



ROYAL GOVERNMENT OF BHUTAN
MINISTRY OF HEALTH & EDUCATION
THIMPHU - BHUTAN



**REPORT
ON
NATIONAL HEALTH SURVEY
JUNE 1994**

Health Division, Thimphu

January 1996



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Preface

A need was felt for the updating of national data, particularly in relation to maternal and child health. The last such survey was conducted in 1984. It is anticipated that the data that this survey has provided will enable health planners and the Royal Government of Bhutan (RGOB) to manage health care in a cost effective and sustainable manner.

This survey was jointly conducted in 1994 by the Health Division (HD) and the Central Statistical Organization (CSO) of the Planning Ministry, on a nationwide basis using a stratified two stage sampling method for data collection.

The HD is indebted to several organizations and persons within and outside the country without whose assistance this survey would not have been possible. We would like to express our gratitude to the many colleagues, health workers and community leaders who have assisted us. In particular, the help of the following individuals, organizations and agencies is gratefully acknowledged:

The Royal Government of Bhutan for the approval to conduct of the survey.

The Ministry of Home Affairs, including Dasho Dzongdas, gups and chipons at the field level.

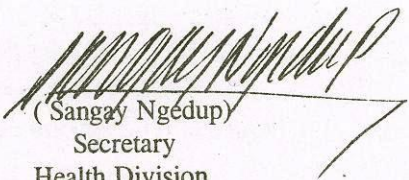
CSO staff who assisted in data collection as well as analysis and report writing.

Health Sector staff, particularly Programme Personnel who were instrumental in data collection and report writing, and including those medical officers and field level health workers who were involved in data collection.

WHO for the provision of funds and technical support from SEARO for the development of the proformas and the statistical and analytical support.

Danida for technical and financial support.

November 1995
Thimphu


(Sangay Ngedup)
Secretary
Health Division

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1. INTRODUCTION

In 1994, a National Health Survey was conducted in order to up-date the basic health statistics in the country. The findings presented in this report are based on a sample survey of approximately 10% of the total population. All the questionnaires are maintained in the Health Division (HD) for possible use in the near future.

2. BACKGROUND AND JUSTIFICATION

During 1984 the Central Statistical Organization (CSO) of the Royal Government of Bhutan (RGOB), in collaboration with the National Institute of Family Health, Gaylegphug, undertook a demographic sample survey. Various information for the measurement of indicators like infant mortality rate (IMR), total fertility rate, crude birth and death rates, age-specific fertility, etc. were collected. Since then no nation-wide survey to measure these and other health-related indicators have been carried out.

Sample surveys covering some of these indicators were conducted later, but these were confined to certain areas only and were not nationally representative. These include a demographic mortality survey in 1991 and covered rural areas of 13 northern Dzongkhags only. A total of 1,868 households with 12,735 persons, including 3,163 women in the reproductive age group (15-49 years), were enumerated. An indirect estimate put IMR for 1989 to be 134 infant deaths per 1,000 live-births (140 for males and 127 for females). The under-five mortality rate (U5MR) was 215 per 1,000 live-births (221 for males and 209 for females). The total fertility rate calculated from the survey data was 6.2 and the crude birth rate was 45 live-births per 1,000 population.

In addition, other specific health surveys were conducted since 1984. The first was a national nutrition survey carried out during 1987-88 covering 3,273 children less than 5 years and 1,367 women in the 15 to 45 age group. In 1988, a study of unmet needs in maternal and child health and family planning (MCH/FP) of 8 Dzongkhags, surveyed 2,097 women in the reproductive age group, 68 hospital and BHU staff, and 92 Gups and Chimis. A knowledge, attitude, belief and practice (KABP) study on sexually-transmitted diseases (STDs) and AIDS was carried out in 1989 and covered 6 Dzongkhags. Finally, a nation-wide iodine deficiency disorder (IDD) survey covering all Dzongkhags was

undertaken during late 1991 and early 1992. The sample population in this latter study included 2,435 children aged 6 to 11 years and 2569 women aged 15 to 45 years.

Because of the inconsistencies and inadequacies of the routine reporting systems, and the lack of a recent comprehensive national survey, the HD undertook this nation-wide health survey in 1994. The indicators for which reliable national estimates were sought included, among others, IMR, U5MR, contraceptive prevalence rate, crude birth rate, crude death rate and total fertility rate.

3. COUNTRY PROFILE

3.1 General

Bhutan is a mountainous kingdom, landlocked between the Tibetan region of China to the north and the northeastern states of the Republic of India to the east, west and south. The kingdom covers a total area of approximately 46,500 square kms. The geography of Bhutan has been a fundamental element in its history and development. The formidable mountain barrier of the high Himalayan peaks in the north, and the dense, subtropical forests in the south covering the steep escarpment rising from the plains of India have served to isolate and protect the country.

Geographically, the country can be divided into three regions - southern subtropical, inner Himalayan and the high northern regions. Due to the diverse physical nature, the climatic conditions within the country also varies enormously.

3.2 People and Religion

In 1990, the population size of the country was estimated at 600,000. The population under 15 years of age was, at that time, 40% with a rural-urban ratio of 95%.

Settlements are mainly concentrated in the arable parts of the country, even though some of these areas are remote and isolated. The distance and isolation in many cases are reflected in different lifestyles and greatly influences peoples' health seeking behaviour as

well as provision of services. For instance, improving access to health services to population groups that lead nomadic lives, poses significant difficulties for the service providers.

The majority of the people in the Western, Central and Eastern regions are Buddhists, whereas Hinduism is more common in the southern region. The Buddhists, on the whole, still follow the old tradition of consulting religious leaders and astrologers and rituals and prayers are expected to continue to play a part in health behaviour for some time to come.

3.3 *Development of the Health Care Services*

Bhutan began its development process in the early 1960's, during the reign of the third monarch, Druk Gyalpo Jigme Dorji Wangchuck. *So-wa-rigpa*, traditional health care, was the only form of health care available until the late 1950's. The first hospital providing allopathic medical care was set up in the country on the return of the first national trained in medical science. Since then, the health infrastructure has been gradually built up in line with Five Year Plans (FYP) and today a well established infrastructure and network is in place.

The introduction of the Primary Health Care (PHC) approach to health delivery in 1979 led to a change in the organizational structure of the health sector. All elements of health services are now delivered through 81 well established Basic Health Units (BHUs) and 41 dispensaries at the local level. In addition, the accessibility to services is further increased by the 350 outreach clinics that are run by the staff of the BHUs and dispensaries. 26 hospitals provide modern medical care as well as referral services for the PHC network.

4. SURVEY PROCESS

4.1 Objectives

The principal objectives of the survey were to:

estimate, with reasonable confidence, national rates of infant mortality, under-five mortality, total fertility and contraceptive prevalence;

determine the age and sex distribution of the study population;

determine the maternal mortality rate (MMR) for the study population;

assess the use of ante-natal care (ANC) services by currently pregnant women;

assess accessibility to and utilization of health care services and illness treatment patterns in the study population over a one month period;

determine the neonatal tetanus incidence for the study population;

assess the incidence of lame children between one and five years of age for the study population.

4.2 Survey Design

4.2.1 Sample Design and Size

A stratified two stage sampling design was adopted for the survey. Dzongkhags were treated as the stratum, blocks in the towns and villages in the rural areas were the primary sampling unit and all households were the second stage sampling units or the ultimate sampling units. All the Dzongkhags were divided into urban and rural areas.

Urban areas were divided into blocks (10 to 20 households) and were selected on the basis of number of households in the block. Within each selected blocks, 5 households were selected for the interview.

Rural areas were composed of villages and the villages were selected by systematic sampling, based on the number of households in the village. Within each selected village, 10 households were selected for the interview.

All households were the ultimate sampling units. A sample of 10 households from the village (rural) and 5 households from the blocks (urban) were thus selected systematically.

The sample size needed to directly calculate the IMR was estimated based on live-births. At a 95% confidence level, with an IMR of 100/1000 live births ($P=0.1$), and with design effect of 2:

relative precision:	20% (80-120)	15% (85-115)	10% (90-110)
live births needed:	1,728	3,074	6,914

To get below a 15% relative precision and still have a sample size which was possible to handle, 10% of the population with a two year recall period was chosen. By this sample size, live-births were estimated to be 4,560.

4.2.2 Recall Period

The two year recall period, from 4 February 1992 to 3 February 1994, was chosen well despite the possibilities of bias affecting data drawn from a long recall period. A shorter recall period would have required a larger sample size than included in the survey.

4.3.4 Supervision

4.2.3 Questionnaires

The interview was carried out according to the designed questionnaires (Annex 2). The *Village information sheet* was developed to determine the accessibility of the health facilities. The information was obtained from appropriate persons at village level.

Schedule A consisted of two pages. Page one contained a table to be completed with information on each member of the household. Page 2 contained particular questions regarding events which occurred during the recall period.

4 Survey Process

Schedule B required information on all women in the reproductive age group (13 to 52) years, regardless of marital status. This age group was chosen to ensure inclusion of the very young and the old mothers. Questions about marriage, pregnancies and family planning were included.

Schedule C sought information on health care seeking behaviour within a recall period of one month.

Schedule D, a vital events register for each household listed details of births and deaths which occurred during the two year recall period.

Schedule E contained questions on death of women of 13 to 52 years to identify maternal deaths.

Schedule F requested information on death of children under 5 years of age and detailed information on death of infants under one month of age for identification of deaths caused by neonatal tetanus.

Schedule G sought information on lame children between 1 and 5 years of age for the purpose of identifying damages caused by polio infections.

4.3 Field Work

4.3.1 Field testing

All the schedules were pre-tested twice in the rural area of Thimphu Dzongkhag. The first pre-testing was conducted on six households by staff who had been involved in the development of the schedules. After amendments, the schedules were field tested a second time by Health Assistants and further improvements were made.

4.3.2 Training of enumerators and supervisors

The group of enumerators consisted of sixty-four health workers and nine staff members of the CSO. All were trained from 18 - 26 April 1994 at the RIHS.

After an overall introduction, covering the objectives of the survey and the logistics, each schedule was reviewed at plenary sessions. This was followed by interview rehearsals, the results of which were used to further amend the interview schedules for clarity.

These sessions helped to clarify doubts and agree on definitions and interpretations of questions. Interpretations of a question were made clear. The participants also shared good hints on how the questions should be phrased to different communities. Two schedules were scrutinized per day.

After finalizing the seven schedules, each participant interviewed three to five households as field practice. The last two days of the training session were utilized for discussion of field experiences, final clarification of all areas of doubt and for planning and organization of the field work.

4.3.3 Language used

The questionnaires were developed in English only. Possibilities of translating the questionnaires into some of the major local languages were discussed but found impossible. Instead the teams of enumerators were selected based on the individual enumerators capability in managing the necessary local languages in the enumerated area. The most commonly used languages were Dzongkha, Sharchop, Lhotsampa, Kurteop, Bumthangkha and Khengkha.

4.3.4 Supervision

The ten survey teams, covered two districts each, and were led by supervisors. The ten supervisors were selected from amongst the staff of CSO and of HD and included doctors, a statistician from HD and one from the CSO. The supervisors were coordinated by a central support team and the Director of the HD.

4.3.5 Field validation procedures

Validation and correction of the information in the questionnaires were carried out in a 2 step fashion in the field. Before leaving a survey unit, the enumerators exchanged completed questionnaires between themselves and checked for completeness and relevance of the information gathered. At the end of the day, the supervisor reviewed the completed questionnaires and validated the information or marked it for revisit.

