

Mid-year Population, Births, Deaths and Rates by Village, 1999

Village code*	Popula-tion	Live births	Deaths	Birth rate	Death rate
MCH-FP area:					
D	2054	59	11	28.7	5.4
W	4448	88	22	19.8	4.9
V10	1737	31	11	17.8	6.3
V11	2115	65	8	30.7	3.8
V31	8837	204	60	23.1	6.8
V32	2856	80	14	28.0	4.9
V59	1304	28	11	21.5	8.4
V60	926	20	5	21.6	5.4
V61	633	15	1	23.7	1.6
V62	903	18	5	19.9	5.5
V72	6287	164	38	26.1	6.0
Block A	32100	772	186	24.0	5.8
H	1355	35	6	25.8	4.4
V12	580	15	1	25.9	1.7
V13	719	14	6	19.5	8.3
V19	2725	64	17	23.5	6.2
V20	1269	34	10	26.8	7.9
V21	486	18	4	37.0	8.2
V22	570	11	4	19.3	7.0
V23	536	13	4	24.3	7.5
V24	2825	70	18	24.8	6.4
V26	2682	67	25	25.0	9.3
V56	1542	32	8	20.8	5.2
V82	1526	29	6	19.0	3.9
V83	545	15	6	27.5	11.0
V85	489	15	5	30.7	10.2
V87	675	19	1	28.1	1.5
VBB	4316	118	29	27.3	6.7
VBC	4814	139	24	28.9	5.0
Block B	27654	708	174	25.6	6.3

Appendix B (cont.)

Village code*	Population	Live births	Deaths	Birth rate	Death rate
K	894	16	6	17.9	6.7
L	536	18	2	33.6	3.7
M	177	5	2	28.2	11.3
N	2095	55	15	26.3	7.2
O	1627	39	10	24.0	6.1
P	2025	45	11	22.2	5.4
Q	344	8	2	23.3	5.8
V27	914	17	11	18.6	12.0
V28	1487	34	5	22.9	3.4
V30	588	9	3	15.3	5.1
V39	341	8	0	23.5	0.0
V40	747	21	9	28.1	12.0
V41	1706	47	10	27.5	5.9
V42	743	22	4	29.6	5.4
V43	905	29	4	32.0	4.4
V44	598	13	4	21.7	6.7
V64	4568	122	38	26.7	8.3
V86	818	20	8	24.4	9.8
V88	527	15	1	28.5	1.9
VBA	2529	42	11	16.6	4.3
DX0	3366	95	21	28.2	6.2
DX1	1291	31	4	24.0	3.1
Block C	28826	711	181	24.7	6.3
R	1472	46	15	31.3	10.2
S	928	22	8	23.7	8.6
T	1599	31	9	19.4	5.6
V15	673	14	5	20.8	7.4
V16	799	21	10	26.3	12.5
V17	1079	24	9	22.2	8.3
V18	3839	99	29	25.8	7.6
V25	1220	27	12	22.1	9.8
V29	497	8	3	16.1	6.0
V33	460	5	4	10.9	8.7
V34	770	9	5	11.7	6.5
V52	194	1	0	5.2	0.0
V54	639	13	1	20.3	1.6
V55	511	12	1	23.5	2.0
V57	1054	32	3	30.4	2.8
V63	2002	42	15	21.0	7.5
V67	625	16	4	25.6	6.4
V81	672	14	4	20.8	6.0
V84	2257	63	19	27.9	8.4
V89	1363	31	10	22.7	7.3
Block D	22653	530	166	23.4	7.3
MCH-FP area	111233	2721	707	24.5	6.4

Appendix B (cont.)

