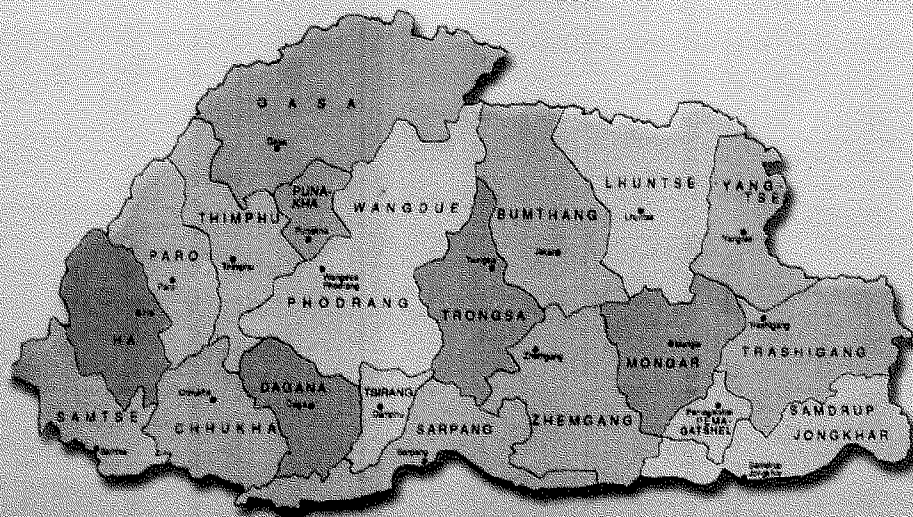
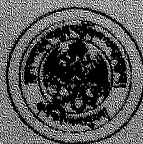


REPORT NATIONAL HEALTH SURVEY 2000



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Content

I.	Background	1
II.	Objectives	1
III.	Sample Size	1
IV.	Sample Design	2
i)	Reference Population	2
ii)	Sampling Procedure	3
a)	Stratification by Rural & Urban	3
b)	Selection of Primary Sampling Units	3
c)	Selection of Secondary Selection Units	3
d)	Sampling Fraction	3
V.	Survey Instruments	4
VI.	Field Work	5
a)	Training of Enumerators	5
b)	Survey	5
VII.	Data Processing & Validation	5
VIII.	Survey Results & Discussion	5
a)	General Distribution, district-wise, of sample population	5
b)	Sex and Age	6
c)	Dependency Ratio	7
d)	School Enrollment	8
e)	Occupation	8
f)	Marital Status	8
g)	Births & Population Growth	9
h)	Fertility	9
i)	Deaths	10
j)	Maternal Mortality	13
k)	Antenatal & Delivery Care	13
l)	Family Planning Knowledge & Practice	15
m)	Access to Health Care Services	15
n)	Rural Water Supply and Sanitation	15
o)	Breast Feeding Practice	16
p)	Health Care Seeking Behavior	17
IX.	Recommendations	19

- Annex 1. Instruction manual for survey supervisors
2. Formats for Health Survey Questionnaires
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**Summary Table of Key Indicators, National Health Surveys,
1984, 1994 & 2000**

Indicators	Rate			
	1984	1994	2000	
Population enumerated	Male	27, 747	30, 440	33, 489
	Female	28, 458	33, 450	35, 358
	Total	56, 205	63, 890	68, 847
Sex ratio, males per 100 females	97.50	91.0	94.7	
Overall Dependency ratio (percent)	80.0	91.7	77.4	
Sex ratio at birth (males per 100 females)	102.0	105.1	106.6	
General Fertility Rate	169.6	172.7	142.7	
Total Fertility Rate	NA	5.6	4.7	
Crude Birth Rate (per 1000 population)	39.1	39.9	34.09	
Crude Death Rate (per 1000 population)	13.4	9.0	8.64	
Infant Mortality Rate (per 1000 live births)	102.8	70.7	60.5	
U5MR (per 1000 live births)	162.4	96.9	84.0	
Maternal mortality ratio (per 1000 live births)	7.7	3.8	2.55	
Population growth rate (percent)	2.6	3.1	2.5	
Trained birth attendance (percent)	NA	10.9	23.66	
Contraceptive Prevalence rate (percent)	NA	18.8	30.7	
Access to Safe Drinking Water (percent)	NA	NA	77.8	
Sanitation (latrine) coverage (percent)	NA	NA	88.0	

Report of the National Health Survey, 2000

I. Background

Since the introduction of modern health care services in the country, in the last four decades there has been remarkable progress in the development of health services and systems in Bhutan. Correspondingly, the health of the population has improved significantly in all aspects. Following the WHO's Alma-Ata Declaration¹ on Primary Health Care (PHC), Bhutan chose to use PHC as its core thrust to reach the rural population scattered over the rugged mountainous terrain of Bhutan. Therefore, Bhutan is committed to the ideals of Health-For-All.

As a part of its commitment to that ideal, monitoring the impact of the various health interventions is essential to gauge the progress. The Health Department of the Ministry of Health & Education has been periodically carrying out surveys to assess the level of key indicators relevant to health development. The first nation wide survey to measure some of the main health indicators was carried out by the Health Department in 1984. One decade later, in 1994, another nation-wide survey was carried out².

The Royal Government is currently in the middle of the implementation of the 8th Five Year Plan (FYP). Further, since it is the end of the decade, it is an opportunity to assess the progress till now and to provide a basis to plan for the next decade of Bhutan's Health Care Services. Within the current 8th FYP³ ambitious goals have been set to improve the health situation of the country and, therefore, to provide a mid-term assessment is considered timely.

II. Objectives

The general objective of the survey was to assess the current situation of the country with respect to various health indicators. The specific objectives were to estimate:

- § IMR and U5MR
- § CBR, CDR and Annual Growth Rate
- § GFR and TFR
- § ANC attendance Rate, Trained Birth Attendance Rate
- § Contraceptive Prevalence Rate
- § Access to Latrines and safe drinking water
- § Exclusive Breast Feeding and Feeding Practices of Babies
- § Leading Causes of mortality
- § Health Care Seeking Behavior
- § General Village Information and VHW situation
- § General Demographic Information

III. Sample Size

In 1994 the IMR was estimated at 70.7/1000 live births and an average household size 5.45. According to Lwanga & Lemeshow⁴, if the range of IMR is expected to be between 55.003 to 74.997, with a relative precision of 0.1538, the number of household required in the sample would be 11,164. However, taking the rarest indicator, IMR, the following were the parameter assumptions and decision rules.

- P The probability of infant mortality which is expected to be 0.065
- Z Assuming IMR to be normally distributed, at 95% confidence level of estimate, the level of statistical significance is 0.05 and the corresponding Z value is 1.96
- d The precision of the estimate should be 0.01 so that the estimate of IMR is between 55 to 75 infant deaths per 1000 live-births, 95 out of 100 random samples
- de Design effect could actually be none since IMR is a rare event and inter-cluster homogeneity would be low. To be conservative, design effect was taken as 1.1
- pfc (Population finite correction factor) Since total number of households in the population is finite, finite correction factor was used $(N-n/N-1)$ where N = total number of households in the sampling frame and n = computed sampling using the following formula.

$$n = Z^2 p(1-p)/d^2$$
$$n = \{(1.96)^2 * 0.065 * 0.935\} / 0.01^2 = 2335$$

This "n" thus calculated is the number of live births needed to estimate IMR.

To adjust for design effect this is multiplied by 1.1 so it becomes 2568. Applying pfc formula above since the number of households is finite, the required number of live-births becomes 2432. Given an estimated crude live birth rate at 40 per 1000 population, the population needed becomes $2432 * 1000/40 = 60,800$ people. Since in this survey the secondary sampling unit was to be households, this population was converted into households. Taking an estimate average number of residents per household as 5.45 the sample of households needed for the survey becomes 11156 and with an estimated 10% non response, the final sample is computed to be 12,272 say 13,000.

IV. Sample Design

(i) Reference population

All citizens of the country residing in urban and rural areas of all 20 dzongkhags or districts were taken as the reference population for the survey. It was projected that there were 618,557 such people in 1997 of which 14.5% resided in urban areas and 84.5% in rural areas.

(ii) Sampling procedures

A stratified two-stage sampling was adopted for the survey. The whole of the country was

first divided into two primary strata namely *rural* and *urban*. The primary secondary sampling unit and secondary sampling units were blocks for urban (town areas) and geogs for rural areas and households respectively.

a) Stratification by Rural and Urban

All the dzongkhags have administratively demarcated urban and rural areas according to certain criteria such as availability of certain amenities and facilities. On these basis each of the 20 dzongkhags were stratified into urban and rural areas.

b) Selection of primary sampling units (blocks & geogs)

In the urban areas sample blocks were systematically selected from each town. The sample size was proportional to the number of households in each town. Within each selected block, 10 households were selected systematically.

