



GOVERNMENT OF MAHARASHTRA

A REPORT ON
‘MORBIDITY AND HEALTH CARE’
BASED ON DATA COLLECTED IN STATE SAMPLE OF
60Th ROUND OF NATIONAL SAMPLE SURVEY
(JANUARY, 2004 – JUNE, 2004)

VOL.I

Directorate of Economics and Statistics, Planning Department,
Government of Maharashtra,
Mumbai

PREFACE

The Directorate of Economics and Statistics has prepared the report on 'Morbidity and health care' based on the data of state sample collected in the 60th round of National Sample Survey.

2. Vol. I of the report contains important findings of the survey in 'executive summary' while detailed results are given in 'findings of the survey'. Estimation procedure, concepts and definitions and some statistical tables are given in Vol. II, which is available on the website "<http://mahades.maharashtra.gov.in>" along with detailed tables.

3. I hope the results of this survey will be useful to senior officers of the Government involved in policy framing, researchers, economists and academicians.

Mumbai:
Date:

Director of Economics and Statistics,
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Chapter – One

EXECUTIVE SUMMMARY

Background

1. Health care is a basic need of any human being. In fact, human development is largely dependent on improvement in health indicators of the population. Utilisation of curative health care services, morbidity profile of the population, hospitalisation and non-hospitalised treatment of different ailments are few of the important aspects of health care. It is important to study the current pattern of morbidity, curative health care, hospitalised/non-hospitalised treatment of ailments and private expenditure incurred on treatment of ailments by the households residing in the state. In order to study this, a household survey on 'Morbidity and Health Care' was conducted in the 60th round of NSS during January-June, 2004.

Findings:-

2. **Awareness about use of drinking water:** As per the findings of the survey, 49.6 per cent of the households treated water before drinking, while this proportion was higher (62.1 per cent) in the urban areas.

3. The traditional method of cloth screening was widely followed in both the rural (82.7 per cent) and urban areas (57.5 per cent) for cleaning the drinking water. The most scientific treatment of water using ultra violet/ resin method was used only by 1.2 per cent and 2.5 per cent of households in rural and urban areas respectively.

4. **Health consciousness:** The proportion of persons reporting ailment during last 15 days prior to the date of survey in rural areas has increased from 2.1 percent in June 1996 to 3.3 per cent in June 2004. Similarly, for urban areas it has risen from 2.8 per cent in June 1996 to 5.2 per cent in June 2004.

5. The proportion of persons reporting commencement of any ailment during last 15 days prior to the date of survey in the rural areas was 1.5 per cent and in the urban areas it was 2.6 per cent which was 0.8 per cent and 1.4 per cent respectively during July 95-June 96.

6. Almost 92 per cent of spell of ailments were reported to be treated during last 15 days in both the rural and urban areas. The reason quoted for most of the untreated spells of ailments were 'ailment not considered serious', 'financial problem' and 'long waiting'. In the rural areas around 9 per cent of the spells of ailment remained untreated due to lack of faith, in spite of availability of medical facility. Around 5 per cent spells of ailment in the rural areas were found to be untreated due to non-availability of medical facility.

7. The proportions of treatments taken in government institutions were 19.1 per cent and 14.8 per cent for rural and urban areas respectively. Though these were far lower than the proportions of treatments in private institutions, comparing the figures with previous survey conducted in 1995-96, which were 13.3 and 8.0 respectively for rural and urban areas, show that gradually more people are using the government facilities.

8. Average medical expenditure per hospitalisation case has considerably increased from 1995-96 to 2004 and is more than double that during 1995-96. The average medical expenditure per hospitalization was Rs. 8821 for male as against Rs.7205 for females in the State during 2004, which were Rs. 4135 and Rs. 3199 for males and females respectively during 1995-96.