4.4 Data Processing

The survey data was processed during the period July to November 1994 and took about 5 months to complete.

4.4.1 Coding

Each of the supervisors completed a control sheet after the field operation. This step ensured that no forms were missed at any stage of the processing and that the field operation was implemented in accordance with procedures set by the sampling statistician.

Manual coding of the un-coded questions were done by temporary staff. In order to reduce the magnitude of the errors during the office editing stage certain procedures and set of rules were framed and the process was closely supervised by HD and CSO.

During the office editing stage, codes were assigned to all the Dzongkhags, gewogs, towns and villages and pre-machine clerical edits done to clean up the questionnaires prior to data entry. This was followed by a check for legibility of the entries and proper recording of data. The forms were then divided into batches to simplify the data entry.

4.4.2 Data Entry

The data entry programme was designed using the Foxpro software. Data keying and computer editing were completed in August and September 1994. In addition to the edit

controls already built into the entry program for certain variables, cross checks for invalid codes was also done manually.

4.4.3 Data Validation

After data entry, a check was made for errors like missing items, illegal or impossible entries, inconsistent entries and unreasonable magnitudes of the data range. The SPSSPC was used for validation of data and were completed in the months of October and November 1994. Numerous tables were prepared for validation purposes and frequency tables for each variable was cross checked and amended accordingly. This process was repeated several times to clean the data before preparing the out put tables.

5. SURVEY FINDINGS

5.1 Description of Sample Population

5.1.1 Urban- rural

A total of 11,716 households with 63,890 household members, representing all the Dzongkhags, were enumerated during the survey period .

Table 1. Districtwise rural/urban distribution of the sample population.

Dzongkhag	Urban	Rural	Total	%
Lhuntse	143	2,505	2,648	4.1
Mongar	214	3,401	3,615	5.7
Trashigang	379	3,221	3,600	5.6
Pemagatshel	199	3,222	3,421	5.4
Samdrup Jongkhar	360	4,569	4,929	7.7
Bumthang	160	3,899	4,059	6.4
Trongsa	222	2,109	2,331	3.6
Zhemgang	259	4,541	4,800	7.5
Sarpang	607	2,021	2,628	4.1
Punakha	382	2,481	2,863	4.5
Gasa	64	807	871	1.4
Wangdi Phodrang	395	1,809	2,204	3.4
Tsirang	226	1,878	2,104	3.3
Dagana	148	2,245	2,393	3.7
Haa	103	2,583	2,686	4.2
Paro	255	2,945	3,200	5.0
Chhukha	1,035	2,989	4,024	6.3
Samtse	267	5,380	5,647	8.8
Thimphu	915	1,854	2,769	4.3
Total	6,441	57,449	63,890	100

The number of sample households for urban area was 1,464 (12.5%) and for rural areas 10,252 (87.5%). The average number of persons per household for the sample population was 5.45. The average number of persons per urban household was 4.4 and that for rural was 5.6. 10.1% of the sample population were living in areas defined as urban and 89.9% in rural areas. This is lower than the official figures for the country where the urban ratio is estimated to be 15%.

5.1.2 Sex and Age

Of the total population enumerated, 47.6% (30,440) were males and 52.4% (33,450) were females.

Table 2. Distribution of the sample population by age and sex.

Age group	Males	Females	Total	%	Cumulative %
< 1	1,136	1,084	2,220	3.5	3.5
1 - 4	4,154	4,125	8,279	13.0	16.5
5 - 9	4,857	4,927	9,784	15.3	31.8
10 - 14	3,384	4,039	7,423	11.6	43.4
15 - 19	2,189	2,994	5,183	8.1	51.5
20 - 24	1,645	2,700	4,345	6.8	58.3
25 - 29	1,928	2,301	4,229	6.6	64.9
30 - 34	1,829	2,048	3,877	6.1	71.0
35 - 39	1,836	1,830	3,666	5.7	76.7
40 - 44	1,587	1,547	3,134	4.9	81.6
45 - 49	1,327	1,233	2,560	4.0	85.6
50 - 54	1,200	1,179	2,379	3.7	89.3
55 - 59	995	1,041	2,036	3.2	92.5
60 - 64	959	956	1,915	3.0	95.5
65 - 69	623	606	1,229	1.9	97.4
70 - 74	390	404	794	1.3	98.7
75 - 79	214	218	432	0.7	99.4
80 - 84	125	136	261	0.4	99.8
85 +	62	82	144	0.2	100
Total	30,440	33,450	63,890	100	

5 Survey Findings

The distribution of the sample population in age groups showed relatively fewer males in the age groups from 10 to 25 years than expected. This may be due to the inclusion criteria that was set for the survey: "Any member of the household staying, permanently or for the most part, at home in the village should be included". This resulted in the exclusion from the survey, of students at boarding schools or colleges, men in the armed forces and others staying away from the home for more than 6 months of the year.

The sex ratio at birth for the 4,735 live-births reported for the two-year recall period was 105.2 males per 100 females, i.e. calculated from 2,427 male and 2,308 female infants born. This figure is consistent with accepted international data.

Table 3. The sex ratio (males per 100 females) by age group

Age Group	Males	Females	Total	Sex Ratio
< 1	1,136	1,084	2,220	104.8
1 - 4	4,154	4,125	8,279	100.7
5 - 14	8,241	8,966	17,207	91.9
15 - 24	3,834	5,694	9,528	67.3
25 - 64	11,661	12,135	23,796	96.1
65 +	1,414	1,446	2,860	97.8

5.1.3 Dependency ratio

The dependency ratio (number of young plus aged persons per 100 persons in the productive age group) for the sample population was 91.7, i.e. calculated from 27,706 persons less than 15 years plus 2,860 persons greater than or equal to 65 years divided by 33,324 persons in the productive age group. The estimate for the dependency ratio is affected by the sampling bias of especially young men, as mentioned above. Therefore, the actual dependency ratio for the population in Bhutan would be a little lower.

5.1.4 Education

Table 4. Education profile by age and sex for the sample population.

Age	None		1 - 5 years		> 5 years		Informal	
	female	male	female	male	female	male	female	male
10 - 14	2,722	1,748	1,274	1,561	40	38	3	37
15 - 19	2,356	1,384	475	587	158	141	5	76
20 - 24	2,345	1,162	187	258	166	185	2	40
25 - 29	2,080	1,325	91	195	128	349	2	59
30 - 34	1,940	1,349	36	140	72	287	0	53
35 - 39	1,790	1,467	17	124	21	188	2	57
40 - 44	1,519	1,302	12	112	12	124	4	49
45 - 49	1,222	1,194	5	51	4	44	2	38
50 - 54	1,170	1,135	4	21	2	14	3	30
55 - 59	1,035	948	1	6	1	9	4	32
60 - 64	952	917	0	3	0	1	4	38
65 +	1,437	1,364	1	2	1	2	7	46
Total	20,568	15,295	2,103	3,060	605	1,382	38	555
%	88.2	75.4	9.0	15.1	2.6	6.8	0.2	2.7

Those who had not completed a single year of schooling are shown under "None". Under "Informal" are those who have received some form of traditional as well as non-formal education. The rest of the table represents those who have received education in a formal educational institution. Only 11.8 % of the female population in the 10+ has received some education. For males the figure is 24.5 %. These figures may be due to the exclusion of students in boarding institutions from the survey.

In the 10 - 14 years age group, half (51.6%) of the boys and two third (67.3%) of the girls have not received any education.

5 Survey Findings

5.1.5 Occupation

Of the sample population in the productive age group (15 - 64 years), 83.8% were farmers, husband/wife of a farmer or worked at a farm. Out of 17,829 females and 15,495 males in this age group, 92.8% and 73.3% were classified under this group.

Table 5. Occupation by age group (15 to 64 years).

Age	Student	Monk	Govern. service	Armed forces	Business	Farmer	Un-employed	Other
15 - 19	912	102	48	6	43	4,007	15	50
20 - 24	82	43	276	67	99	3,717	24	47
25 - 29	8	54	475	147	142	3,360	5	38
30 - 34	1	41	423	143	125	3,108	3	33
35 - 39		47	299	115	138	3,034	1	32
40 - 44		46	187	113	136	2,626	1	25
45 - 49		36	90	30	137	2,249	2	16
50 - 54		35	52	1	87	2,182	1	21
55 - 59		45	15		60	1,897	0	19
60 - 65		51	6		30	1,742	2	74
Total	1,003	500	1,871	622	997	27,922	54	355
%	3.0	1.5	5.6	1.9	3.0	83.8	0.2	1.1

Differences in occupation revealed gender gaps with 10.2 % males and 1.6 % females engaged in government service and 100% males in the armed forces. In private business the difference between male and female was much less, with 2.4% females and 3.6% males.

Un-employment was seldom reported. Retired persons are included in the 'other' category.

5.1.6 Marital Status

Of the sample population of 20 years of age and above, 11,935 (81.1%) males and 12,196 (74.9%) females are married. 11.1% males and 9.3% females have never been married.

At the time of data collection, 1.7% males and 4.7% females were separated or divorced. The rate of divorce cannot be estimated from the data collected in this survey.

The reported age at first marriage showed that 55.4% of the women were married before their 20th birthday.

5.2 Births and Population Growth

Of the 4,841 births reported for the two-year recall, 4,735 (97.8%) resulted in live-births and 106 (2.2%) were still-born. This is comparable to those reported from prospective studies of pregnant women carried out in India, Nepal and Sri Lanka.

Table 6. Infant mortality by sex during the recall period.

Sex	Living		Dead		Total
	Number	%	Number	%	Number
Male	2,233	92.0	194	8.0	2,427
Female	2,138	92.6	170	7.4	2,308
Total	4,371	92.3	364	7.7	4,735

Of the 4,735 live-born infants, 4,371 (92.3%) were alive at the time of the survey while 364 (7.7%) had died.

The crude birth rate for the sample population for the second year of the recall period was 39.9 live-births per 1,000 population (2,549 live-births for 63,890 population). For the urban sample population it was 38.3 and for the rural 40.1.

The growth rate for the sample population for the second year of the recall period was 3.1%.

5 Survey Findings

In the national health survey in 1984 the crude birth rate was 39.1 and the crude death rate was 13.4 giving a growth rate of 2.6%. This seems to indicate that the increase of growth rate is mainly due to decline in death rate.

5.3 Fertility

There were 14,653 women in the 15 to 49 age group. The general fertility rate for the second year of the recall period was 172.7 per 1,000 reproductive women (2,531 live-births for 14,653 reproductive women). Only 2,531 live-births were used for this calculation, and not the total 2,543 live-births as twelve of the live-births were delivered by women outside of this age group (less than 15 years of age- 8 live-births, 50 years or more-1 live-birth, and age unknown 3 live-births).

Table 7. The age specific fertility rate (15-49 years).

Age	Number of Women	Live-Births	Age Specific Fertility Rate
15 - 19	2,994	360	120.2
20 - 24	2,700	720	266.7
25 - 29	2,301	556	241.6
30 - 34	2,048	400	195.3
35 - 39	1,830	318	173.8
40 - 44	1,547	147	95.0
45 - 49	1,233	30	24.3
Total	14,653	2,531	172.7

The total fertility rate for the second year the recall period was 5.6 per female.

5.4 Parity

Of the 11,224 women in the reproductive age-group, the average parity for women who is or has been married, was 3.9. The highest parity was reported in the group of women married before 15 years of age.