Village code*	Population	Live births	Deaths	Birth rate	Death rate
Comparison area					
A	3137	70	22	22.3	7.0
B	2099	52	12	24.8	5.7
C	3947	115	30	29.1	7.6
F	1424	40	6	28.1	4.2
G	2738	60	20	21.9	7.3
J	660	6	3	9.1	4.5
U	8641	219	47	25.3	5.4
V01	496	8	4	16.1	8.1
V02	530	19	2	35.8	3.8
V03	643	17	4	26.4	6.2
V04	326	10	2	30.7	6.1
V05	3290	93	39	28.3	11.9
V06	2368	69	24	29.1	10.1
V07	366	10	4	27.3	10.9
V08	1208	29	5	24.0	4.1
V09	1173	29	8	24.7	6.8
V14	802	16	8	20.0	10.0
V35	3847	97	32	25.2	8.3
V36	5504	124	35	22.5	6.4
V38	1665	32	13	19.2	7.8
V45	1149	28	9	24.4	7.8
V46	404	12	3	29.7	7.4
V47	1888	52	6	27.5	3.2
V48	614	12	4	19.5	6.5
V49	1355	34	11	25.1	8.1
V50	95	1	1	10.5	10.5
V51	790	18	4	22.8	5.1
V53	3170	73	25	23.0	7.9
V65	808	21	4	26.0	5.0
V66	863	16	2	18.5	2.3
V68	1010	33	6	32.7	5.9
V71	480	12	2	25.0	4.2
V73	848	26	7	30.7	8.3
V74	1422	40	15	28.1	10.5
V75	384	10	4	26.0	10.4
V76	1782	54	16	30.3	9.0
V78	270	10	1	37.0	3.7

Village code*	Popula-tion	Live births	Deaths	Birth rate	Death rate
V79	319	11	1	34.5	3.1
V80	1149	40	8	34.8	7.0
V90	1252	32	3	25.6	2.4
V95	2039	59	14	28.9	6.9
V96	710	22	4	31.0	5.6
V97	432	15	4	34.7	9.3
V98	169	3	1	17.8	5.9
V99	600	17	7	28.3	11.7
VB0	2868	66	23	23.0	8.0
VB1	1171	35	9	29.9	7.7
VB2	1067	22	10	20.6	9.4
VB3	3109	82	15	26.4	4.8
VB4	3835	96	37	25.0	9.6
VB5	971	28	7	28.8	7.2
VB6	612	20	3	32.7	4.9
VB7	350	4	1	11.4	2.9
VB8	1423	42	10	29.5	7.0
D28	1169	22	10	18.8	8.6
D29	213	6	1	28.2	4.7
D30	769	21	5	27.3	6.5
D31	1105	38	9	34.4	8.1
D32	766	20	10	26.1	13.1
D33	1135	31	8	27.3	7.0
D34	1419	37	10	26.1	7.0
D35	623	18	8	28.9	12.8
D88	1480	47	16	31.8	10.8
D89	1314	38	9	28.9	6.8
D90	980	24	9	24.5	9.2
D93	1306	41	13	31.4	10.0
D94	1536	44	14	28.6	9.1
D95	543	22	3	40.5	5.5
D96	1010	19	11	18.8	10.9
D97	821	25	9	30.5	11.0
D98	3442	81	33	23.5	9.6
D99	2170	52	12	24.0	5.5
Comp. area	106073	2747	787	25.9	7.4

*See village name in Appendix A.

Appendix C

Life Table Equations

1. $$_nq_x = \frac{_nm_x}{1/_n + {_nm_x} [\, 1/_2 + {^n}/_{12} (_nm_x \quad \ln C) \,]}$$

2. $$l_0 = 100,000$$

   $$l_x = (1 - {_nq_{x-n}}) \; l_{x-n}$$

3. $$L_0 = 0.276 \; l_0 + 0.724 \; l_1$$

   $$L_1 = 0.410 \; l_1 + 0.590 \; l_2$$

   $$L_i = 1/_2 \; (\, l_i + l_{i+1} \,), \quad i = 2, 3, 4$$

   $$_nL_x = \frac{_nd_x}{_nm_x} \quad \text{for } 5 \le x \le 80$$

   $$_\infty L_{85} = \frac{l_{85}}{_\infty m_{85}} \quad \text{for the last age group 85+}$$

4. $$e = \frac{T_x}{l_x} \quad \text{where } T_x = \sum_{y=x} L_y$$

Note: Greville's method, as suggested in Shryock, H.S., Seigel, J.S., and Associates, The Methods and Materials of Demography (revised), U.S. Dept. of Commerce, Bureau of the Census, 1975, Vol. II p.414 and pp. 444-5.

(ln C assumed to be 0.095; separation factors in Equation 3 correspond to an infant mortality rate of 100.)