9. Other important findings of the survey are:

i) Immunisation and Maternity Health Care

- 97 per cent of children (0-4 years) received immunisation.
- Average expenditure per child (0-4 years) on immunisation was Rs. 27 in the rural areas and Rs. 165 in the urban areas.
- Average expenditure on child-birth was Rs. 1435.
- 87 per cent pregnant women in the rural areas received ante-natal care as against 90 per cent in the urban areas.
- 73 per cent and 78 per cent pregnant women received post-natal care in the rural and urban area respectively.
- Average expenditure on ante-natal care was about Rs. 250 while that on post-natal care was about Rs. 150.

ii) Health Care of the Aged

- Proportion of aged persons in the rural areas was 8.2 per cent and that in urban areas was 6.3 per cent as per the survey results during January-June 2004, which has increased by 2 percentage points, compared to the earlier survey during 1995-96.
- Sex ratio among aged persons was 984 as per the survey results as against 1104 as per the census 2001 data.
- 31 per cent aged persons in rural area and 54 per cent in urban area are found to be fully economically dependent on others.
- Economic dependency on others is more pronounced in case of females than males in both the areas.
- About 9 per cent of aged persons were either confined to their home or bed.

Survey Recommendations

10. The following recommendations emerge from the survey.

- (i) Though, in general, the awareness about importance of using clean/treated water for drinking purposes has increased, a large percentage of population still drinks untreated water (Rural 50.4 per cent and Urban 37.9 per cent) and thus faces the risks from water-borne diseases. More efforts for increasing awareness as well as providing clean drinking water to the masses need to be made.
- (ii) In rural areas, more medical facilities need to be provided, so that no cases of illness go untreated for lack of facilities.
- (iii) Awareness campaigns on importance of ante-natal and post-natal care need to be implemented.

Chapter - Two

SUMMARY OF FINDINGS

Introduction

2.1 To know the status of health of population, the facilities provided and utilized, health services including mass immunisation and family welfare programmes and other aspects of health care, the NSSO carried out surveys in July 1980 - June 1981 (35th round), July 1986 - June 1987 (42nd round) and July 1995 - June 1996 (52nd round).

2.2 After a gap of about nine years, the Governing Council decided to take up a survey on 'Morbidity and Health care' at the request of Ministry of Health and Family Welfare, during the period January to June, 2004.

About the survey

2.3 The present report is based on the enquiry on morbidity and health care conducted in the 60th round (January - June 2004) of the NSSO. The enquiry covered the curative aspects of the general health care system in India and also the utilisation of health care services provided by the public and private sector, together with the expenditure incurred by the households for availing the services. This report presents the results of the survey relating to all these aspects viz., the utilisation of the curative health care services, morbidity profile of the population, hospitalised and non-hospitalised treatment of ailments together with the estimates of expenditure incurred for treatment of ailments. In addition, results on problems of the aged persons are also provided separately in the report.

The survey covered 2666 households in 268 villages and 4073 households in 408 urban blocks.

Results of survey

2.4 As per the survey estimates during January to June 2004, about 9.24 crore people lived in 1.98 crore households in Maharashtra. About 59 per cent of the households belonged to rural areas and accounted for nearly 61 per cent of total population. A household consisted, on an average of 4.8 persons in rural areas and 4.4 persons in the urban areas. The rural and urban population had 944 and 900 females respectively per 1000 males, which were 960 and 873 for rural and urban areas respectively during the 2001 population census.

2.5 Household income, or for that matter 'level of living' is highly related with the 'general health' of the household members as well as to some extent with 'medical care' received by them. Thus, information on household income acts as the background information for a correlative study on morbidity and health care. As it is difficult to collect reliable income data, the NSSO collects data on consumption expenditure in its surveys.

2.6 In rural area, majority (45.6 per cent) households belonged to the middle MPCE class while in urban area majority (51.4 per cent) belonged to the upper MPCE class.

Table 2.1
Percentage distribution of households by percentile groups of MPCE.

Rural		Urban	
Percentile Group	Percentage of households	Percentile Group	Percentage of households
Lower 30%	23.4	Lower 30%	11.9
Middle 40%	45.6	Middle 40%	36.7
Upper 30%	31.2	Upper 30%	51.4
All	100.0	All	100.0

2.7 Structure of the dwelling not only reflects the living condition of the households and its members but also has a bearing on the health of the members of the households. The ST population has the lowest proportion residing in pucca houses in both rural and urban areas, indicating that this social group is economically most backward.