Table 8. . Parity by age at first marriage.

Age of first marriage	< 15	15-19	20-24	25-29	30-34	35-39	40-45	Total
Number of women	1,043	7,088	2,814	447	70	13	3	11,478
Total parity	4,693	27,272	10,912	1,389	149	15	2	44,432
Average parity	4.5	3.8	3.9	3.1	2.1	1.1	0.7	3.9

5.5 Deaths

The number of deaths in the first year of the recall period was 345 and in the second year 576. Based on the reported number of deaths in the second year, the crude death rate is estimated to be 9.0 per 1,000 population (576 deaths for 63,890 population).

Table 9. The age-specific death rates for the second year of the recall period

Age	Population	Deaths	Age Specific Death Rate
0 - 4	10,499	284	27.0
5 - 9	9,784	25	2.6
10 - 14	7,423	11	1.5
15 - 19	5,183	14	2.7
20 - 24	4,345	14	3.2
25 - 29	4,229	11	2.6
30 - 34	3,877	10	2.6
35 - 39	3,666	23	6.3
40 - 44	3,134	10	3.2
45 - 49	2,560	14	5.5
50 - 54	2,379	17	7.1
55 - 59	2,036	19	9.3
60 - 64	1,915	37	19.3
65 - 69	1,229	20	16.3
70 - 74	794	29	36.5
75 - 79	432	12	27.8
80 - 84	261	14	53.6
85 +	144	12	83.3
Total	63,890	576	

For the second year of the recall period, the following causes of death were reported for the 292 deaths above 5 years of age:

Accident	30	10.3%
Respiratory infection	31	10.6%
Diarrhoea	27	9.2%
Fever	19	6.5%
Malignancy	9	3.1%
Ageing	39	13.4%
Other reasons	113	38.7%
Unknown	24	8.2%

This method of reporting cause of death is not very specific and reliable. It can only give some idea of the main causes. Accident is reported to be the cause of death in 10% of all cases which appears to be rather high. This could be attributed to three major bus accidents during the study year. Malignancy was reported as a cause of death only after the age of 35 and death due to old age was reported for only those over 60 years. The rest of the causes were, more or less, evenly distributed over all age groups.

5.6 Life Expectancy

The life table was calculated, based on the sample population and the deaths reported in the second year of the recall period by age group. See annex 4. The life expectancy at birth from this life table is 66 years for both sexes. This figure has not been weighted for sample bias.

5.7 Infant and Under-five Mortality

The IMR for the two-year recall period was 70.7 (335 infant deaths for 4,735 live-births), and the U5MR, the probability of children dying between birth and their fifth birthday, for the two-year recall period was 96.9 (459 under-five deaths for 4,735 live-births).

Table 10. Infant and child mortality rates by sex and year of recall.

Category	First year			Second year			Two-year recall period		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Infant deaths	73	56	129	108	98	206	181	154	335
Child deaths	24	22	46	40	38	78	64	60	124
Under-five deaths	97	78	175	148	136	284	245	214	459
Live-births	1,123	1,069	2,192	1,304	1,239	2,543	2,427	2,308	4,735
IMR	65.0	52.4	58.9	82.8	79.1	81.0	74.6	66.7	70.7
U5MR	86.4	73.0	79.8	113.5	109.8	111.7	100.9	92.7	96.9

However, when the live-births, infant deaths and under-five deaths were broken down by first and second year of the recall period IMR was 58.9 for the first year and 81.0 for the second year. Similarly, the U5MR was 79.8 for the first year and 111.6 for the second year of the recall period. The differences between the first and the second year figures may be due to recall bias.

Table 11. Reported causes of infant and child mortality.

Cause of Death	Infant Death		Child Death	
	Number	%	Number	%
Accident	4	1.9	0	0
Respiratory infection	31	15.0	11	14.1
Diarrhoea	29	14.1	33	42.3
Fever	26	12.6	10	12.8
Others	63	30.6	19	24.4
Un-known	53	25.7	5	6.4
Total	206	100	78	100

The major reported cause of child death is diarrhoea.

5. Survey Findings

5.8 Maternal Mortality

102 deaths were reported for women in the reproductive age group. A review of each case was undertaken in order to determine whether the deaths were related to pregnancy, labour, delivery or puerperium.

Eighteen of these death were determined to be maternal deaths, eight in the first year of the recall period and 10 in the second year of the recall period. The MMR for the two-year recall period was 3.8 (18 death for 4,735 live-birth). For the first and the second year of the recall period the MMR were 3.6 (8 deaths for 2,192 live-births) and 3.9 (10 maternal deaths for 2,543 live births) respectively.

The cause of death for the 18 maternal deaths were

postpartum haemorrhage	7
puerperal sepsis	3
malaria during pregnancy	2
obstructed labour	2
retained placenta	1
ante-partum haemorrhage	1
toxaemia	1
unknown	1

None of the maternal deaths took place in a hospital or a BHU. Fourteen delivered at home, one in a cow shed and the rest in other, non-specified places. Only one sought treatment. Of those who had died, three had attended the ANC.

5.9 Ante-natal and Delivery Care

At the time of survey, 1,010 (6.9%) women in the 15 - 49 years age group were pregnant. Only 519 (51.4%) of the pregnant women had attended ante-natal clinics. This is less than the percentage reported through the regular reporting system of the district health network in the Dzongkhags. The age of the pregnant women had no bearing on the low attendance rate. The average number of visits for the women in the third trimester

was 2.7 visits. Only a few in the first trimester had visited the ANCs. The average for the 519 current pregnant women who attended the ANC was 2.3 visits.

288 (10.9%) of the babies in the second year of the recall period were delivered in hospitals or BHUs, and 86.1% were delivered at home. The rest of the births took place in cattle sheds, in the fields, en-route or other un-specified places.

Table 12. Number of deliveries by outcome and category of attendant for the second year of the recall period.

Attendant at delivery	Outcome of delivery		Total births	
	Livebirths	Stillbirths	Number	%
Doctor	77	9	86	3.3
Nurse/midwife	227	3	230	8.7
Health worker	71	5	76	2.9
VHW/TBA	4	0	4	0.2
Husband	884	34	918	34.9
Mother	761	34	795	30.2
Other relative	256	10	266	10.1
Neighbour	92	4	96	3.6
Other	19	2	21	0.8
Self	134	4	138	5.2
Unknown	2	0	2	0.1
Total	2,527	105	2,632	100

The most frequent attendant at delivery was the husband, attending more than one third of all deliveries. The second most frequent was the mother, who attended nearly another third of all deliveries. Trained assistance was present in only 15.1% of all deliveries. In 5.2% of the cases the woman in labour delivered with no help at all.

5.10 Family Planning Knowledge and Practice

Only 10,939 women of 14,653 women in the sample population answered questions about FP because the persons were not available for a direct interview.

5 Survey Findings

Table 13 provides data for 10,939 women in the reproductive age group who answered these questions. The table provides information on current use of contraception by type and age. The contraceptive prevalence rate for the sample population of women, 15 to 49 years old, reported was 18.8%. A UNFPA programme review and strategy development mission in September-October 1991 reported a prevalence rate of 10%.

The women in their thirties have the highest contraceptive prevalence rate in this sample population. The methods most often used are sterilization (of women or spouse) and DMPA.

Table 13. Users of FP by age group and type.

Age group	No. of women	Number of Users by Method						Total Users	
		Pills	Condom	DMPA	IUD	Sterilized	Spouse Sterilized	No.	%
15 - 19	1,533	7	1	12	2	0	0	22	1.4
20 - 24	2,013	34	8	81	13	9	38	183	9.1
25 - 29	1,961	65	8	147	28	54	149	451	23.0
30 - 34	1,716	73	10	106	33	72	229	523	30.5
35 - 39	1,528	42	7	64	23	107	251	494	32.3
40 - 44	1,244	27	2	17	12	62	152	272	21.9
45 - 49	944	9	0	8	3	31	60	111	11.8
Total	10,939	257	36	435	114	335	879	2,056	18.8

949 women reported that use of contraceptives was not possible at the time because they were pregnant. Many of the women at the lower end of the reproductive age group did not use FP because they did not have a spouse, and many in the elder group did not use FP because they were past the reproductive age. Another estimate, eliminating these two age groups, and comprising of 8,462 women, 20 to 44 years old, gives a more accurate current user rate of 22.7% (1,923 users for 8,462 women).

In the sample population of 14,653 women in the reproductive age group, 10,939 (74.7%) women had heard of FP. 1,993 (13.6%) women had never heard of FP and 1,721 (11.7%) women were reported as unknown. Only 51.2% in the age group, 15 to 19 years old, were aware of FP.

5.11 Episodes of Illness

Information on episodes of illness during the past month was recorded. Out of 63,890 household members enumerated, 5,556 episodes were reported, of which 1,931 (34.8%) did not seek any kind of treatment, even though 28% of these untreated episodes had symptoms which lasted for more than one week.

90% of the episodes for which treatment was sought, did so within the first week of symptoms and 69% within the first 3 days. In the choice of health care, 92% went to the modern health care system, 5.8% went to a traditional healer, 1.3% to a lama or monk and only 0.5% utilised the indigenous health care system. The indigenous health care system has outlets in 7 districts so the accessibility is not equal to the other care providers.

68% of those respondents who sought treatment travelled less than one hour to the care provider, and 90% lived within a distance of less than three hours.

Table 14. Average travelling time (hours) to the nearest health centre.

	Hospital	BHU/disp.	Other modern care, VHW	Indigenous	Lama/Monk	Traditional healer
first choice	2.45	1.60	0.99	2.67	2.30	1.35
second choice	7.68	2.75	6.35	13.0	0.62	1.79

10 % of the 3,625 episodes for which treatment was sought returned to the same care provider. 8.6% went to another care provider. 294 (8.8%) episodes first seen in the modern health care system changed to another care provider. Of these, 50% went to a lama/monk or a traditional healer. 16 (6.2%) episodes first seen by lamas/monks or a traditional healer turned to an alternative care provider of which 13 of these went to the modern health care system.

5 Survey Findings

5.12 *Neonatal Tetanus*

Schedule F used for the survey had specific questions on cases of neonatal tetanus. The recall period for these questions was one year. Not a single case of neonatal tetanus was reported in this retrospective study.

5.13 *Poliomyelitis*

Schedule G was designed to collect information on lame children in the 1 and 5 age group. Two suspected cases were reported and later examined by a specialist in neurology. The specialist ruled out poliomyelitis as the cause of lameness in both cases.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Comparison between 1984 and 1994 survey

The impact of the health care services is evident from the improvement of the health indicators over the last decade.

Table 15. Comparative result for 1984 and 1994 national surveys.

Sample Population and Selected Health Indicators for Sample Populations	Survey Results	
	1984	1994
Persons enumerated:		
Total	56,205	63,890
Males	27,747	30,440
Females	28,458	33,450
Sex ratio, males per 100 females	97.5	91.0
Dependency ratio	80	91.7
Live-births for one-year period	2,198	2,543
Sex ratio at birth, males per 100 females	102.0	105.1
Crude birth rate per 1,000 population	39.1	39.9
General fertility rate	169.6	172.7
Deaths for one-year period	754	576
Crude death rate per 1,000 population	13.4	9.0
Population growth rate	2.6%	3.1%
Infant Mortality Rate per 1,000 live-births	102.8*	70.7
Under-five Mortality Rate per 1,000 live-births	162.4	96.9
Maternal Mortality Rate per 1,000 live-births	7.7	3.8

* Many documents quote 142 as the Infant Mortality Rate. This figure was estimated based on an indirect method.