Similarly, out of 202 geogs (rural areas) 100 sample geogs were systematically selected by probability proportional to size where size is the total number of households in the geog. Within each selected geog, 105 households were selected.

c) Selection of secondary sampling units (households)

Once in the field, a new listing of all households in the selected blocks and geogs were made which served as the sampling frame for the selection of sample households. From these lists of households 10 households in each urban block and 105 households from every rural geog were systematically selected using random number tables.

d) Sampling Fraction

Area	total No. blocks/ geogs	Tot. Sample blocks geogs	Sample H/holds	Sampling Fraction
Urban	736	250	2500	1/ 9
Rural	202	100	10500	1/ 8
Total	-	-	13000	1/ 8

V Survey Instruments

The data for this study was collected from individuals in the selected households using a set of preset, structured questionnaires. There were a total of seven schedules to be filled by the surveyors. Most of the questions in the schedules were pre-coded.

Schedule-A collected general information on villages in the selected geog, such as accessibility to health facilities and presence of an active Village Health Worker (VHW). This was filled after the households in a particular geog had been selected and information was obtained from the most appropriate person in the village: usually "Mang-ap" or "Chupen"

Schedule-B was the Household member folder, which collected general information like age, sex, marital status and occupation of individual household member. Adults were interviewed directly, while information for children, disabled and sick people were collected from the most knowledgeable person in the same household.

Schedule-C collected information on access of household members to safe drinking water source and sanitary latrines. It also included questions related to the number of episodes of illness in the household during the preceding month and about the number of deaths in the recall period. This information was generally collected from the head of the household.

Schedule-D sought information on all women in the reproductive age group (15 to 49 years) regardless of marital status. Questions in this schedule included pregnancy status; ANC visits, feeding practices of children less than 1 year of age, number of past pregnancies, knowledge and use of contraceptive methods.

Schedule-E, which was administered directly to all women in the reproductive age group who reported having one or more pregnancies in the past, sought information on all previous pregnancies including outcome, place of delivery, birth attendants, delivery type and the month and year of delivery. It also collected information on the current status of those children, which they had given birth to.

Schedule-F contained questions aimed at determining the health care seeking behavior of the people. These questions were asked to all individuals who reported having fallen ill during the preceding month. Information was collected relating to nature of illness, choice of first caregiver and subsequent caregivers. An open-ended question aimed at finding the reason for choice of first caregiver was also included.

Schedule-G, the mortality folder, collected information of all deaths in the household in the recall period. Information collected include age and sex of deceased, probable cause of death, place of death and whether the death was related to pregnancy or child birth if the deceased had been a woman in the reproductive age group.

VI. Field Work

a) Training of Enumerators and supervisors

Enumerators for the survey included senior health officials, both from the various programs at the headquarters and from the field. A total 80 enumerators were trained. From amongst these enumerators 22 key senior people were chosen and trained to be supervisors (team leaders) in their respective survey areas who would carry out field editing at the end of every day.

During the training period each schedule was reviewed and additional notes included clarifying any doubts. The sessions also finalized definitions and interpretations of the questions to be asked. Mock interview sessions were also held amongst the surveyors for hands on experience.

b) Survey

All survey teams having been distributed into their respective survey areas, left Thimphu to conduct the survey on the 7th of March 2000. By mid April the bulk of the survey had been carried out and the completed schedules received in the Health Department. The last area to be surveyed was Thimphu City itself.

VII. Data Processing & Validation

In Thimphu, the questionnaires were checked manually to ensure that no forms were missing and that the field operation had been carried out in appropriate manner. Manual Coding of previously un-coded questions was then carried out.

Computer programmers of the Health Department and the CSO developed the data entry program using FoxPro 2.6a software. Appropriate checks e.g Range Checks, Acceptable Values, automatic skip patterns etc. were built into the entry program to ensure data quality.

Data entry was carried out by computer operators specially selected for the purpose. Data entry began in early May 2000 and was completed by late July 2000. After data entry, both for the analysis and checks for errors like missing items, outliers and inconsistencies were carried out with the statistical package, SPSS 10.0 for Windows.

VIII. Survey Results and Discussions

(a) General distribution, district-wise, of the sample population

In the survey the total of 12,711 households with 68,847 members were enumerated, of which, 11,010 (or 15.99%) were urban. The district-wise distribution of the estimated population is given in table 1.

Table 1: Percent district wise distribution of estimated population

DZONGKHAG	%
Bjaka	1.91
Chhukha	7.21
Daga	4.20
Gasa	1.03
Sarpang	6.34
Ha	1.94
Lhuntshi	3.17
Monggar	8.27
Paro	3.54
Pemagatsel	3.00
Punakha	3.94
Samdrup Jongkha	7.52
Samtse	9.49
Thimphu	9.51
Trashigang	10.52
Trongsa	1.82
Tsirang	3.74
Wangduephodrang	5.29
Yangtse	4.41
Zhemgang	3.15
Total	100.00

The average number of individuals per household is 5.42, with (5.6) in rural and (5.5) urban.

(b) Sex and age

The sex ratio at birth is 106.6 males to every 100 females. For the whole population the sex ratio is 94.7 males per 100 females, which reflects that the 49% of the population is male and 51% females. In the 1994 survey, the sex ratio at birth was 105.2 males to every 100 females. The percentage sex distribution, by age group is as shown in table 2.

Table 2. Percent distribution by age group

Age Gr.	Male	Female	Total
< 1	2.21	2.00	2.1
1 - 4	9.48	8.69	9.1
5 - 9	14.59	13.68	14.1
10 - 14	11.99	13.97	13.0
15 - 19	10.38	9.97	10.2
20 - 24	6.44	8.44	7.5
25 - 29	6.20	7.35	6.8
30 - 34	5.84	6.17	6.0
35 - 39	5.52	5.37	5.4
40 - 44	5.24	4.89	5.1
45 - 49	4.91	4.29	4.6
50 - 54	4.43	4.26	4.3
55 - 59	3.62	3.34	3.5
60 - 64	3.32	2.74	3.0
65 - 69	2.56	2.16	2.4
70 - 74	1.71	1.31	1.5
75 +	1.56	1.37	1.4
Total	100.00	100.00	100

The proportion of the population under 15 years of age is 39.13% as compared to 43.4% in 1994, and the proportion of population in the age group of 15 to 44 years is 40.11% as compared to 38.2% in 1994 – no significant difference in the latter. In 1994, 18% of the population were older than 44 years as compared to 21% in 2000.

(c) Dependency ratio

The dependency ratio is the proportion of the population under 15 years of age and over 64 years. The overall dependency ratio is 77.4%. It is 73.2% for urban and 78.2% for rural.

Dependency estimate is an important indicator as it reflects on the economic burden as young children and old people are dependent on the working age population. In addition to the total dependency ratio, it is important to estimate the child and aged dependency ratios. Child dependency is the proportion of children under 15 years of age to that of working population aged 15 to 64 years. In 1997⁵ the child dependency was projected to be 78%. From this survey the child dependency ratio is estimated to be 67.9%. In similar manner, aged dependency is the proportion of the 65 years old and above to the number of persons in the working age group, 15 to 64 years. The aged dependency is 9.4%. This is a clear reflection of the young age structure of the Bhutanese population where the dependents are

still primarily young people as the proportion of old is still very small. But with improved socio-economic and health care services, the life expectancy will rise and, with that the aged dependency will also increase. In 1997 the aged dependency was projected to be only 8% and expected to rise to 10% in 2017. However, from this survey the aged dependency is much higher than was projected in 1996.

(d) Net Primary School enrollment

Net primary school enrolment was estimated as a proportion of all those children aged between 6 to 12 years who are currently in school. The net primary school enrolment for Bhutan in 2000 was estimated at 57%. This is not the same as gross enrolment as many students enroll even when they are over-aged. Therefore, the net primary school enrollment rate will by definition be lower than the gross school enrollment rate reported by the Education Department (72%).

(e) Occupation

The analysis for occupation included only those aged between 15 to 64 years. By far the largest proportion, 66%, are farmers. The other categories included 7.6% as household work, 6.9% as students, 5.4% as government employees, 3.8% in the private (business) sector, 2.8% as monk/gomchens, 1.9% in the armed forces, 1.0% as unemployed adults, and the rest in undefined category.

(f) Marital status

The marital status of the population aged 15 years or more as enumerated from this survey is presented in table 3.

Table 3. Percent marital status of people aged 15+ years by gender.

Marital status	Males	Females
Married	65.4	65.7
Single	27.8	21.6
Separated	0.7	1.2
Divorced	0.9	2.7
Widowed	5.2	8.7
Total	100.0	100.0

In 1994 the expected age at first marriage for 55% of the women was less than 20 years. Although the age at first marriage is not known in the 2000 survey, it seems likely that based on the age specific marital status (Table 4) the age at first marriage is increasing.

Table 4. Age Specific Marital Status in percentage.

Age group	Single	Married	Divorced	Separated	Widowed	Total
10-19	94.0	5.7	0.1	0.2	0	100
20-29	29.9	66.1	2.1	1.5	0.4	100
30-39	7.3	87.0	2.4	1.4	1.9	100
40-49	5.2	87.2	2.2	1.0	4.4	100
50-59	4.6	81.2	2.0	0.6	11.6	100
60-69	5.0	67.4	2.1	0.8	24.7	100
70+	5.4	45.6	1.1	0.6	31.7	100

(g) Births and Population Growth

The total population enumerated in this survey is 68,847. There were 2,347 live births, and 48 stillbirths. The crude birth rate, CBR, estimated from the survey 34.09 per 1000 population, the crude death rate, CDR, is 8.64 per 1000 population. The population growth rate estimated is 2.55%.