Appendix D

New Standard Populations

Age group (years)	Males	Females	Both sexes combined
0	2,558	2,471	2,396
1-4	9,513	9,231	9,490
5-9	10,824	10,472	10,649
10-14	9,954	9,609	9,783
15-19	9,989	9,627	9,809
20-24	9,477	9,137	9,308
25-29	8,458	8,204	8,332
30-34	7,355	7,175	7,266
35-39	6,585	6,476	6,531
40-44	5,326	5,253	5,290
45-49	4,341	4,335	4,338
50-54	3,994	4,061	4,027
55-59	3,486	3,604	3,544
60-64	2,912	3,179	3,045
65-69	2,167	2,591	2,378
70-74	1,424	1,837	1,629
75-79	958	1,406	1,181
80-84	429	814	602
85+	250	518	402
Total	100,000	100,000	100,000

Appendix E

List of HDSS Staff - 1999

Project Director
Peter Kim Streatfield, Ph.D.

Matlab Field Station

Supervisory Staff:

Mr. A.M. Sarder, Sr. Manager
Mr. Liaquat Ali Mondal, SFRO
Mr. Md. Aftekharuzzaman, FRO
Mr. Md. Nazrul Islam, FRO

Mr. AAM Mobinul Islam
Senior Programmer

Mr. M. Monirul Alam Bhuiyan
Medical Assistant

Ms. Shahana Ahmed, DET
Ms. Monowara Begum, DET

Mr. Md. Anisur Rahman
Clerk, Gr. I

Health Assistants:

Mr. M. Abul Kashem
Mr. M. Idris Ali Miah II
Mr. Zahirul Hoque
Mr. Golam Hossain
Mr. P.C. Chakraborty
Mr. Md. Jasimuddin
Mr. Nasir Ahmed
Mr. Alfaz Uddin A. Chowdhury
Mr. Md. Sadiquzzaman
Mr. Shah Mostafa Kamal
Mr. Sheikh Abdul Jabber
Mr. Md. A. Malek Patwari
Mr. Md. Monirul Hoque

Note: Besides these, 91 Community Health Research Workers (CHRWs) contributed to the DSS data collection.

Dhaka-based Staff

Dr. Abdur Razzaque
Mr. Saker A. Chowdhury
Ms. Lutfun Nahar
Ms. Saleha Begum
Mr. Md. Nurul Alam
Mr. Md. Golam Mostafa
Mr. Sentu B. Gomes
Ms. Rahima Mazhar
Mr. A.B.M. Delwar Hossain
Mr. M. Kapil Ahmed
Mr. Sajal K. Saha

Mr. Carel van Mels
Mr. Harun-ur Rashid
Ms. Habiba Rahman
Ms. Nasrin Aktar
Mr. Md. Shahjahan
Mr. Mohammad Ali
Mr. AHM Golam Mustafa
Mr. Mahfuzur Rahman
Mr. Samiran Barua
Mr. Md. Zahirul Haq
Mr. Md. Arifur Rahim

THE HEALTH AND DEMOGRAPHIC SURVEILLANCE SYSTEM (HDSS), MATLAB PROJECT

During the past 30 years ICDDR,B: Centre for Health and Population Research has carried out a number of its research activities in Matlab thana, a rural area of Bangladesh with a population of 210,000. Many of these projects have been longitudinal in nature which means that this population or sub-groups (e.g., children below 5) were followed up over time. This has scientific advantages, because it allows precise measurement of the sequence of events and it makes it possible to establish cause-effect relationship with more precision than possible with other research designs.

Two important components of the Matlab HDSS Project are the Demographic Surveillance System (DSS) and the Record Keeping System (RKS). These two systems have now been fully integrated, and all annual reports now provide both health and demographic data. The demographic data cover both MCH-FP and Comparison areas since 1966, and the health data cover the MCH-FP area only. One of the uses of these two systems has been to identify population and health problems and their various causes.

DSS and RKS have also been indispensable in the evaluation of the impact of health interventions which have been carried out in Matlab. They are indispensable, because they provide the enumerators and denominators of demographic and epidemiological rates such as birth and death rates, cholera incidence rates, contraceptive use rates, etc.

A great deal of effort was spent in 1997 on the task of setting new long-term objectives for Matlab. New initiatives have been taken in the areas of child health (e.g., with respect to Integrated Management of Childhood Illness) and in reproductive health (e.g., expansion of Safe Motherhood Programme).

A question which has to be answered here is if and to what extent these new projects have to be implemented in the DSS area of Matlab thana. It may for various reasons indeed be desirable or necessary to start them elsewhere in Matlab (the Non-DSS area) or elsewhere in the country. These new initiatives which have been taken in 1997 have already led to completion of several research protocols. All of these projects need a modernized, integrated Health and Demographic Surveillance System (HDSS), Matlab.

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