6 Conclusions and Recommendations

The dependency ratio has increased due to a proportional increase of children below 15 years. The proportion of people in the 65+ age group has remained more or less the same.

The comparison table shows an increase in the crude birth rate and a major reduction in the crude death rate. The resultant increase in the population growth rate can, therefore, be said to be a result of improved living conditions and health care facilities. The impact of the FP programme, however, is negligible.

The significant improvement of the IMR, the U5MR and the MMR can be attributed to improved nutrition and hygiene and to accessibility to health services.

6.2 Recommendations for Improved Health Care Delivery

To achieve the targets set in the seventh FYP, the MCH and FP programme must be intensified.

Table 16. Comparison of 7th FYP health targets and actual achievements.

Category	7th FYP	Survey result
IMR	50	70.7
U5MR	70	96.9
Polio	Eradicate polio	No polio sequele found
Neonatal tetanus	Eliminated by 1995	No cases reported
MMR	3.3	3.8
Access to FP	100%	75% heard of FP
ANC attendance rate	90%	51%
Trained attendant during delivery	50%	15%

Awareness raising, especially targeted at women in the reproductive age-group, regarding the necessity of attending the ANC and the post-natal clinic (PNC) is essential to increase

Awareness raising, especially targeted at women in the reproductive age-group, regarding the necessity of attending the ANC and the post-natal clinic (PNC) is essential to increase attendance at these clinics. An increased attendance can further reduce the IMR, the U5MR, and the MMR. In addition, an increased attendance rate increases the possibility of deliveries being attended by trained persons.

The FP programme needs to be intensified. Firstly, awareness about needs and benefits of FP must be increased. This could be done by the health workers at the PNC and in the child health clinic. Annual health camps with sterilization facilities should be held all over the country. This is expected to increase user rate of FP, and because of increased child spacing, impact indirectly on the population growth rate as well as on the IMR and U5MR.

Increased access to safe water supply, latrines in each household and general improvement in hygiene will have a direct impact on the incidence of diarrhoea which will again influence the IMR and the U5MR.

6.3 Recommendations for Improved Health Management Information System

The ongoing monitoring and evaluation of the health care services through monitoring of the health indicators must be further improved. This will provide the health system signals for requirements of specific activities and/or target groups.

6.4 Recommendations for Secondary Analyses of the Survey Data

The accessibility to health care facilities should be analyzed from the information available on the Village Information Sheet.

It is possible to generate more information about the women in the reproductive age group, especially with regard to parity, in different age groups. Pregnancy history of all women in the reproductive age group is available.

All data are stored in the Health Division for any further analysis.

List of Abbreviations

AIDS	acquired immuno deficiency syndrome
ANC	ante-natal care
BHU	basic health unit
CSO	Central Statistical Organization
DMPA	Depoprovera
FP	family planning
FYP	five year plan
HD	Health Division
HFA	health for all
IDD	iodine deficiency disorder
IMR	infant mortality rate
IUD	intrauterine device
KABP	knowledge, attitude, belief, practice (study)
MCH	maternal and child health
MMR	maternal mortality rate
NNT	neonatal tetanus
PHC	primary health care
PNC	post-natal care
RGOB	Royal Government of Bhutan
RIHS	Royal Institute of Health Science
SPSSPC	statistical programme for personnel computer
STD	sexual transmitted disease
TBA	trained birth attendant
U5MR	under five mortality rate
UNFPA	United Nations Fund for Population Activities
VHW	village health worker

FORMATS FOR

HEALTH SURVEY QUESTIONNAIRES

VILLAGE INFORMATION SHEET

SCHEDULE A: HOUSEHOLD LISTING

SCHEDULE B: INFORMATION FOR WOMEN IN THE REPRODUCTIVE AGE GROUP

SCHEDULE C: HEALTH CARE SEEKING BEHAVIOUR

SCHEDULE D: VITAL EVENTS REGISTER

SCHEDULE E: DEATH OF WOMAN IN THE REPRODUCTIVE AGE GROUP

SCHEDULE F: DEATH OF CHILD UNDER 5 YEARS OF AGE

SCHEDULE G: INFORMATION REGARDING CHILD BETWEEN 1 AND 5 YEARS OF AGE WITH LAMENESS

VILLAGE INFORMATION SHEET

Information on this form should be obtained from the most appropriate person at village level, usual VHW/Chupens/Mang-aps. Please complete this form upon first reaching the village, before any house visits.

Name of village: _____

Does the village/town have a health facility?
(Circle the appropriate answer) Hospital / BHU / Dispensary / Outreach Clinic / No

If BHU or Dispensary, how many health workers are presently stationed there? _____

If no, where is the nearest health facility? _____

What kind of health facility is it? Hospital / BHU / Dispensary / Outreach Clinic
(Circle the appropriate answer)

How many hours does it take to reach this health facility? _____
(If less than an hour, enter "0")

If hospital is not the nearest health facility, where is the nearest
hospital? _____

How many hours does it take to reach this hospital? _____
(If less than an hour, enter "0")

Has any Health Worker visited this village in the past 3 months? Yes / No

Has the village any VHW? Yes / No

Supervisor: _____

Date surveyed: _____ (DD/MM/YY)

SCHEDULE A: HOUSEHOLD LISTING

Dzongkhag: Gewog: Village: Language: House Number:

A1 HHSN	A2 Name	A3 Sex 1=M 2=F	A4 Age*	Tick for Schedule B**	A5 Relationship to Head of Household or the Adult Women 1=Head W/1=wife of no 1 H/1=husband of no 1 S/2=son of no 2 D/2=daughter of no 2 Sister/1=sister of no 1 Brother/2=brother of no 2 Niece/2=niece of no 2 Nephew/1=nephew of no 1	A6 Marital Status 1=Single 2=Married 3=Separated 4=Divorced 5=Widowed	A7 Occupation 1=Child (non-student) 2=Student 3=Monk/Gomchhen 4=Government Services 5=Armed Forces 6=Business 7=Farmer/Housewife 8=Unemployed Adult 9=Other (specify)	A8 Completed Years of Schooling (Remember to enter for each member of the household) 0=never in school or in class 1 1=compl.class 1 2=compl.class 2 3=compl.class 3 ...etc.
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

* Enter age in completed years if ≥ 1 year, in completed months if ≥ 1 month but < 1 year, and in completed days if < 1 month.

** For each woman in the reproductive age group (13-52 years), please enter a tick mark in the column and complete Schedule B.

SCHEDULE A: HOUSEHOLD LISTING

Page 2

Dzongkhag:

Gewog:

Village:

House Number:

<p>A9 How many episodes of illness(es)* of household members have there been during the past 1 month for which treatment was sought?</p> <p>*If one or more episodes, please complete Schedule C: Health Care Seeking Behaviour</p>	<p>0= None 1= One 2= Two 3= Three ...etc. 99= Unknown</p>	<p>Household</p>
<p>A10 How many births* (including stillbirths) have there been within the specified two year recall period, 4th of February 1992 to 3rd of February 1994?</p> <p>*If one or more, enter relevant information for each birth on Schedule D: Vital Events Register</p>	<p>0= None 1= One 2= Two 3= Three ...etc. 99= Unknown</p>	<p>Births</p>
<p>A11 How many deaths* have there been within the specified two year recall period, 4th of February 1992 to 3rd of February 1994?</p> <p>*If one or more, enter relevant information for each death on Schedule D: Vital Events Register</p>	<p>0= None 1= One 2= Two 3= Three ...etc. 99= Unknown</p>	<p>Deaths</p>
<p>A12 Is there any child between 1 and 5 years of age with lameness?</p> <p>If yes, go to Schedule G</p>	<p>0= No 1= Yes 99= Unknown</p>	<p>Lameness</p>

Date: Signature of enumerator.....

SCHEDULE B:**INFORMATION FOR WOMAN IN THE REPRODUCTIVE AGE GROUP**

Dzongkhag:

Gewog:

Village:

House Number:

Serial Number on Household Listing:

Present Age:

If the interviewed is not the person concerned, then name of informant:

B1	How many times have you been married?	0=Never married 1=One time 2=Two times,etc. 99=Unknown
B2	What was your age at the time of your first marriage? Enter exact age at first marriage in completed years.	Exact age or 88=Not applicable 99=Unknown
B3	How many times in the past have you been pregnant* (excluding any current pregnancy)?	0=None 1=One time 2=Two times,etc. 99=Unknown
*If pregnant one or more times, please also complete Schedule B, page 2: Pregnancy History Form		
B4	Are you currently pregnant? If not pregnant, go to B9	1=Yes 2=No 88=Not applicable 99=Unknown
B5	If currently pregnant, how many weeks gestation are you?	Gestational duration (wks) or 99=Unknown
B6	If currently pregnant, how many antenatal care clinics have you attended during this pregnancy?	0=None 1=One 2=Two 3=Three 4=Four,etc. 99=Unknown
B7	How many weeks gestation were you at the time of your first visit to an antenatal care clinic?	Gestational duration (wks) 88=Not applicable 99=Unknown
B8	How many times have you been visited at home by a health care worker during this pregnancy?	0=None 1=One time 2=Two timesetc.
B9	a) Do you want more children than you presently have? b) If you do not have children, do you want any?	1=Yes 2=No 3=Doesn't know 88=Not applicable
B10	Have you heard of family planning?	1=Yes 2=No 3=Doesn't know
B11	Are you currently using any family planning method, and, if so, what method?	0=Not currently using 1=Pills 2=Condoms 3=DMPA injections 4=Intrauterine device 5=Sterilized 6=Spouse sterilized 88=Not applicable

SCHEDULE B:

Page 2

INFORMATION FOR WOMAN IN THE REPRODUCTIVE AGE GROUP

Dzongkhag:

Gewog:

Village:

House Number:

Serial Number on Household Listing:

PREGNANCY HISTORY FORM

This page is to be completed for every woman who reports having one or more past pregnancies (B3). Starting with the woman's first pregnancy, carefully inquire about the details for each pregnancy in the order of their occurrence. After carefully filling in the information on the first table for each previous pregnancy, please summarize the information obtained onto the table at the bottom of the page and confirm this summary with the woman concerned.

SN	Outcome of Pregnancy (Please circle)	Month and Year of Abortion or Delivery (MM/YY)	If Pregnancy Resulted in a Live Birth:		
			Sex	If living, present age*	If died, age at death*
1	AB / SB / LB		M / F		
2	AB / SB / LB		M / F		
3	AB / SB / LB		M / F		
4	AB / SB / LB		M / F		
5	AB / SB / LB		M / F		
6	AB / SB / LB		M / F		
7	AB / SB / LB		M / F		
8	AB / SB / LB		M / F		
9	AB / SB / LB		M / F		
10	AB / SB / LB		M / F		
11	AB / SB / LB		M / F		
12	AB / SB / LB		M / F		

* Enter age in completed years if greater than or equal to 1 year,
in completed months if greater than or equal to 1 month but less than 1 year,
in completed days if greater than or equal to 1 day but less than 1 month,
and in completed hours if less than 1 day.