The CBR and CDR estimated in 1994 Survey were 39.9 per 1000 population and 9.0 per 1000 population. Therefore, for the crude birth rate particularly, there is a notable decline. But the most encouraging result is that of the decline of growth rate from 3.1% to 2.5%. From regular reports from the districts, there is indication that the growth rate might be even less than this survey estimate. This is attributable to the success of the great intensification undertaken in the promotion of reproductive health in the last six years. The key objective of the 8th FYP for the Health Sector is to bring the growth rate to about 2%. And from all indications it appears that it could very well become a reality.

(h) Fertility

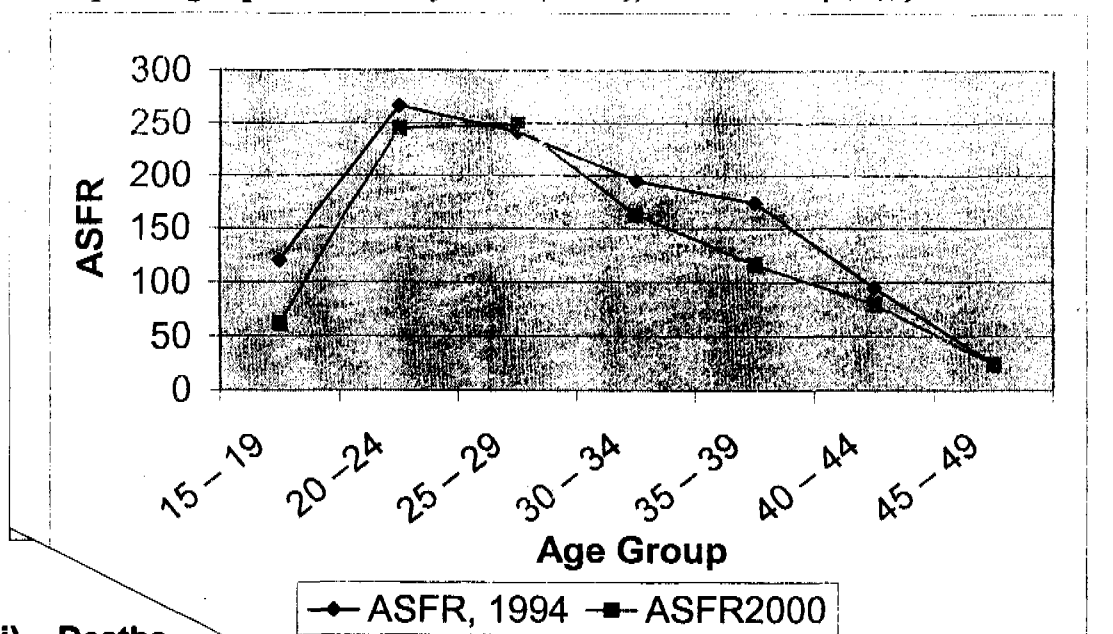
The General Fertility Rate, GFR, is 142.7 per 1000 reproductive aged women, and the Total Fertility Rate, TFR, is 4.7 per female of reproductive age. Both the GFR and TFR have reduced since 1994: the GFR and TFR from the 1994 Survey was 172.7 and 5.6 per female. Again this is a reflection of the tremendous impact that the intensified promotion of family planning and population advocacy has had.

Table 5. Age Specific fertility rates (ASFR), 1994 & 2000 surveys (15-49) years

Age Group	ASFR (994)	ASFR (2000)
15 - 19	120.2	61.7
20 - 24	266.7	245.4
25 - 29	241.6	248.7
30 - 34	195.3	162.2
35 - 39	173.8	116.3
40 - 44	95.0	79.7
45 - 49	24.3	24.2
Total	172.7	142.7

In the population projection for Bhutan⁵, the low variant projection estimates that the TFR (estimated to be 5.32 in 1997) will decline by 25% (or to 3.9) between 1997-2000. The current estimate indicates a decline of 16%, thereby raising the expectation that the projected decline in TFR can be achieved by 2000. Thereafter, it is expected to decline by 30% and 25 % respectively, or to 2.79 by 2002-2007 and to 2.1 by 2007-2012.

Graph-I. Age Specific Fertility Rates (ASFR), 1999&2000 (15-49) Years



(i) Deaths

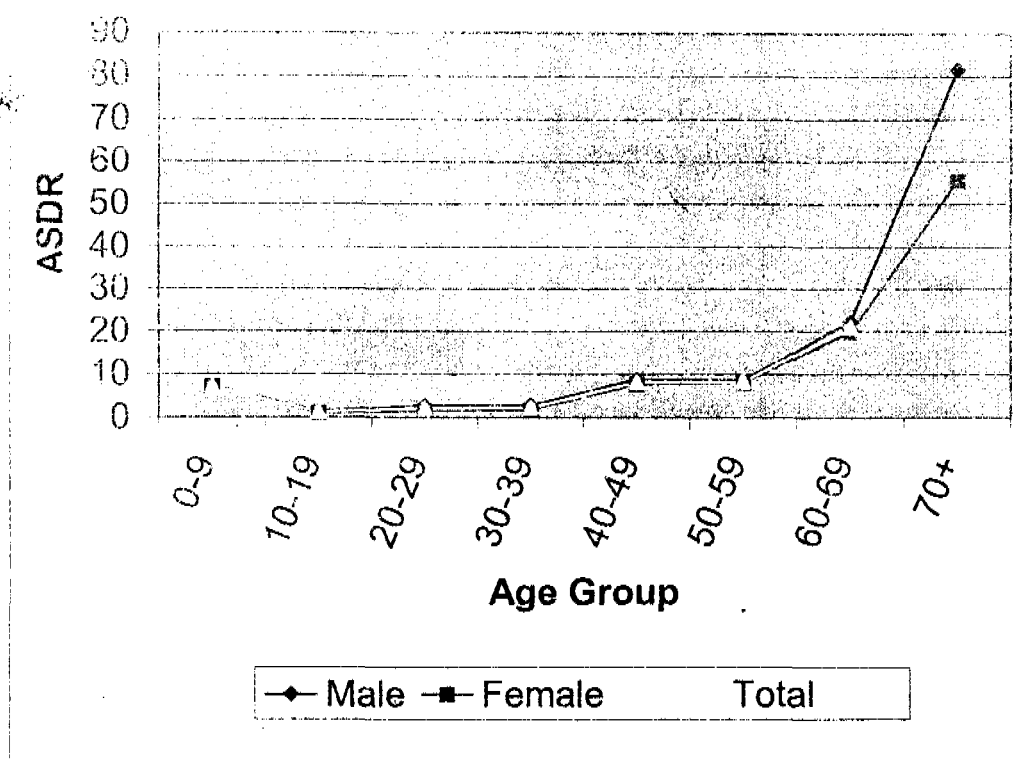
The estimated crude death rate is 8.64 per 1000 population, not very significantly different from the 1994's 9.0 per 1000 population. The age specific death rates are given in table 6.

Table 6. Age specific death rates (Per 1000 population)

Age group	Sex death		Total
	Male	Female	
<9	7.0	7.2	7.1
10-19	1.5	1.1	1.3
20-29	2.8	1.6	2.2
30-39	2.9	1.9	2.4
40-49	8.6	7.7	8.15
50-59	8.4	8.1	8.25
60-69	22.3	19.7	21
70+	81.5	55.4	68.45

However the interpretation of Age Specific Death Rate should be taken with caution as the number of death in every age group is small.

Graph - II. Age Specific Death Rate (ASDR)-2000



At present the attribution of cause of death is a difficult task. The system of certifying deaths is introduced only very recently and, post mortem examination is hardly ever carried out for the sake of establishing the cause of death. In the survey, for every death reported, a descriptive detail surrounding the immediate period of death was noted. From these, a medical officer categorized the probable cause of death, focusing largely on assigning the most likely cause of death to an organ system. Where the cause of death was definitely known, it was put as such. Therefore, the most commonly attributed organ systems of involvement in the reported deaths are as in table 7.

As anticipated, for a large proportion of deaths, no definitive causes can be attributed simply due to inadequate information.

Table 7. Percentage distribution of causes of death for all age groups.

Cause of death	Male	Female	Total
Cardiovascular & blood disorders	8.6	8.5	8.5
Diseases of lung including Pneumonia	11.6	15.4	13.5
Gastrointestinal & liver diseases excluding hepatitis	6.3	3.9	5.1
Swellings	2.9	6.3	4.6
Accidents and Poisoning	12.5	5.0	8.7
Fevers	4.9	5.0	4.9
Diarrhea & dysentery	5.7	7.6	6.6
Tuberculosis	4.3	1.8	3.1
Hepatitis	2.2	1.3	1.7
Other infections	1.7	3.7	2.7
Kidney, UTI & maternal	0	4.0	2.0
Endocrine & metabolic disorders	0.7	0.4	0.6
Prematurity	1.7	0.4	1.1
Malagnancies	2.2	5.0	3.6
Old Age	8.2	7.5	7.9
Others	2.2	3.6	2.9
Unknown	24.2	20.6	22.5
Total	99.9	100	100

Death in children is an important indicator, not only to assess the current situation, but also to track the impact of interventions. The attributable causes of death in the under five children are in table 8.

Table 8. Causes of death in children under five years of age .

Cause of death	Percent
Pneumonia	21.0
Prematurity	5.7
Other diseases of the lung	6.7
Diarrhoea & dysentery	13.3
Hepatitis	1.9
Fevers	5.7
Infections	3.8
Swellings	1.0
Blood disorders	1.9
Accidents	2.8
Gastrointestinal Diseases	1.9
Tuberculosis	1.0
Others	2.8
Unknown	30.5
Total	100

The most notable aspect of the causes of deaths in under five children is the high proportion of children dying with respiratory infections. Even from the regular morbidity reports, the proportion of children suffering from respiratory infections is the leading morbid event reported from the health facilities. As above, again a large proportion of deaths still remain 'unknown.'

There were a total of 2347 live births and 143 infant deaths. The infant mortality rate, IMR, is 60.54 per 1000 live births. The IMR for males is 60.48 per 1000 live births and for females, 60.590 per 1000 live births. There is no marked difference between the sexes with regards to IMR.

The under five mortality rate, U5MR, is 84.05 per 1000 live births, and the sex specific U5MR are 84.40 per 1000 live births for males and, 83.68 per 1000 live births for females.

(j) Maternal mortality

The total number of maternal deaths found in this survey is 6. Therefore, the maternal mortality ratio, MMR, is 255.64 per 100,000 live births. Given the small numerator, inflating it by weighting, the MMR works out at 257.92 per 100,000 live births – hardly any difference.

The interpretation of MMR for Bhutan must be approached with caution. Given the small number of maternal deaths reported, the standard errors associated with the predicted maternal mortality ratios are very large and, therefore, such point estimates cannot be used to predict trends on a year to year basis⁶. Apart from the issue of small numerator, population based enquiries have the problem of simply omitting the events, particularly when it concerns sensitive issue such as maternal deaths.⁷ Since the total births reported in the entire country is around 20,000, to obtain a relatively good number of maternal deaths in a year, while conducting such as survey, is almost impossible.

Therefore, for Bhutan, the issue is not to focus on assessing MMR as an indicator, but to look at process indicators related to maternal and child health programs and to put in place a sensitive surveillance for maternal deaths and institute a mechanism to regularly audit the maternal deaths with a view to put in corrective interventions to reduce deaths rather than chase after a rate that is often meaningless.

(k) Antenatal and Delivery Care

One of key indicators relevant for maternal mortality reduction is that of trained birth attendance. This can be achieved either by increasing delivery in health facilities or increasing more outreach to assist deliveries at home by trained personnel. In Bhutan, the proportion of birth attended by a trained person was only 15.1% in 1994. However, by now this has risen to 23.66%, still a long way off from the target of all births to be attended by trained attendants.

Table 9. Distribution of place of delivery and attendance of trained person.

Place of delivery	Deliveries	
	1994	2000
Hospital	10.9	18.9
BHUs		0.9
Home	86.1	78.3
Others	3	1.9
Total	100	100

The place of delivery is still the home, 78.3%, followed by 18.9% in hospitals and BHUs, contributing only 0.9%. While the proportion of those that actually deliver at BHUs is so small, through the system of house calls, the 4.76% of the births delivered at home are attended by health workers from the BHUs.

In terms of the category of people attending delivery, it is interesting to note that mothers/mother-in-laws attended to 33.44% of the births, husbands 23.99%, other in-laws 11.1%, and Village Health Workers only 0.17%. Of course, in the present system, the VHWs are not trained to conduct deliveries.

If Bhutan is to ever reach the target of all births to be attended by trained personnel, the strategy needs to be reviewed. This is so as it is just simply not possible to have more health facilities or more health workers. And at the same time, targeting mothers/mother-in-laws and husbands is just simply not feasible. Therefore, the need to perhaps impart training in delivery to Village Health Workers may be further discussed. Of course, basic emergency support and hygiene practices can be taught to in-laws and husbands, but they cannot be trained to reach the level where they can be considered 'trained birth attendant'.

From the total number of women, 51% had attended at least one antenatal clinic. (Table 10)

Table 10. Percentage of women in ten-year age groups that attended ANC.

Age group	Number of ANCs attended					Total
	0*	1 st ANC	2 nd ANC	3 rd ANC	4+ ANC	
10-19	47.7	24.8	7.3	9.2	11.0	100
20-29	43.9	18.6	13.8	8.9	14.8	100
30-39	58.5	18.1	8.5	8.5	6.4	100
40-49	63.3	10.0	13.3	1.7	11.7	100
Total	49.0	18.6	11.8	8.3	4.9	100

*Did not attend any ANC.

However, this should not be directly interpreted as the proportion of the reach of antenatal services to pregnant women. This is so as women in earlier trimesters either do not yet realize that they are pregnant or that they may wait for the pregnancy to advance a little before they decide to seek antenatal care. And, therefore, a point estimate cannot truly

measure the proportion of women attending antenatal clinics. This fact is borne out when the antenatal attendance is tied to the period of gestation: 72% of the women in their third trimester had attended ANC, 46% in their second trimester attended ANC, and only 16% of those in the first trimester had attended ANC. Therefore, antenatal services need to enhance the knowledge among pregnant women about the need to start attending ANC as soon as they know that they are pregnant.

(l) Family Planning Knowledge and Practice

In terms of the reach of the population advocacy, it seems to be going well. Table 11 shows that 95% of the women have heard of family planning.

Table 11. Knowledge versus practice of FP by age groups.

Age group	Respondents in Percentage	
	Heard of FP	FP Users
10 -19	93.6	2.4
20 - 29	95.2	26.3
30- 39	96.3	53.9
40- 49	91.7	39.9
Total	95.0	30.7

However within the reproductive age group (15-49) years only 93.6% of the women have heard of family planning. But as is commonly known, knowledge does not always lead to action; the contraceptive prevalence is only 30.7%. Nevertheless, this is an improvement from 18.8% in 1994. The contraceptive use as practiced today is shown in table 12.

Table 12. Methods of contraception in use

Method of contraception	Percent
Vasectomy	44%
DMPA	19%
IUD	11%
Pills	11%
Tubectomy	10%
Condoms	4%

(m) Access to health care services

In 1997, prior to the start of the 8th FYP, through a rapid assessment it was ascertained that approximately 90% of the Bhutanese population had access to a service center, be it a static facility or an Outreach Clinic. In this survey, it was found that 78.2% of the villages have access to such a service within two hours walking distance, and 89.01%, within three hours. Only 3.7% of the villages are beyond six hours walking distance from a health service point.

(n) Rural Water Supply & Sanitation

Clean drinking water supply is an important component of the Primary Health Care. Following the transfer of Rural Water Supply Scheme from Public Works Division under the Ministry of Communication to Ministry of Health & Education in 1998, major initiatives were undertaken to increase the coverage of Rural Water Supply from 57% then. From this survey, it is now seen that overall coverage 77.8% of the sample households have access to safe drinking water. Safe drinking water is defined as water either from a piped or a protected spring source, available to the household within 50 m vertical height or 100 m horizontal distance. The urban access to safe drinking water is 97.5% and rural, 73.2%.

Similarly the promotion of safe excreta disposal is an important aspect of health promotion in the rural areas. From this survey, it is seen that 88.0% of the households reported having a latrine, but 1.5% reported as not actually using it.

(o) Breastfeeding practice

It is known that in Bhutan mothers introduce solid food and other feeds early to infants, whereas the ideal practice is to promote exclusive breastfeeding at least for the first four months. Since we had no data on the situation on exclusive breastfeeding, all women with children less than one year old were questioned about their feeding practices. It is observed that exclusive breastfeeding is practiced in 42% of the cases.

(p) Episodes of illness and health care seeking behavior

In total, 4 % of household members experienced one or more episodes of illness during the last month preceding the interview and 17 % of households were affected. This is in line with the findings from NHS1994. The vast majority of respondents were ill for 1-3 days only and the median duration of illness was 6 days. However, 9.6 % of respondents reported having been ill for one month or more.