SUMMARY OF PREGNANCY HISTORY

Total Number of Pregnancies (excluding any current pregnancy):	Total Number of Liveborn:	Males	Females
Abortions	Number Living		
Stillbirths	Infant Deaths (< 1 yr)		
Liveborn Males	Child Deaths (>= 1 & < 5)		
Liveborn Females	Other Deaths (>= 5 yrs)		

SCHEDULE C: HEALTH CARE SEEKING BEHAVIOUR

Dzongkhag:

Gewog:

Village:

House Number:

This questionnaire is to be completed for any episode of illness during the past one month for which health care was sought by any household member. Please complete a table for each episode of illness. For example, a household member who was ill on two separate occasions should have two tables completed. Two separate episodes of illness for two different household members would also require two tables to be completed.

Household member SN:		Name:	
Symptoms (describe):			
Duration of symptoms in days: Duration of symptoms in days before treatment was sought:			
Type of care centre/provider that was consulted?		What kind of treatment, if any, was provided?	
How many hours travel is this care centre/provider from your home?			
Was this care centre/provider seen again for the same illness? Yes / No		If yes, was any further treatment needed? Yes / No If yes, describe the kind of treatment given:	
Was another, different care centre/provider seen for the same illness? Yes / No		If yes: What care centre/provider was consulted? How many hours travel is this care centre/provider from your home?	

SCHEDULE D: VITAL EVENTS REGISTER

Dzongkhag:

Gewog:

Village:

House Number:

Enter information for all births (including stillbirths) and deaths within the specified two year recall period, 4th of February 1992 to 3rd of February 1994. *Enter age in completed years if greater than or equal to 1 year; in completed months if greater than or equal to 1 month but less than 1 year; in completed days if greater than or equal to 1 day but less than 1 month; and in completed hours if less than 1 day.

BIRTHS (including stillbirths):

Mother's Information		Information Concerning Delivery		Information Concerning Liveborn Children		
Name	HHSN	Outcome	Place**	Attendant***	Name of child	1 = Male 2 = Female
		SB / LB				
		SB / LB				
		SB / LB				
		SB / LB				

DEATHS:

Name	Sex 1 = M 2 = F	Age* at death	Date of death (DD/MM/YY)	** Place of death	Cause of death, if known, or symptoms prior to death

**Place of death or of delivery:
1 = Hospital
2 = BHU
3 = Home
4 = Field/Forest
5 = On route
6 = Animal shed
7 = Other (specify)

***Attendant at Delivery:

- 1 = Doctor
- 2 = Nurse/Nurse midwife
- 3 = Other health worker
- 4 = VHW
- 5 = Husband
- 6 = Mother/Mother-in-law
- 7 = Other relative
- 8 = Neighbour
- 9 = Traditional birth attendant
- 10 = Other (specify)
- 11 = No one attended (self)

For each death of a woman in the reproductive age group (i.e. 13-52 years), please also complete Schedule E.
For each death of a child under 5 years of age, please also complete Schedule F.

SCHEDULE E: DEATH OF WOMAN IN REPRODUCTIVE AGE GROUP

Dzongkhag:

Gewog:

Village:

House Number:

Name of informant:

Relation to the woman who died:

This form must be completed for every woman in the reproductive age group who died during the two year recall period specified for this survey, 4th of February 1992 to 3rd of February 1994. The information should be ascertained through careful and tactful questioning of those with knowledge about the events in question.

E1	Name:	Age at death: (in completed years)	Date of death: (DD/MM/YY)
E2	Was this woman pregnant at the time of her death? Yes / No / Unknown If no, go to E3. If yes, what was the gestational duration in weeks? _____ (99 = Unknown) Were there any known complications of the pregnancy? Yes / No / Unknown If yes, describe these complications and then go to E9:		
E3	Had this woman been pregnant within 2 months of her death? Yes / No / Unknown If no, go to E9. If yes, on what date did the pregnancy terminate? (DD/MM/YY)		
E4	What was the outcome of the pregnancy? AB / SB / LB If AB, go to E9. If SB or LB, go to E5.		
E5	Where did the delivery take place?		
E6	Who attended the delivery?		
E7	Were there any known complications of the pregnancy, labour, delivery or the postpartum period? Yes / No / Unknown If yes, describe:		
E8	If SB, go to E9. If LB: Is the child living? Yes / No If the child died, verify entry of the death data on Schedule D as appropriate.		
E9	Please describe in detail the situation surrounding the death of this woman. Please provide as many details of illnesses, symptoms, etc. as possible around the time of death. Provide the cause of death, if known, at E10.		
E10	Cause of death, if known:		

SCHEDULE F:**DEATH OF A CHILD UNDER 5 YEARS OF AGE**

Dzongkhag:

Gewog:

Village:

House Number:

Name of informant:

Relation to the child:

This form must be completed for every child under five (5) years of age who died during the two year recall period specified for this survey, 4th of February 1992 to 3rd of February 1994. The information should be ascertained through careful and tactful questioning of those with knowledge about the events in question.

Name of child:

Sex of child: Male / Female

Date of death (DD/MM/YY):

Age at death:

F1	For each child that died before reaching his/her 5th birthday, describe in as much detail as possible the sequence of events leading up to the death. Describe the symptoms involved from the beginning of the illness and throughout the duration of the illness, the actions taken by the family members during the course of the illness, etc. If the child died in an accident of some type or from another type of injury, describe all of the events involved, the types of injuries incurred, actions taken by the family members, etc. Use the back side of this form if necessary.	
F2	If the child died within the <u>one year period, 22nd of February 1993 to 21st of February 1994</u> before reaching 1 month of age, please ask the following questions about events that have preceded the death of the infant.	Please circle the appropriate response:
F2.1	Was the infant able to suck milk after birth?	Yes / No / Unknown
F2.2	How many days after birth did the illness begin? _____ days	0=None 1=One day 2=Two days 3=Three days...etc.
F2.3	Did the infant stop sucking milk when the illness began?	Yes / No / Unknown
F2.4	Did the infant have a fever?	Yes / No / Unknown
F2.5	Did the infant have convulsions?	Yes / No / Unknown
F2.6	Was the infant noted to be stiff?	Yes / No / Unknown
F2.7	With what was the cord cut when the child was born? (other) please specify _____	Knife / Sickle / Blade / Other / Unknown
F2.8	Was anything applied on the cord after cutting? If <u>Yes</u> , please mention exactly what was applied: _____	Yes / No / Unknown

Probable cause of neonatal death: _____

Physician's signature: _____

SCHEDULE G: INFORMATION REGARDING CHILD BETWEEN 1 AND 5 YEARS OF AGE WITH LAMENESS

Dzongkhag:

Gewog:

Village:

House No:

HHSN: Name of the child:

Sex of the child: Male / Female

Age of the child:

Name of informant:

Date of onset of lameness (DD/MM/YY):

Age of the child at the onset of lameness:

Circle the appropriate answer

G1	Did the child have a fever with the onset of lameness?	Yes / No / Unknown
G2	Was the onset of lameness acute?	Yes / No / Unknown
G3	Did the lameness progress after onset?	Yes / No / Unknown
G4	Did the child receive medical care during illness? If Yes, where _____	Yes / No / Unknown
G5	Did the child receive polio vaccine prior to the onset to illness? Check immunization card (if it is available) to see how many doses received and note the dates _____	Yes / No / Unknown

Physical examination of the child:

Circle the appropriate findings:

G6	The gait of the child is:	Normal / Impaired / Not sure
G7	Paralysis of lower limb present?	Yes / No
G8	The affected lower limb is the:	Right / Left / Both
G9	The type of lameness is:	Flaccid / Spastic / None present
G10	Muscular wasting is present in affected limb:	Yes / No / Not sure
G11	Extent of paralysis: Requires mechanical aid for walking: Unable to walk:	Yes / No Yes / No

Probable cause of lameness: Polio / Trauma / Congenital / Others
(if others, specify) _____

SCHEDULE A: HOUSEHOLD LISTING

Annex 3.

This schedule consists of two pages. Page 1 contains a table to be completed with information regarding each member of the household. Any member of the household who

GUIDELINES FOR COMPLETION OF QUESTIONNAIRES

GENERAL GUIDELINES

Questioning and interviewing should be carried out carefully and tactfully at all times. All entries onto the questionnaires should be clearly made in easily-legible handwriting.

PAGE 1
A careful determination of dates should be done, obtaining the day, month and year as accurately as possible. Enumerators should carry with them local calendars for reference during data collection.

Special caution is advised with regard to the determination of ages, with careful verification and cross-checking with year of birth, local calendars, etc.

Careful verification and re-verification of heading information for each subsequent schedule used for any one household or for any individual person in a household should be carried out.

For ease of completing the forms, spaces have been provided for filling in the answers to the questions to be presented. Lead-in questions should be used as appropriate, with back-tracking to related questions for reconfirmation of responses.

Where coded responses to questions are to be applied, the list of code numbers has been provided on the same form for easy reference by the enumerators.

Enumerators should carefully review each set of questionnaires before leaving the reference household so that entries may be double-checked and responses clarified as needed. All the schedules for one household should be stapled to ensure that some schedules are not mixed up with another household.

Supervisors should carefully review each set of questionnaires before leaving the area of the village concerned so that entries may be double-checked and responses clarified as needed.

VILLAGE INFORMATION SHEET

Information on this form should be obtained from the most appropriate person at village level, usually the VHW/Chupens/Mang-aps. The supervisor should complete this form when the survey team first reaching the village.

Enter the **name of the village** being surveyed.

Indicate whether or not there is a health facility in the village by circling "**Hospital**", "**BHU**", "**Dispensary**", "**Outreach clinic**", or "**No**".

If the village has a BHU or a Dispensary, enter in the space provided the **number of health care workers** presently stationed there.

If no (i.e. the village does not have a health facility), enter in the space provided the **location** (i.e. name of village/town) of the **nearest health facility**.

Indicate what kind of health facility it is by circling "**Hospital**", "**BHU**", "**Dispensary**", or "**Outreach Clinic**".

Enter in the space provided the **number of hours** it takes to reach this nearest health facility. If it is less than one hour write "0".

If hospital is not the nearest health facility, enter in the space provided the **location** (i.e. name of town) of the **nearest hospital**.

Enter in the space provided the **number of hours** it takes to reach this hospital.

Indicate whether or not the village has been visited by any **health worker within the past 3 months** (February, March, April) by circling "Yes" or "No".

Indicate whether or not there is a **VHW** in the village by circling "Yes" or "No".

Enter in the spaces provided the name of the **supervisor** of the field work in this village and the **date** on which this village is being surveyed in day/month/year format (DD/MM/YY).

SCHEDULE A: HOUSEHOLD LISTING

This schedule consists of two pages. Page 1 contains a table to be completed with information regarding each member of the household. Any member of the household who are permanently or the majority of the year staying at home in the village should be included, as well as servants, in this listing. If there is more than 15 members of the household you have to use an additional copy of Schedule A. Indicate at the bottom of the first sheet "1st sheet of 2", and at the top of second sheet "2nd sheet of 2". Page 2 contains a table with particular questions regarding important events which may have occurred within the household during the two year recall period specified for this survey (4th of February 1992 to 3rd of February 1994) or during the one month period immediately preceding the survey.

PAGE 1

Identification information which should be filled in on the first page of this schedule includes the names of the **Dzongkhag, Gewog and Village**. In addition, the **language** used during the interview should be indicated at the top of this page and the **house number** should be clearly specified. If there is no housenumber you must describe the position of the house in the village so it can be identified.