The burden of illness is not distributed evenly across population groups, but is associated to a number of characteristics of the individual. Thus, the incidence of illness is found to be higher for

- females as opposed to males
- increasing age beyond 10-14 year olds
- widowed respondents, especially younger females
- respondents with no schooling
- housewives as opposed to other occupational groups
- Western and Eastern region
- Households with no latrines

At the same time the duration of illnesses is found to be longer for

- increasing age
- widowed males
- farmers

- rural residents
- increasing distance to health facility
- households without access to safe drinking water

(i) Health care seeking behavior

Health seeking pattern

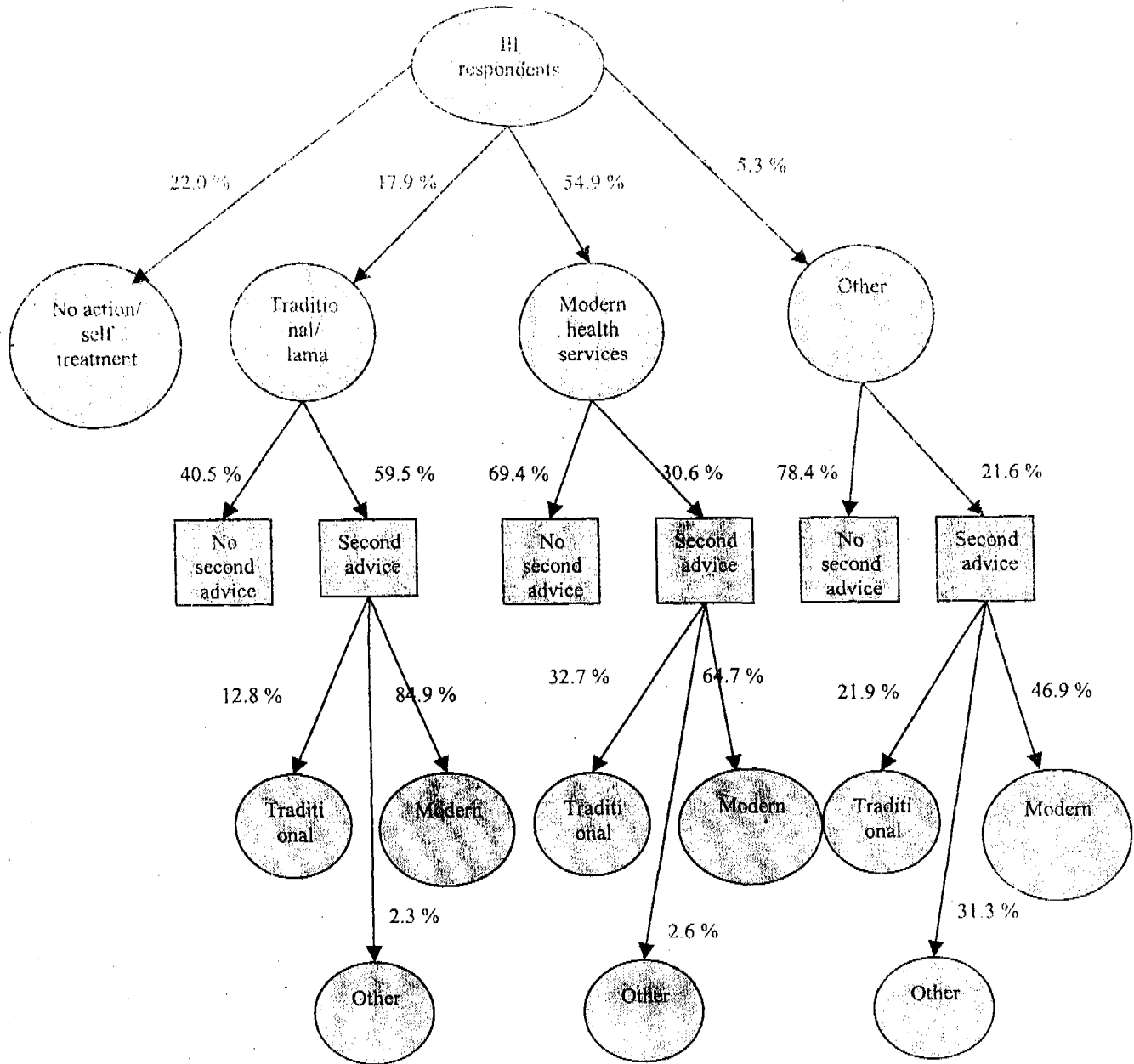
Among those who reported being ill during the last month preceding the interview 22 % reported that they had either done nothing at all (the majority) or had treated themselves. Thus, 78 % of respondents had sought advice from a third party and 31 % sought such advice at least twice. It appears that 65% of all those who were ill consulted the modern health services, (defined as VHW, BHU/ORC or hospital) at least once. Correspondingly, of the 78% of those ill who sought advice for their illness, 83 % consulted the modern health services at least once. From the diagram⁸, as well as from the comments regarding the motivation for seeking advice at first caregiver chosen, it appears that many adopt a health care seeking strategy that involves two sorts of advice at the same time. Thus, many of those patients who chose to seek first advice at a traditional practitioner or a lama, indicate that they needed some rituals to be performed before they could go to attend the modern health facility. This is reflected by the fact that 31 % of all who sought care went for traditional practitioner or a lama, whereas only 11 % made use only of these sources of advice. Of those who did seek some kind of advice 62 % made use of the modern health care system only.

Characteristics of those who do not seek care

There was no statistically significant difference in whether care was sought depending on gender, relationship to head of household, marital status, occupation and education.

Those who did seek some kind of advice tend to have shorter distance to the nearest modern health facility, but the association is not very clear, thus indicating that either distance is not very important or other sources of advice are available nearby. There was a statistically significant difference between the Regions⁹ with regard to whether care was sought. Thus, in the South 84 % and in the West 82 % of those ill sought advice as compared to 80 % in the Central and 75 % in the Eastern region. Similarly, there was a statistically significant difference in whether care was sought between rural and urban areas with 84 % of respondents in urban areas seeking care as compared to 80 % of respondents in rural areas. This is in line with findings elsewhere in the world, where people in rural areas seem to have a higher threshold for when they decide to seek care.

Chart 1. Health seeking behavior among ill respondents.



As could be expected the likelihood of seeking care depends on duration of illness as well as symptoms. The likelihood of having sought some kind of advice is thus statistically significantly higher with increasing length of illness experienced. Stomach pain, Swelling and Injuries statistically significantly more often resulted in respondents seeking advice, whereas Cough and Cold and Fever less frequently, although still in almost 4 out of 5 cases, resulted in advice sought.

Use of modern health services by characteristics of those ill

There is a slight tendency for males to use modern health services more often than females, but the difference is not statistically significant at conventional levels. Similarly and surprisingly no statistically significant difference was found between groups with different levels of education, although the likelihood that modern care is used tend to increase with increasing levels of education. Whether modern care was sought was not associated with the existence of a health facility within the village, but those who sought modern care had significantly shorter distance to the nearest health facility. The presence of a village health worker was statistically significantly related to whether modern health services were sought.

The finding that an increasing proportion of respondents use modern health facilities with increasing duration of illness is reassuring. Respondents suffering from symptoms like Stomach, Eye or Skin problems as well as Injuries were also more likely to seek modern health services than others. In particular, respondents with Body ache and Dental problems more often sought advice elsewhere.

The use of modern health services was statistically significantly different for different occupational groups. Thus, Monks/gomchens, Armed forces personnel and Housewives tended to use modern health services more often while Unemployed adults, Farmers and Others tended to use services less than average. However, this may be due rather to the proximity of an available health service facility rather than a real difference in the manner of making choices. Correspondingly, it was found that 76 % of urban respondents seeking care went for modern health services as compared to 64 % in the rural areas. The use of modern health services was also different between the four geographical regions. Thus, in the South and Central region 71 % of the ill respondents had made use of modern health services at least once, whereas for the West this proportion was 64 % and for the East 61%.

IX Recommendations

The following are recommended for future course of action related to such similar work.

(a) This kind of nation-wide surveys are difficult to conduct, expensive to fund and often yield conflicting results. Rather than focus on such surveys in future, perhaps, better surveillance and an improved health information system might yield equally adequate data. Further, establishment of special study centers (sentinel sites) to generate important health indicators as well as to track changes over time maybe a better way than to conduct nation-wide surveys. These can then be complemented with rapid assessments for specific indica-

tors of interest.

(b) Maternal mortality ratio estimates for Bhutan should only be a secondary exercise as it does not provide adequate input to guide activities related to maternal mortality reduction. Therefore, MMR may be approached with caution to be considered in the core group of indicators for tracking national development process. But process indicators for reproductive health services and surveillance for maternal deaths should become the mainstay of tracking efforts towards maternal mortality reduction. However, the survey estimate is necessary in the absence of other reliable sources of information for policy formulation.

(c) Research is needed to assess the determinants of respiratory infections, particularly in children. And the respiratory infections prevention program needs to review its strategies to ensure that its activities are really relevant in the reduction of both morbidity and mortality attributable to respiratory infections.

Annex II.

NATIONAL HEALTH SURVEY, 2000 INSTRUCTION MANUAL FOR SURVEY SUPERVISORS

BACKGROUND

The Royal Government has committed to both "Health For All" and "World for the Children Goal" by the year 2000 declarations to ensure basic health care for its citizens. Accordingly, the health Division of Royal Government of Bhutan has planned to carry out a nation wide Health Survey/Multiple Indicator Cluster Survey-2000 to estimate the current health indicators. For many others, the data are either absent or even older.

OBJECTIVE

The main objectives of the survey is to estimate the following health indicators such as infant mortality rate, infant mortality rate under 5, morbidity and treatment practices, immunization coverage, maternal health and family planning, infant feeding practices.

COVERAGE

The National Health Survey covered all the twenty Dzongkhags on a sample basis with an approximate of 13,000 households will be interviewed.

SAMPLE DESIGN

A stratified two-stage sampling is adopted for the survey. There are two primary strata-Urban and Rural. The primary and secondary sampling units are blocks for urban (towns) areas, and geogs for rural areas and households respectively.

a. Town areas.

Sample blocks are selected systematically from each town. The sample size is proportional to the total number of households in each town. Within each selected block, 20 households is selected.

b. Rural areas

Out of 2020 geogs, 100 sample geogs are selected by probability proportional to size where is the number of household in the geog. Within each selected geog, 105 households is selected.

SELECTION OF SECONDARY SAMPLING UNITS.

Households are the secondary sampling units. A new listing of household is to be made for every sample blocks and geogs to serve as the sampling frame. Once, the listing is completed, 10 household should be selected from each sample blocks and 105 households from each sample geogs by systematic sampling.

SAMPLE SIZE AND SAMPLING FRACTION

Type of areas	Total number blocks/geogs	Total sample blocks/geogs	Sample H/holds	Sampling fraction
Urban	736	250	2,500	1/9
Rural	202	100	10,500	1/8
Total			13,0000	1/8

MAP DRAWING

For three large towns such as Thimphu, Phuntsholing and Gelephu, you are asked to draw a sketch map of the town. It should be clear with roads and approximate number of houses and the road well indicated.

DEMARCATON OF BLOCKS

Once the map is completely drawn, divide the town into blocks. Using distinctive features like Dzong, Hospitals, Roads, Footpath and other physical features like River/stream, Trees etc. Each block should consist of approximately 25 to 30 households. Roads are good boundary for the blocks but other distinctive features can also be used like Dzong, Hospitals, building structures etc. For larger building e.g. Goal building in Phunstholing has about 50 units, then 2 blocks can be formed in that building. Similarly, if the flat has the required numbers of households i.e. 25 households or 30 households, then treat the flat as one block. If two adjacent flats together have the required numbers of households, serially as 01, 02, 03, ... etc. Once the block formation is completed then fill in the **BLOCK SAMPLE SELECTION FORM** with full description of **BLOCK**, **BLOCK NUMBER** and number of households.

HOUSEHOLD LISTING

For the entire block selected do the listing of the households. The listing should include the Bhutanese national residing in the enumeration area. While listing the households, see the definition of households. For the other towns, do the complete listing of the household in that town. When listing of the households a clear household identification (e.g. area located, house numbers etc. should be written on the household sample selected form.

SELECTION OF HOUSEHOLDS IN THE RURAL AREAS

Illustration

Let us take Thimphu Dzongkhag as an example.
 Total number of sample geogs =3
 Total number of sample households =315
 Selected geogs: Chang, kawang and Toepisa

Household listing for household selection

Geog : kawang
 Total households – 280
 Skip interval= $280/105 = 2.67$
 Random start should be 1 to $2.27 = 1.13$

Serial No.	Name of Villages	Serial No.	Name of H/ hold head
1.	Nashina	*1.	Dorji
		2.	Tshering
		3.	Dema
		4.	Penjor
		5.	
2.	Changchey	6.	Dawa
		*9.	Pema
9.	Pangkha	*148.	Wangmo
15.	Khame	*279.	Wangdi

For selection of households, first ask the Gup of the selected Geog to provide the total numbers of households in the geog. List down the names of the head of households with proper identification under the selected geog. The listing should also include the families of the government staff residing in the selected geog. Suppose, the total number of households in Kawang geog is 280 while listing and since the sample of 105 household per geog is to be selected, the procedure to find out the skip interval is $280/105=2.67$. Now take a three digit random number and treat last two digit as a decimal point. The random number you pick should be less than or equal to skip interval that is 2.67. if your random number is less than or equal to skip interval, then locate this number where it falls in the serial number of the households. In our example it falls in household serial number 1 which is our first sample household. Once, you have selected the first household, and then add the skip interval 2.67 to the random start 1.13 which comes to 3.8 and rounded to 4. Again you locate this number

in the household serial number. This time the household serial 4 is selected which is the second selected household. The procedure to select third, fourth, fifth households... till 105 sample households to be selected are shown in the above example. Round the figure if the decimal is more than or equal to 5. Once, you have given the asterisk mark for the selected household till the end of the households count these asterisk marks and the total should come to exactly 105 households. If not there is something wrong in the procedure. Re-do the exercise from the beginning till you get exactly 105 households. For the small geog which has less than or equal to 105 households in total, then there will be no household selection and interview the entire household.

SELECTION OF BLOCKS IN THE TOWN AREAS

Let us take paro town as an example.

Total number of blocks =15

Total number of sample blocks =6

Total number of sample households per block =10

Block Skip interval= $15/6 = 2.50$

Random start should be 1 to 2.50 =2.30

Serial No.	Name of Block	Procedure
1.	A	
*2.	B	2.30
3.	C	
4.	D	
*5.	E	$2.50+2.30=4.80$
.	.	.
.	.	.
.	.	.
*15	P	$2.50+12.30=14.80$

There should be 6 asterisk marks out of 15 blocks in Paro town.

CROSS CHECK: Total number of sample blocks =6

Total number of sample households per block =10

Total number of sample households in Paro town = $6 \times 10 = 60$

In the block selection, the first step you should do is that once you have formed the number of blocks with an approximately 25 to 30 households per block in the town, then write the name of the blocks with proper identification particulars as illustrated in the above example. After completing this exercise, than look at the serial number of the blocks, which is also the total number of block in the town. In the above example, the total number of blocks is 15. Now divide 15 by 6 (total number of sample blocks in the town)= 2.50. This number is the skip interval for the selection of the block. Now pick a three digit random number and treat

the last two digit as decimal place and see this number should be ≥ 1 and ≤ 2.50 . Suppose the random number you pick is 2.30. This number is called a random start. Now locate this number in the block serial number and see where it falls. In the above example, it falls under block serial number 2. Therefore, the first selected block is block 2. Selection of second, third, fourth, fifth etc. Should be done as in the above illustration. Every time, the skip interval is added to the previous sum. Make sure that when you add the previous sum the skip interval don't round the previous sum figure and add up. The addition should include decimal point. Rounding take place only after you locate the block serial number.

HOUSEHOLD SELECTION.

For household selection, the procedure is same as block selection. Suppose you take block 2. You know that during quick count of the households there were 26 households in block 2. But in the actual listing of the households, you found only 25 to 30 households. Now to find out the skip interval for household selection, the total households you should base in that block should be either 25 or 30 and not 26 from the quick counting.

EXAMPLE

Skip Interval = $25/10 = 2.5$ (1)

or

Skip Interval = $30/10 = 3$ (2)

For (1) Random start $\geq 1 \leq 2.5$

(2) Random start $\geq 1 \leq 3$

After this exercise, locate the random start figure in the household serial number and put asterisk marks. This is your first selected household. For selection of second, third, fourth, fifth.... etc. Households, follow the block selection procedure. Once, you have completed the selection, count the selected households, which should be exactly 10 households and if not, try again from the beginning for selection.

Note: 1). Be careful in the selection of blocks/households. Here skip interval and

random start is to work out by you in the field. The random number is provided to you.

2). Skip interval is the total number of the households in the selected blocks/geog divided by 10 or 105 respectively. Make sure that you are taking 10 and 105 households for urban and rural respectively. Take Always two decimal places if the total households are not exactly divisible by 10 and 105.

3). Random start which is the random number you pick from the random table should lie between ≥ 1 and \leq to the skip interval if the skip is an integer. If the skip is in decimal place, then skip interval lie between $\geq 0.1 \leq$ to the skip interval. The number of random digit depend upon the digit in the block/household total number.