Column A1

The household serial number (HHSN) has been pre-printed on the schedule for the convenience of the enumerators. Space has been provided for fifteen (15) household members to be entered on the page. If there is more than 15 members of the household, use an additional copy of Schedule A and clearly indicate that it is a continuation form by writing "1st sheet of 2" at the bottom of the first used Schedule A and "2nd sheet of 2" at the top of the second used Schedule A. Entering all appropriate identification information as entered on the first form.

Column A2

Enter the full name of each household member.

Column A3

Enter a "1" for male or a "2" for female to indicate the sex of each household member.

Column A4

Enter the age of each household member.

The age must be recorded: in completed years for adults or children greater than or equal to 1 year of age; in completed months for infants greater than or equal to 1 month of age

but less than 1 year of age; and in completed days for infants less than 1 month of age. Extreme care is cautioned to be taken when determining and recording the age of each household member. Use the local calendar to determine dates of birth as needed. For clarity, place a "Y" for year, "M" for month or "D" for days after the numerical value for age.

The next column on the household listing is to be used for referencing female household members who are from 13 through 52 years of age. Place a tick mark (/) in the space provided as a reminder that Schedule B must be completed for each of these women. When Schedule B is completed for one female go back to Schedule A and place a cross-tick (X) before you start completing the Schedule B for the next female household member. Please, ensure that one Schedule B is completed for each female household member between 13 and 52 years of age.

Column A5

For each of the household members indicate their relationship to the head of the household or to the adult women in the household by relating to the HHSN (i.e. wife of 1="W/1", husband of number 1="H/1, son of number 2="S/2, daughter of number 2="D/2", sister of number 1="Sister/1", brother of number 2="Brother/2", niece of number 2="Niece/2", nephew of number 1="Nephew/1"). If there are servants and/or not related in the household you must write "servant" or "not related". This indication of the relationship will make it easier to check the quality of the data collected.

Column A6

Enter the code number for the marital status of each household member. Valid codes are "1" for single (never married), "2" for married, "3" for separated, "4" for divorced, and "5" for widowed.

Column A7

Enter the code number for the occupation of each member of the household (even for children!). Valid codes are from 1 through 9. If the occupation of a household member does not fit into any of the categories provided, enter "9" (other) and specify their occupation on the same line in this column. If one is undergoing training within the Government Services, the Armed Forces or Business he/she should be coded under these terms.

- | | | |
|-------------------------|----------------------|---------------------|
| 1 = Child (non-student) | 2 = Student | 3 = Monk/Gomchen |
| 4 = Government services | 5 = Armed forces | 6 = Business |
| 7 = Farmer/Housewife | 8 = Unemployed Adult | 9 = Other (specify) |

Column A8

Enter the number of completed years of schooling (i.e. the highest class completed) for each member of the household. Valid values are from 0 through 12. For example, a household member who has never attended school should be recorded as "0", a child in class one should be recorded as "0", if a household member has completed class three but failed class four, a "3" should be recorded in this column. For household members who have finished class 12 and got further education should be recorded as "12".

PAGE 2

Identification information which should be filled in on the second page of this schedule includes the names of the **Dzongkhag, Gewog and Village** as well as the **house number**.

These data should be carefully checked against that recorded on page 1 of this schedule to see that they match.

Question A9

How many episodes of illness* of household members have there been during the past 1 month for which treatment was sought?

This question is asked in order to obtain information concerning the household's practices over the last one month period in seeking treatment for illnesses. The episodes which are to be counted for a response to this question (and for which Schedule C is to be completed) are those illnesses for which some kind of help has been sought. It does not matter what type of practitioner was seen (e.g. VHW, BHW, lam, traditional healer, etc.), only that the illness concerned was felt by the household members serious enough to warrant outside help or treatment. The valid responses to this question include: "0" for no episode of illness, "1" for one, "2" for two, "3" for three, ...etc., and "99" for unknown.

*If one or more episodes of illness are reported (i.e. codes 1, 2, 3, ...etc.), then complete the same in number of Schedule C : Health Care Seeking Behaviour must be completed for each episode.

Question A10

How many births* (including stillbirths) have there been within the specified two year recall period, 4th of February 1992 to 3rd of February 1994?

This question is asked to obtain information on the number of stillbirths and live births which have occurred during the specified two year recall period. Stillbirths are included in order to obtain information on the place of and attendant at delivery. Careful

questioning of the household members should be undertaken in order to obtain complete information, e.g. in cases where the woman delivering died or is not now resident in the household. Twins are to be counted as two births, triplets as three births, etc. Valid responses to this question are: "0" for none, "1" for one, "2" for two, "3" for three, "4" for four, ...etc., and "99" for unknown.

*If one or more births have occurred during the two year recall period, detailed information must be entered for each birth on Schedule D: Vital Events Register. In addition, this detailed information must be reviewed against Schedule B: Information for Women in the Reproductive Age Group, to verify accuracy and completeness of all data recorded for births during the recall period.

Question A11

How many deaths* have there been within the specified two year recall period, 4th of February 1992 to 3rd of February 1994?

This question is asked to obtain information on the number of deaths which have occurred during the specified two year recall period. Careful questioning of the household members should be undertaken in order to obtain complete information, e.g. in cases where infants died soon after birth. Valid responses are the same as for question A10.

*If one or more deaths have occurred during the two year recall period, detailed information on each death must be entered on Schedule D: Vital Events Register. In addition, for infants who were born and died during the two year recall period, the detailed information must be reviewed against the response to question A10.

Question A12

Is there any child between 1 and 5 years of age with lameness?

This question is asked to obtain information on polio. Tactful questioning of the household members should be undertaken in order to obtain the complete information. Valid responses are: "0" for no child with paralysis, "1" for yes if one or more children are paralytic, then Schedule G should be completed, "99" for unknown.

At the bottom of this page the enumerator must write the **date** of the interview in the format of day, month and year (DD,MM,YY) and his/her **signature**.

SCHEDULE B: INFORMATION FOR WOMEN IN THE REPRODUCTIVE AGE GROUP

This schedule consists of two pages. Page 1 contains information which is to be collected for all women in the reproductive age group, 13 to 52 years old, regardless of their marital status. Page 2 contains information which is to be collected for all women who have had one or more previous pregnancies.

PAGE 1

Identification information which should be filled in on the first page of this schedule includes the names of the **Dzongkhag, Gewog and Village**. In addition, the **house number** as well as the **serial number on household listing** and **present age** of the household member should be indicated and verified against the data recorded on Schedule A. If it is impossible to interview the women concerned because she is away from the village, you must write down the **name of the interviewee**, preferable another women in the household.

Question B1: How many times have you been married?

Enter the total number of times that the woman has been married. Valid responses include "0" for never married, "1" for married once, "2" for twice, "3" for three times, etc., and "99" for unknown.

Question B2: What was your age at the time of your first marriage?

Enter the exact age in completed years at the time of the woman's first marriage. Be careful to ascertain the age in actual years rather than age as usually counted in Bhutan. If the woman has never been married, then enter "88" for not applicable, and if her age at first marriage is not able to be determined accurately, enter "99" for unknown.

Question B3: How many times in the past have you been pregnant* (excluding any current pregnancy)?

Enter the total number of times in the past that the woman has been pregnant. You may have to spend some time ascertaining the answer to this question, as recall tends to be biased. Please carefully obtain the information as best as possible, indicating that all abortions, stillbirths as well as live births should be included. Do not include a current pregnancy. Valid responses include "0" if the woman has never been pregnant, "1" if she has had one previous pregnancy, "2" if she has had two previous pregnancies, "3" if she has had three, etc. and "99" if the total number of pregnancies cannot be determined.

*If this woman has previously been pregnant one or more times, please also complete Schedule B, page 2: Pregnancy History Form. If she has had no previous pregnancy, there is no need to complete Schedule B, page 2.

Question B4: Are you currently pregnant?

Try to ascertain whether or not the woman is currently pregnant. Enter a "1" for yes, a "2" for no, "88" not applicable if it is a young school girl, not sexual active, or women who has already reach the menopause, or a "99" for unknown.

If the woman is not currently pregnant, proceed to question B9.

Question B5: If currently pregnant, how many weeks gestation are you?

For women who are currently pregnant, enter the gestational duration (in weeks) in the space provided. If the gestational duration is unknown, enter "99".

Question B6: If currently pregnant, how many antenatal care clinics have you attended during this pregnancy?

For women who are currently pregnant, enter the total number of times she has attended antenatal clinics during the current pregnancy. Valid responses include "0" for never attended, "1" for having attended once, "2" for two times, "3" for three times, "4" for four times, etc., and "99" for unknown.

Question B7: How many weeks gestation were you at the time of your first visit to an antenatal care clinic?

For women who are currently pregnant, enter the gestational duration in weeks at the time of their first antenatal care visit. If the woman is pregnant but has not attended any antenatal clinics during this pregnancy (see question B6), enter "88" for not applicable. If the gestational duration at first visit is unknown, enter "99".

For question B5, B6 and B7 try to get as correct information as possible, e.g. see the ANC card if the women has one but do not try to perform a clinical examination.

Question B8: How many times have you been visited at home by a health care worker during this pregnancy?

For women who are currently pregnant, enter the number of times they have been visited at home by a health care worker during this pregnancy. Valid responses are "0" for not

visited at home, "1" for visited at home one time, or "2" for visited at home two times, ...etc...

Question B9: Do you want more children than you presently have? or
If you do not have children, do you want any?

If this woman has no children, ask her if she wants any. If she already has children, ask her if she wants any more. Valid responses are "1" for yes, "2" for no, or "3" if she doesn't know whether she wants (any more) children or not. If it is a young school girl, not yet sexual active or a women who has reach the menopause, the response is "88" for not applicable.

Question B10: Have you heard of family planning?

Ask the woman whether or not she has heard of family planning. Valid responses are "1" if she says she has heard of family planning, "2" if she says she has not heard of family planning, or "3" if she doesn't know.

Question B11: Are you currently using any family planning method, and, if so, what method?

Ask the woman whether or not she is currently using any family planning method. If she is, ask what method she is using. Valid responses include "0" if not currently using contraception, "1" if using pills, "2" if using condoms, "3" if receiving DMPA injections, "4" if using an intrauterine device (IUD), "5" if the woman has been sterilized (tubectomy), "6" if the woman's spouse or sexual partner has been sterilized (vasectomy), or "88" if it is not applicable, e.g. if the woman is currently pregnant, menopausal or not sexual active.

PAGE 2

This page includes a pregnancy history form and is to be completed for every woman who reports having one or more pregnancies in the past (see question B3). Starting with the woman's first pregnancy, carefully inquire about the details for each pregnancy in the order of their occurrence.

Twins are to be counted as two (2) births, triplets as three (3) births, etc., although being counted as only one (1) pregnancy. List each child of a twin or triplet pregnancy on separate lines of the table, putting a bracket (I) to the left of the Month/Year of Abortion/Delivery column in order to indicate a single pregnancy but multiple births.

After completing the details for all pregnancies, specifically inquire about and confirm the total number of abortions, stillbirths, children still living, and liveborn infants who died at birth or later. Note any gaps between pregnancies which seem too long and try to ascertain whether or not a pregnancy has been omitted. Revise the table as needed to include any missed pregnancies.

After carefully filling in the information on the first table for each previous pregnancy, please summarize the information obtained onto the table at the bottom of the page. Again carefully review and confirm this summary with the woman concerned. Cross-check the total number of pregnancies with question B3. Cross-check any birth or death information which is reported as having occurred during the two year recall period specified for this survey against questions A10 and A11.