SELECTED GEOG AND CODE FOR NATIONAL HEALTH SURVEY, 2000

Sl. No	Name of Dzongkhag	Tcode	Name of Town	Gcode	Selected geog
1	Chukha	1100	Chimakoti	1101	Bango
				1103	Chapchha
				1106	Geling
		1110	Phuntsholing	1111	Bhalujhora
				1112	Dala
				1114	P / ling
2	Haa	1200	Haa	1201	Bji
				1203	Sama
3	Paro	1300	Paro	1303	Dopshari
				1305	Lamgong
				1307	Naja
				1309	Tshento
4	Thimphu	1400	Thimphu	1402	Chang
				1405	Kawang
				1407	Toepisa
5	Punakha	1500	Punakha	1502	Chhubu
				1506	Lingmukha
				1507	Shenga
				1510	Dzoma
6	Gasa	1600	Gasa	1604	Lunana
7	Wangduephodrang	1700	Wangdue	1702	Bjena
				1705	Gangte
				1710	Nyisho
				1713	Ruepisa
				1715	Thedtshp
8	Bumthang	2100	Bumthang	2101	Chhoekor
				2103	Tang
9	Trongsa	2200	Trongsa	2202	Korphu
				2204	Nubi
10	Zhemgang	2300	Zhemgang	2302	Nangkor
				2304	Trong
				2313	Goshing
11	Lhuntse	3100	Lhuntse	3101	Gangzur

National Health Survey, 2000

12	Mongar	3200	Mongar	3103	Khoma
				3105	Membi
				3108	Tshenkhar
				3202	Chaskhar
				3203	Dramtse tshogom
				3204	Dramtse tshoyom
				3208	Khangkhar
				3209	Mongar
				3211	Selang
				3212	Sherimuhung
13	Trashigang	3300	Trashigang	3214	Tharong
				3215	Tsakaling
				3301	Bartsham
				3302	Bidung
				3304	Phongme
				3305	Radi
				3306	Samkar
				3308	Udoeong
				3309	Yangyer
				3311	Mera
14	Yangtse	3400	yangtse	3321	Khaling
				3322	Lumang
				3331	Kangpara
				3332	Thrimshing
				3420	Jamkhar
				3403	Khamdang
				3404	Ramjar
				3405	Toetsho
15	Pemagatshel	3500	Pemagatshel	3406	Tomizhangtshen
				3408	Yalang
				3503	Dungme
				3504	Khar
				3505	Shumar
				3506	Yurung
16	S/Jongkhar	3600	S/Jongkhar	3601	Gomdar
				3602	Orong
				3611	Dechhenling
				3621	Hastinapur
				3623	Louri
				3631	Bakuli
				3633	Martshala

National Health Survey, 2000

17	Samtse	4100	Samtse	4101 4103 4105 4106 4107 4112 4113 4121 4122 4124	Charghare Gumaune Pagli Samtse Tading Dorokha Dumtse Bangra Biru Sipsu
18	Sarpang	4200 4210	Sarpang Gelephu	4201 4203 4211 4215 4217 4223	Doban Leopani Bhur Serzhong Taklai Nichula
19	Tsirang	4300	Tsirang	4301 4306 4309 4312	Beteni Kikhoorthang Phumtenchhu Tsimag Dangra
20	Dagana	4400	Dagana	4401 4402 4405 4413	Drugyelgang Kalizingkhar (kana) Tsangkha Gozhi

**DISTRIBUTION OF SAMPLE BLOCKS/GEOGS AND HOUSEHOLDS
UNDER EACH DZONGKHAG FOR THE NATIONAL HEALTH SURVEY,
2000**

Sl.	Dzongkhag	Sample blocks	Sample h'holds	Sample Geogs	Sample of h'holds	Total h'holds
1	Thimphu	101	1010	3	315	1325
2	a) Chukha	10	100	6	630	730
	b) P/ ling	36	360	0	0	360
3	Ha	4	40	2	210	250
4	Paro	6	60	4	420	480
5	Samtse	7	70	10	1050	1120
6	Tsirang	3	30	4	420	450
7	Dagana	2	20	4	420	440
8	Punakha	11	110	4	420	530
9	Gasa	2	20	1	105	125
10	Wangdue	10	100	5	525	625
11	Bumthang	2	20	2	210	230
12	a) Sparang	4	40	6	630	670
	b) Gelephu	19	190	0	0	190
13	Zhemgang	3	30	3	315	345
14	Trongsa	2	20	2	210	230
15	Lhunste	2	20	4	420	440
16	Mongar	5	50	9	945	995
17	P/ gatshel	3	30	4	420	450
18	S/Jongkahr	11	110	7	840	950
19	Trashigang	5	50	12	1365	1415
20	Yangtse	2	20	6	630	650
Total		250	2500	98	10500	13000

NATIONAL HEALTH SURVEY, 2000: WEIGHTING SCHEME

Weights for Urban areas: The weight, denoted by $W_{(u)jk}$ is the reciprocal of the probability, as follows:

$$W_{(u)jk} = \left(\frac{M_k}{m_k} \right) \times \left(\frac{N_{jk}}{10} \right). \text{ Where}$$

M_k is the total number of blocks in the k th town.

m_k is the number of sample blocks selected in the k th town.

N_{jk} is the total numbers of households in the j th sample block of the town

10 is the total number of households in the j th sample block of the k th town.

Note that the probability and its corresponding weight is different for every sample block. This means there will be 250 separate weights to calculate and apply at the estimation stage for the urban stratum, one for each urban block selected. In applying the weights, all sample households in a given sample receive the same weight as do all sample persons in those households.

Weights for rural areas:

$$\text{Weight} = \frac{1}{f} \times \frac{n + m + p + r}{n} \text{ where}$$

f is the overall sample fraction in rural areas.

n is the number of households completed the forms.

m is the number of households not at home.

p is the number of households who were not able to answer.

r is the number of households who refuse to answer.

The weight is self weighting and only one weight is use for all geogs.

¹ WHO/UNICEF; International Conference on Primary Health Care, Alma Ata. 1978

- ² **Health Division, RGOB**; Report on National Health Survey, June 1994
- ³ **Ministry of Planning, RGOB**; Eighth Five Year Plan (1997/2002), Vol 1, Main Document
- ⁴ **S.K. Lwanga & S. Lemeshow**, Sample Size Determination in Health Studies: A Practical Manual: WHO, Geneva, 1991
- ⁵ **Ministry of Planning, RGOB**; Population projection of Bhutan: total and sectoral implications of population growth on the economy and strategies to achieve desired demographic goal, March 1996
- ⁶ WHO/UNICEF; Revised 1990 Estimates of Maternal Mortality, A new approach, April 1996
- ⁷ WHO/UNICEF/UNFPA; Americas Region Consultation on Maternal Mortality Estimates. Washington, D.C. 20 – 22 April 1998
- ⁸ See Annexure I
- ⁹ *Four zones determined by different climatic and cultural differences were defined, i.e. an Eastern region (Lhuntse, Mongar, Trashigang, Trashiyangtse and Pemagatshel); a Central region (Bumthang, Trongsa, Zhemgang, Dagana and Tsirang); a Western region (Haa, Paro, Thimphu, Punakha, Gasa and Wangdue); and finally, a Southern region (S/Jongkar, Sarpang, Chukha and Samtse).*

ANNEX 1: Data collection Schedules

SCHEDULE A: VILLAGE FOLDER

Dzongkhag.....
 G1 Geog code.....[][]
 V1 Size.....[][]

Var	Items Please tick in appropriate box for each item[]	Code For coder's use
V3	Does the village have health care facility? 1 [] yes 2 [] no If yes V6	[]
V4	If no, what is the nearest health care facility? 1 [] Hospital 2[] BHU 3 [] ORC	[]
V5	What is the time needed to reach this facility by foot? [][]hr [][]min	[][][][]
V6	Does the village have an active VHW? 1 [] Yes 2 [] No	[]

Supervisor:.....Signature:.....

Date Surveyed:.....

SCHEDULE B: HOUSE-HOLD MEMBER FOLDER

Dzongkhag.....
 G1 Geog/Town Code....[III]
 G2 Size Geog/Town.....[III]
 V2 Sample village/block code[I I]
 HH1 House-hold Sr No.[I I]

Subj ID HM1	Name	Sex HM M-1 F-2	Age* HM3	Tick for Schedules D and E**	R'ship with Head of HH HM4 1-Head 2-Spouse 3-Son/daughter 4-Father/ mother 5-Brother/ sister 6-Other relative 7-Non-relative	Marital Status hm5 1-single 2-Married 3-Separated 4-Divorced 5-Widowed	Occupation HM6 01-Child (non student) 02-sTudent 03-Monk/Gomchen 04-Govt. Services 05-Armed Forces 06-Business 07-Farmer 08-Housewife 09-Unemployed adult 10-Other (specify)	Primary school enrolment (6-12 yr) HM7 1-yes 2-no 9- Not relevent	Level of educa. HM8 01-Comp class 1 02-Comp class 2 03-Comp class 3 04-Comp class 4 05-Comp class 5 and so on, 00-Other(non-formal) edu)*** 99-Children< 6
01		[]	[I]		[]	[]	[]	[]	[]
02		[]	[]		[]	[]	[]	[]	[]
03		[]	[]		[]	[]	[]	[]	[]
04		[]	[]		[]	[]	[]	[]	[]
05		[]	[]		[]	[]	[]	[]	[]
06		[]	[]		[]	[]	[]	[]	[]
07		[]	[]		[]	[]	[]	[]	[]
08		[]	[]		[]	[]	[]	[]	[]
09		[]	[]		[]	[]	[]	[]	[]
10		[]	[]		[]	[]	[]	[]	[]
11		[]	[]		[]	[]	[]	[]	[]
12		[]	[]		[]	[]	[]	[]	[]
13		[]	[]		[]	[]	[]	[]	[]
14		[]	[]		[]	[]	[]	[]	[]
15		[]	[]		[]	[]	[]	[]	[]

• Enter age in completed years if >=1 year, in completed months if > month but < 1 year, and in completed day if < 1 month.
 ** For each woman in reproductive age (15-49), please enter tick mark in the column and completed Schedules D and E.
 *** Other, non-formal means anyone that can read and write in any languages, but has not gone to a formal education institute; this also excludes gomchens/ monks as they are already listed under "Occupation."

SCHEDULE C: HOUSE-HOLD FOLDER

Dzongkhag
 G1 Geog/Town code..... [I I]
 G2 Size of Geog/Town.....[I I]
 V2 Sample village/block code.....[I I]
 HH1 House-hold Sr No [I I]

Variable	Items Please tick in appropriate box for each item []	Code For coder's use
HH2	Does the household have a latrine and use it? 0 [] None 1 [] Yes and use 2 [] yes but not use	[]
HH3	Does the household have an access to safe water? 1 [] Yes 2 [] No	[]
HH4	How many episodes of illness (es) among household member(s) have there been during the past 1-month? [I] If one or more episode, Please complete Schedule F : (HSB)	[I]
HH5	How many deaths among household member (s) have there been during the past 1-year (17 th to Feb 1999 to 6 th of Feb 2000?) [I] If one or more death, Please complete Schedule G : Mortality.	[I]

SCHEDULE D: CONTRACEPTIVE USE AND FEEDING PRACTICE OF BABY

Dzongkhag
 G1 Geog/Town code.....[| | |]
 G2 Size of Geog/Town.....[| | |]
 V2 Sample village/block code.....[| |]
 HH1 House-hold Sr No. [| |]
 HM1 Sr No. of individual.....[|]

Variable	Item	Code To be filled in by coder.
CP1	Are you currently pregnant? Tick [] 1[]yes 2[]No 3[] Don't know if 2 or 3 CP4	[]
CP1	How many weeks of gestation period? [] weeks	[]
CP2	How many ANC clinics attended during this pregnancy? [] if 00- CP4	[]
CP3	How many weeks you were at the time of first ANC? []	[]
CP4	How many times have you been pregnant in the past (excluding current pregnancy if you have one) []	[]
CP5	Do you want to have more children? Tick [] 1[]Yes 2[] No	[]
CP6	Have you ever heard of family planning? Tick [] 1[]Yes 2[] No 3[] Don't know	[]
CP7	Are you currently using any family planning method, and if so which? Tick [] 0[]No 1[]Pills 2[]Condoms 3[] DMPA inj. 4[]IUD 5[]Sterilized 6[]Vasectomy 7[] Other (Specify).....	[]
CP8	Do you have a baby less than 1 year? 1[] yes 2[] no If no, end of the schedule	[]
CP9	If yes, what is the sex of the baby? 1[] Male 2[]Female	[]
CP10	If yes, how old is the baby? []days [] months	[]days [] months
CP11	What kind of feeding for the baby during first 4 months of life? 1[] Exclusive BF 2[] Mixed feeding	[]
CP12	If mixed feeding, at what age of the baby was this introduced? 1=1mo2=2mos 3=3mos 4= 4 mos []	[]

SCHEDULE E: PAST PREGNANCIES FOLDER

Dzongkhag [I I I]
 G1 Geog /Town code [I I I]
 G2 Size of Geog/Town..... [I I I]
 V2 Sample village/block code..... [I I I]
 HF-1 House-hold Sr No. [I I I]
 HM1 Sr No. of individual [I I I]

Pregnancy No.	Outcome P2 1=Abort 2=Still 3=Live	Where did the event take place? P3 1=hospital 2=BHU 3=home 4=field/forest 5=on route 6=animal shed 7=other	Attended by whom? P4 1=doctor 2=nurse/nurse mw 3=other HW 4=VHW 5=husband 6=mother/inlaw 7=other relative 8=neighbor 9=other(specify) 10=self	Type of delivery. P5 1=normal 2=forceps or vacuum 3=LSCS 4=destructive 5=other	Month & Yr of event P6 (Calendar month & Calendar year) [I] mo [I I I] yr	If pregnancy resulted in a live birth:				
						Sex P7 1=male 2=female	If living: Age P8 [I] yr [I] mo [I] d	If dead: Age at dth P9 [I] yr [I] mo [I] d	If dead: Mo/yr of death P10 (Calendar month & Calendar year) [I] mo [I I I] yr	If dead where? P11 1=home 2=hosp 3=other (specify)
	[]	[]	[] [] []	[]	[I] mo [I I I] yr	[]	[I] yr [I] mo [I] d	[I] yr [I] mo [I] d	[I] mo [I I I] yr	[]
	[]	[]	[] [] []	[]	[I] mo [I I I] yr	[]	[I] yr [I] mo [I] d	[I] yr [I] mo [I] d	[I] mo [I I I] yr	[]
	[]	[]	[] [] []	[]	[I] mo [I I I] yr	[]	[I] yr [I] mo [I] d	[I] yr [I] mo [I] d	[I] mo [I I I] yr	[]
	[]	[]	[] [] []	[]	[I] mo [I I I] yr	[]	[I] yr [I] mo [I] d	[I] yr [I] mo [I] d	[I] mo [I I I] yr	[]
	[]	[]	[] [] []	[]	[I] mo [I I I] yr	[]	[I] yr [I] mo [I] d	[I] yr [I] mo [I] d	[I] mo [I I I] yr	[]
	[]	[]	[] [] []	[]	[I] mo [I I I] yr	[]	[I] yr [I] mo [I] d	[I] yr [I] mo [I] d	[I] mo [I I I] yr	[]
	[]	[]	[] [] []	[]	[I] mo [I I I] yr	[]	[I] yr [I] mo [I] d	[I] yr [I] mo [I] d	[I] mo [I I I] yr	[]
	[]	[]	[] [] []	[]	[I] mo [I I I] yr	[]	[I] yr [I] mo [I] d	[I] yr [I] mo [I] d	[I] mo [I I I] yr	[]
	[]	[]	[] [] []	[]	[I] mo [I I I] yr	[]	[I] yr [I] mo [I] d	[I] yr [I] mo [I] d	[I] mo [I I I] yr	[]
	[]	[]	[] [] []	[]	[I] mo [I I I] yr	[]	[I] yr [I] mo [I] d	[I] yr [I] mo [I] d	[I] mo [I I I] yr	[]
	[]	[]	[] [] []	[]	[I] mo [I I I] yr	[]	[I] yr [I] mo [I] d	[I] yr [I] mo [I] d	[I] mo [I I I] yr	[]

Please specify other (if any) for P3, P4, P5, and P11 in the space below also giving the specific P1 code.

SCHEDULE: HEALTH CARE SEEKING BEHAVIOR FOLDER

Dzongkhag.....
 G1 Geog /Town code.....[I I I]
 G2 Size of Geog/Town.....[I I I]
 V2s sample village/block code...[I I]
 HH1 Household Sr No. [I I]

HH member HM1	HS1 Open-ended question Record the most prominent symptoms as reported by the respondent. will be coded later.	How many days were you ill HS2	Where did you first seek advice / care ? HS3 1= none 2= self 3= traditional 4= LAMA 5= VHW 6= BHU / ORC 7= Hospital 8= Other (specify)	Did you seek second advice / care ? If so where ? HS4 0= no second care 1= traditional 2= LAMA 3= VHW 4= BHU / ORC 5= Hospital 6= Other (specify)	Who made decision to seek first care ? HS5 1= self 2= head of HH 3= spouse of head 4= grand parents 5= other relative 6= other (specify)	Why do you choose this particular caregiver open ended question. Answer will be narrative and to be coded before data entry.e HS6
[I]		[I I]	[]	[]	[]	
[I]		[I I]	[]	[]	[]	
[I]		[I I]	[]	[]	[]	
[I]		[I I]	[]	[]	[]	
[I]		[I I]	[]	[]	[]	
[I]		[I I]	[]	[]	[]	

Please specify other (if any) for HS3, HS4, and HS5 in the space below also giving the specific HM1 code.

SCHEDULE MORBIDITY DEATH

Please note that this Schedule refers to deaths that have occurred only within the last ONE YEAR of the Recall Period, i.e. 17th Feb'99-6th Feb 2000

Dzongkhag.....
 G1 Geog/Town Code..... [] [] [] []
 G2 Size of Geog/Town..... [] [] [] []
 V2 Sample village/block code. [] [] [] []
 HH1 House-hold Sr No. [] [] [] []

M1 Sr. No.	Name	Sex M2 1=male 2=female	Age at death M3 [] [] yr [] [] mo [] [] d	Place of death M4 1=hospital 2=BHU 3=home 4=field/forest 5=on route 6=animal shed 7=other	M5 If the deceased was a female in reproductive age was the death related to pregnancy or childbirth ? 1=yes 2=no	Cause of death if known, or symptoms prior to death. Open-ended question. Answer to be coded before data entry.
		[]	[] [] yr [] [] mo [] [] d	[]	[]	
		[]	[] [] yr [] [] mo [] [] d	[]	[]	
		[]	[] [] yr [] [] mo [] [] d	[]	[]	
		[]	[] [] yr [] [] mo [] [] d	[]	[]	
		[]	[] [] yr [] [] mo [] [] d	[]	[]	

The following space or reversed page may be used for specifying other for M4 and M5. Please state appropriate M1 code.