Identification information which should be filled in on the second page of this schedule includes the names (or code numbers) of the **Dzongkhag, Gewog and Village** as well as the **house number** and the **serial number** of the household member from Schedule A: Household Listing. These data should be carefully checked against that recorded on page 1 of this schedule as well as against the information recorded on Schedule A to see that the data correspond.

Serial numbers for 1 through 12 pregnancies are provided in the left-most column of the table. Trace the woman's pregnancy history from her first pregnancy through to her last (most recent) pregnancy. Complete the rows of the table first, then the columns (i.e. ask about the outcome, date, etc. of the first pregnancy before going on to ask the details of the second pregnancy, etc.).

Outcome of Pregnancy: Indicate the appropriate outcome for each pregnancy. Circle "AB" if the pregnancy resulted in an abortion/miscarriage, circle "SB" if the pregnancy resulted in a stillbirth, or circle "LB" if the pregnancy resulted in a live birth.

Enter the **date of the abortion or delivery** in month/year format. Try to ascertain this information as accurately as possible, using calendars of important events to assist with orientation to the date of the abortion/delivery.

For each of the pregnancies recorded which resulted in a live birth, circle "M" for male or "F" for female to indicate the **sex of the infant**. If the child is living, enter his/her **present age*** in the space provided. If the child died, enter his/her **age at the time of death***.

* The age should be entered in completed years if greater than or equal to 1 year, in completed months if greater than or equal to 1 month but less than

1 year, in completed days if greater than or equal to 1 day but less than 1 month, and in completed hours if less than 1 day. For each age recorded, place a "Y" for years, "M" for months, "D" for days, or "H" for hours after the numerical value for age.

In the table at the bottom of the page (Summary of Pregnancy History), please enter a summary of the data from the table above. Review this summary with the woman concerned and verify the accuracy and completeness of the data recorded. Note that the last two columns of the table are for recording information on liveborn males and liveborn females separately.

Note:

The total number of pregnancies excludes any current pregnancy and should equal the number of abortions plus the number of stillbirths plus the number of liveborn males plus the number of liveborn females.

The total number of liveborn males should be the same number as reported in the second column of the table and should equal the number of living sons plus the number of male infant deaths (i.e. deaths of sons at less than 1 year of age) plus the number of male child deaths (i.e. deaths of sons at exact age 1 year or older but at less than 5 years of age) plus the number of male deaths other than those included above (> i.e. deaths of sons at exact age 5 years or older).

The total number of liveborn females should be the same number as reported in the second column of the table and should equal the number of living daughters plus the number of female infant deaths (i.e. deaths of daughters at less than 1 year of age) plus the number of female child deaths (i.e. deaths of daughters at exact age 1 year or older but at less than 5 years of age) plus the number of female deaths other than those included above (> i.e. deaths of daughters at exact age 5 years or older).

SCHEDULE C: HEALTH CARE SEEKING BEHAVIOUR

This questionnaire is to be completed for any episode of illness during the immediate past one month to the date of the interview for which health care or treatment was sought by any household member. Please complete a table for each episode of illness. For example, a household member who was ill on two separate occasions should have two tables completed. Two separate episodes of illness for two different household members would also require two tables to be completed.

Identification information which should be filled in on this schedule includes the names (or code numbers) of the **Dzongkhag, Gewog and Village**. In addition, the **house number** should be indicated and verified against that recorded on Schedule A.

FOR EACH EPISODE OF ILLNESS:

Enter the **serial number from the household listing** and the name of the household member who was ill. Verify this data against that recorded on Schedule A.

Describe the **symptoms** of this illness episode in as much detail as possible.

Enter the **duration of the symptoms** in days, and the **duration of symptoms** in days before outside assistance or treatment was sought from a health care provider if outside assistance was sought.

Enter the **type of care centre/ provider** that was consulted for this episode of illness. Note the name of the BHU or the hospital, or the type of care provider. Care providers could include: traditional healer, lam, indigenous practitioner, VHW, HA, BHW, ANM, etc.

If any **treatment** was provided, describe the type of treatment as best as possible. Possible types of treatment include: ritual offerings, blood letting, medications, injections, tablets, etc.

Enter the **number of hours** it takes (took) for this household member to travel to the care centre/ provider from their home.

Ask whether or not this **same care centre/provider** was seen again for the same illness. Circle the appropriate response: "Yes" or "No".

If the same care centre/provider was consulted a second time **for the same illness**, ask if there was **any further treatment** needed. Circle the appropriate response: "Yes" or "No".

If further treatment was given, please describe the type of treatment in as much detail as possible.

Ask whether or not **another care centre/provider** was seen for the same illness. Circle the appropriate response: "Yes" or "No".

If another care centre/provider was seen for the same illness episode, enter the **type of care centre/provider** that was consulted. Note the name of the BHU or the hospital, or type of care provider. Types of care providers could include: traditional healer, lam, indigenous practitioner, VHW, HA, BHW, ANM, etc.

Enter the **number of hours** it takes (took) for this household member to travel from their home to the second care centre/provider that they consulted.

SCHEDULE D: VITAL EVENTS REGISTER

This register is for entry of information on all births (including stillbirths) and deaths which have occurred within the specified two year recall period, from the 4th of February 1992 to the 3rd of February 1994. The data entered on this form should be cross-checked against that entered at questions A10 and A11 as well as against that on the pregnancy history form for women in the reproductive age group (Schedule B). Determine all dates and ages as accurately as possible, using local calendars for reference.

Identification information which should be filled in on this schedule includes the names of the **Dzongkhag, Gewog and Village**. In addition, the **house number** should be indicated and verified against that recorded on Schedule A.

BIRTHS (including stillbirths):

For each delivery (birth):

Enter the **full name of the woman** giving birth during the two year recall period as well as her **serial number** from the household listing (Schedule A).

Indicate the **outcome of pregnancy** by circling "SB" for stillbirth or "LB" for live birth.

Enter the code number for the **place of delivery**. Valid responses are "1" for hospital, "2" for BHU, "3" for home, "4" for field or forest, "5" for on route, "6" for animal shed, and "7" for other. If "7" (other) is entered, please specify the place of delivery in the appropriate column.

Enter the code number for the **person who attended the delivery**. Valid responses are "1" for doctor, "2" for nurse or midwife, "3" for other health worker (except VHW), "4" for VHW, "5" for husband, "6" for mother or mother-in-law, "7" for other relative, "8" for neighbour, "9" for traditional birth attendant, "10" for other, and "11" for no attendant (i.e. self). If "10" (other) is entered, please specify the attendant at delivery in the appropriate column.

For each liveborn child:

Enter the **full name of the child**.

Indicate the **child's sex** by entering a "1" for male or a "2" for female.

Enter the **date of the child's birth** in day/month/year format (DD/MM/YY). Cross-check this information against that recorded on the pregnancy history form (Schedule B, page 2).

If the child is living, enter his/her **present age***.

If the child died, enter his/her **age* at death**.

- * Enter age in completed years if greater than or equal to 1 year; in completed months if greater than or equal to 1 month but less than 1 year; in completed days if greater than or equal to 1 day but less than 1 month; and in completed hours if less than 1 day. For each age recorded, place a "Y" for years, "M" for months, "D" for days, or "H" for hours after the numerical value for age.

DEATHS:

Enter the **full name of the deceased person**.

Indicate the **sex** of the deceased person by entering a "1" for male or a "2" for female.

Enter the deceased person's **age* at the time of his/her death**.

- * Enter age in completed years if greater than or equal to 1 year; in completed months if greater than or equal to 1 month but less than 1 year; in completed days if greater than or equal to 1 day but less than 1 month; and in completed hours if less than 1 day. For each age recorded, place a "Y" for years, "M" for months, "D" for days, or "H" for hours after the numerical value for age.

Enter the **date of death** in day/month/year format (DD/MM/YY). If the exact date cannot be recalled but the informant knows it was in July 1992, you enter "99/07/92".

Enter the code number for the **place of death**, i.e. the location where the death actually occurred. Valid responses are "1" for hospital, "2" for BHU, "3" for home, "4" for field or forest, "5" for on route, "6" for animal shed, and "7" for other. If "7" (other) is entered, please specify the place of death in the appropriate column.

Enter the **cause of death** if it is known. If the cause of death is not known and cannot easily be established, enter the **major symptoms** which preceded the person's death.

Note:

For each death of a woman in the reproductive age group (i.e. 13-52 years), also complete Schedule E. For each death of a child under 5 years of age, also complete Schedule F.

SCHEDULE E: DEATH OF WOMAN IN THE REPRODUCTIVE AGE GROUP

This form must be completed for every woman in the reproductive age group, 13 to 52 years, who died during the two year recall period specified for this survey, from the 4th of February 1992 to the 3rd of February 1994. The information should be ascertained through careful and tactful questioning of those with knowledge about the events in question.

Identification information which should be filled in on this schedule includes the names (or code numbers) of the **Dzongkhag, Gewog and Village**. In addition, the **house number** should be indicated and verified against that recorded on Schedule A.

Enter the **name of the informant** and the **relation to the woman**.

E1 Name, Age at death, Date of death (DD/MM/YY)

Enter the full name of the woman on the first line of the table. Enter her age in completed years at the time of her death. Enter the date of death in day/month/year format (DD/MM/YY).

E2 Was this woman pregnant at the time of her death?

Ask whether or not the woman was pregnant at the time of her death. Circle "Yes", "No", or "Unknown" as applicable.

If the woman was not pregnant at the time of her death, proceed to question E3.

If the woman was pregnant, enter the gestational duration in weeks at the time of her death or enter "99" if the gestational duration is unknown.

Ask whether or not there were any known complications of the pregnancy. Circle "Yes", "No" or "Unknown" as applicable.

If there were known complications, please describe these complications in as much detail as possible and then proceed to question E9.

E3 Had this woman been pregnant within 2 months of her death?

Ask whether or not the woman had been pregnant within 2 months of her death. Circle "Yes", "No" or "Unknown" as applicable.

If she had not been pregnant within 2 months of her death, proceed to question E9.

If she had been pregnant within 2 months of her death, enter the date that the pregnancy terminated (i.e. miscarriage/abortion or delivery occurred) in day/month/year format (DD/MM/YY).

E4 What was the outcome of the pregnancy?

Indicate the outcome of the pregnancy: circle "AB" for abortion, "SB" for stillbirth, or "LB" for live birth as appropriate.

If the pregnancy terminated in abortion or miscarriage (AB), proceed to question E9.

If the pregnancy terminated in a stillbirth (SB) or live birth (LB), proceed to question E5.

E5 Where did the delivery take place?

Enter the code number to indicate the place of delivery. Valid responses include: "1" for hospital, "2" for BHU, "3" for home, "4" for field or forest, "5" on route, "6" for animal shed, and "7" for other. If "7" (other) is entered, please specify the details of the place of delivery.

Cross-check this data against that recorded on the vital events register (Schedule D) as appropriate.

E6 Who attended the delivery?

Enter the code number to indicate the attendant at delivery. Valid responses include: "1" for doctor, "2" for nurse or midwife, "3" for other health worker (except VHW), "4" for VHW, "5" for husband, "6" for mother or mother-in-law, "7" for other relative, "8" for neighbour, "9" for traditional birth attendant, "10" for other, and "11" for no one attended (self). If "10" (other) is entered, please specify the attendant at delivery.

Cross-check this data against that recorded on the vital events register (Schedule D) as appropriate.

E7 Were there any known complications of the pregnancy, labour, delivery or the postpartum period?

Ask whether or not there were any known complications of the pregnancy, labour, delivery or the postpartum period: circle "Yes", "No" or "Unknown" as applicable.

If there were known complications of the pregnancy, labour, delivery or postpartum period, please describe these complications in as much detail as possible.

E8 If SB, go to E9. If LB: Is the child living?

If the outcome of pregnancy was a stillbirth, proceed to question E9.

If the outcome of pregnancy was a live birth, ask whether or not the child is living: circle "Yes" or "No" as applicable.

If the child has died, cross-check and verify entry of the data regarding this death on Schedule D as appropriate.

E9 Please describe in detail the situation surrounding the death of this woman.

(Enter cause of death, if known, at E10). Enter as many details of illnesses, symptoms, etc. as possible concerning this woman's death. Try to be as specific as possible and indicate any association of symptoms or illnesses to the woman's pregnancy, labour, delivery or postpartum course.

E10 Cause of death

Enter the cause of death if it is known. Try to determine whether or not there was any association between the cause of death and the woman's pregnancy, labour, delivery or postpartum course and explain the association at E9.

SCHEDULE F: DEATH OF CHILD UNDER 5 YEARS OF AGE

This form must be completed for every child under five (5) years of age who died during the two year recall period specified for this survey, 4th of February 1992 to 3rd of February 1994, for the first part, and a one year recall period, 22nd February 1993 to 21st February 1994, for the second part. The information should be ascertained through careful and tactful questioning of those with knowledge about the events.

Based on the information collected in the first part of this Schedule a national rate of infant mortality rate and of under-five mortality will be estimated. The second part is to determine the appearance of neonatal tetanus cases.

Identification information which should be filled in on this schedule includes the names of the **Dzongkhag, Gewog and Village**. In addition, the **house number** should be indicated and verified against that recorded on Schedule A.

Enter the **name of the informant** and the **relation to the child**.

Enter the **full name of the child**. Indicate the **sex of the child** by circling "Male" or "Female" as appropriate.

Enter the **date of the child's death** in day/month/year format (DD/MM/YY). Enter the **child's age at the time of his/her death**. Enter the age at death in completed years if the child was greater than or equal to 1 year of age at the time of his/her death; in completed months if greater than or equal to 1 month but less than 1 year; in completed days if greater than or equal to 1 day but less than 1 month, or in completed hours if less than 1 day. Enter a "Y" after the numerical value for age if it is entered in years, an "M" if entered in months, a "D" if entered in days, or an "H" if entered in hours.

F1

For each child that **died before reaching his/her 5th birthday**, describe in as much detail as possible the **sequence of events leading up to the death**. Describe the symptoms involved from the beginning of the illness and throughout the duration of the illness, the actions taken by the family members during the course of the illness, etc. If the child died in an accident of some type or from another type of injury, describe all of the events involved, the types of injuries incurred, actions taken by the family members, etc. Please specify the **cause of death**, if known. Continue this description on the back side of the form, if necessary.

F2

If the child died within the one year period, 22nd of February 1993 to 21st of February 1994, **before reaching one month of age**, please ask each of the following questions

about events that have preceded the death of the infant. Circle the appropriate response to each question as provided in the second column.

F2.1 Was the infant able to suck milk after birth?

The valid responses to this question include: "Yes" if the infant has been sucking, "No" if the infant never was sucking, or "Unknown" if the informant do not know.

F2.2 How many days after birth did the illness begin?

This question is asked to obtain the time relation between the birth and the start of the illness that has preceded the death of the infant. The valid responses to this question include the figures from "0 to 30". Enter the number of days in the space provided.

F2.3 Did the infant stop sucking milk when the illness began?

The valid response to this question are: "Yes" if the infant stopped sucking when the illness began, "No" if the infant did stop sucking, or "Unknown" if the informant do not know or the infant had never start sucking milk.

F2.4 Did the infant have a fever?

This question is asked to obtain the information of fever was related to the illness of the infant. The valid response to this question are: "Yes" if the informant knows that the infant had fever, "No" if there was no fever, or "Unknown" if it is not known or cannot be recalled.

F2.5 Did the infant have convulsions?

This question is asked to obtain information of the symptoms of the illness prior to the death. The valid responses to this question are: "Yes" if the infant had convulsions, "No" if the child did not have convulsions, or "Unknown" if the informant do not know.

F2.6 Was the infant noted to be stiff?

This question is asked to obtain information of the symptoms prior to the death of the infant. The valid responses to this question are: "Yes" if the infant was stiff prior to the death, "No" if the infant was not stiff, or "Unknown" if the informant do not know.

F2.7 With what was the cord cut when the child was born?

This question is asked to obtain information of what kind of tool was used to cut the cord of the baby when it was born. The valid responses to this question are: "Knife", "Sickle",

"Blade" please encircle the actual tool, if one of these were used, "Other" should be encircled if another tool that can be specified was used, please specify in the space provided, or "Unknown" if the informant do not know.

F2.8 Was anything applied on the cord after cutting?

The valid responses to this question are: "Yes" if something was applied, "No" if nothing was applied, or "Unknown" if the informant do not know. If Yes, please mention exactly what was applied in the space provided.

After the data collection a physician will go through this Schedule and try to set the most probable cause of death.

SCHEDULE G: INFORMATION REGARDING CHILD BETWEEN 1 AND 5 YEARS OF AGE WITH LAMENESS

This form must be completed for every child between 1 and 5 years of age with lameness. A physical examination of the child is necessary to fill in the second part of the form.

Identification information which should be filled in on this schedule includes the names of the **Dzongkhag, Gewog, Village and the House number.**

Enter the **household serial number (HHSN)**, the **name of the child**, indicate the **sex of the child** by circling "Male" or "Female" as appropriate, and the **age of the child** in completed years.

Enter the **name of the informant**, the **date of onset of lameness** in day/month/year format (DD/MM/YY), and the **age of the child at the onset of lameness** in completed years.

For all the following five questions, circle the appropriate answer to each question "Yes", "No", or "Unknown" as provided in the right column:

G1 Did the child have a fever with the onset of the lameness?

This question is asked to obtain information of fever was present in the child before the lameness started. The valid responses are: "Yes" if the child had fever, "No" if there was no fever, or "Unknown" if the informant do not know.

G2 Was the onset of the lameness acute?

This question is asked to obtain information of the onset of the lameness. Did it develop suddenly. The valid responses are: "Yes" if the lameness developed suddenly, "No" if the lameness developed over a prolonged period of time, or "Unknown" if the informant do not know how the lameness developed.

G3 Did the lameness progress after onset?

This question is asked to obtain information of further progress of the lameness after the onset. The valid responses are: "Yes" if the lameness progressed after the onset, "No" if there was no progress, or "Unknown" if the informant do not know.

G4 Did the child receive medical care during illness?

This question is asked to obtain the information of medical care was provided during the illness, and where it was provided. The valid responses to this question are: "Yes" if medical care was received, "No" if no medical care was received, or "Unknown" if the informant do not know. If Yes, enter the name of the health facility where the child received medical care in the space provided.

P1.7 With what was the cord cut when the child was born?

This question is asked to obtain information of what kind of tool was used to cut the cord of the baby when it was born. The valid responses to this question are: "Knife", "Stick",

G5 Did the child receive polio vaccine prior to illness?

This question is asked to obtain information of polio vaccinations the child had prior to the onset of the lameness. If the immunization card is available, please check it and write in the space provided the date(s) of when the child had received the polio vaccine. In the right column the appropriated answer is circled: "Yes" if the child have received one or more polio vaccine, "No" if the child had not received any polio vaccine prior to the onset of the lameness, or "Unknown" if the informant do not know.

To give a probable cause of lameness, a physical examination of the child should be performed, if the child is present. For the following questions circle the appropriate finding to each question.

G6 The gait of the child is:

Observe the gait of the child and circle the appropriate findings: "Normal" if the gait is normal, "Impaired" if the walk of the child is affected, or "Not sure" if you cannot jugde if it is normal or not.

G7 Paralysis of lower limb present?

This should be answered by "Yes" if paralysis is present, or "No" if it is not present.

G8 The affected lower limb is the:

Circle "Right" if the right leg is affected, "Left" if the left leg is affected, or "Both" if both legs are affected.

G9 The type of paralysis is:

Examine the affected limb(s) and observe if the paralysis is "Flaccid", "Spastic", or "None present" and circle the appropriate findings.

G10 Muscular wasting is present in affected limb:

Try to compare the muscles in one limb with the same muscles of the other limb and assess whether there are any differences. The valid responses are: "Yes" if there is a difference in the volume of the muscles, "No" if there is no difference, or "Not sure" if you are not sure.

G11 Extent of paralysis:

Requires mechanical aid for walking: "Yes", or "No"

Unable to walk: "Yes", or "No"

After the data are collected a physician will go through the information and see if it possible to give a probable cause of the lameness in following categories: "Polio", "Trauma", "Congenital", or "Others" and specify others if possible.

Life Table constructed from data of Bhutan National Health Survey 1994

Age group	Population	Death	Death rate	Fraction of last year lived	Probability of dying	Number of persons alive	Number of deaths	Number of person-years lived	Number of person-years lived beyond	Observed expectation of life
0-1	2,220	206	0.0928	0.30	0.08713	100,000	8,713	93,901	6,612,475	66.12
1-4	8,279	78	0.0094	0.41	0.03687	91,287	3,365	357,204	6,518,575	71.41
5-9	9,784	25	0.0026	0.44	0.01269	87,921	1,115	436,484	6,161,370	70.08
10-14	7,423	11	0.0015	0.54	0.00738	86,806	641	432,556	5,724,886	65.95
15-19	5,183	14	0.0027	0.59	0.01343	86,165	1,157	428,453	5,292,331	61.42
20-24	4,345	14	0.0032	0.49	0.01598	85,008	1,358	421,575	4,863,878	57.22
25-29	4,229	11	0.0026	0.51	0.01292	83,649	1,081	415,598	4,442,303	53.11
30-34	3,877	10	0.0026	0.52	0.01282	82,568	1,058	410,302	4,026,705	48.77
35-39	3,666	23	0.0063	0.53	0.03091	81,510	2,520	401,629	3,616,403	44.37
40-44	3,134	10	0.0032	0.54	0.01584	78,990	1,251	392,074	3,214,774	40.70
45-49	2,560	14	0.0055	0.53	0.02700	77,739	2,099	383,764	2,822,700	36.31
50-54	2,379	17	0.0071	0.53	0.03514	75,641	2,658	371,957	2,438,936	32.24
55-59	2,036	19	0.0093	0.52	0.04564	72,983	3,331	356,919	2,066,979	28.32
60-64	1,915	37	0.0193	0.52	0.09232	69,652	6,431	332,826	1,710,060	24.55
65-69	1,229	20	0.0163	0.51	0.07825	63,221	4,947	303,986	1,377,235	21.78
70-74	794	28	0.0353	0.52	0.16256	58,274	9,473	268,636	1,073,248	18.42
75-79	432	12	0.0278	0.51	0.13004	48,801	6,346	228,457	804,612	16.49
80-84	261	14	0.0536	0.50	0.23649	42,455	10,040	187,175	576,155	13.57
85+	144	12	0.0833		1.00000	32,415	32,415	388,980	388,980	12.00
Total	63,890	575								