Table 2.2
Percentage distribution of households by structure of dwelling for each social group

Type of structure	Social group of Household				
	ST	SC	OBC	Others	Total
Rural					
Pucca	32.6	43.5	46.0	68.1	52.1
Semi-pucca	35.8	39.3	43.9	28.5	36.4
Katcha	31.6	17.2	10.1	3.4	11.5
All	100.0	100.0	100.0	100.0	100.0
Urban					
Pucca	67.3	74.1	75.4	85.0	81.4
Semi-pucca	27.8	20.9	16.8	13.5	15.8
Katcha	4.9	5.0	5.8	1.5	2.8
All	100.0	100.0	100.0	100.0	100.0

2.8 The quality of dwelling structure is associated with the level of living of households. It is seen that in rural areas 52 per cent households while in urban areas as many as 81 per cent households lived in pucca houses.

Table 2.3
Percentage distribution of households by structure of dwelling

MPCE	Type of structure			
	Pucca	Semi-pucca	Katcha	Total
Rural				
Lower 30%	39.0	39.9	21.1	100.0
Middle 40%	48.4	39.9	11.7	100.0
Upper 30%	67.4	28.6	4.0	100.0
All	52.1	36.4	11.5	100.0
Urban				
Lower 30%	58.3	30.9	10.8	100.0
Middle 40%	78.0	18.8	3.2	100.0
Upper 30%	89.2	10.2	0.6	100.0
All	81.4	15.8	2.8	100.0

2.9 The water collected by a household for drinking is sometimes not consumed directly but is consumed only after some cleaning/treatment. Cleaning/treatment of water before drinking is a good indicator of health awareness. It is seen from the table that more households (62 per cent) in urban areas reported cleaning of water before drinking compared to the rural areas (50 per cent) indicating higher level of awareness about the water-borne diseases. The proportion is appreciably higher among the households that received their drinking water from tankers.

Table 2.4
Percentage of households treating water before drinking for each source of drinking water

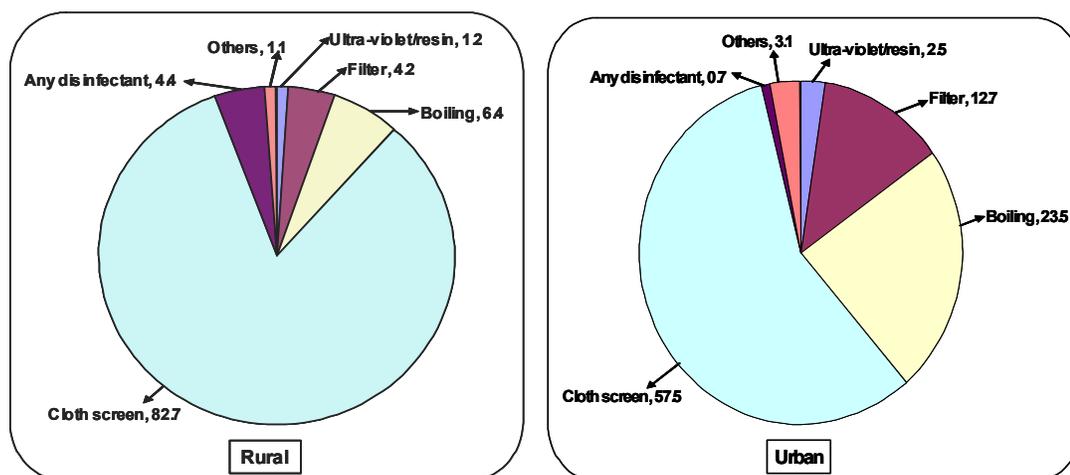
Major source of drinking water	Rural	Urban
Tap	56.0	62.6
Tubewell/hand pump	34.9	45.9
Tankers	51.3	94.4
Pucca well	52.3	63.4
Tank/pond reserved for drinking	21.8	0.0
River/canal	57.5	0.0
Others	0.0	100.0
All	49.6	62.1

2.10 Information on the method usually adopted by households for treating water was collected for those households, which treated water before drinking. A list of methods used for treatment was specified. About 83 per cent in the rural areas and nearly 58 per cent in the urban areas used the traditional method of 'cloth screen'. The most scientific method of ultraviolet/resin among the specified methods was adopted by only 2.5 per cent in the urban areas and 1.2 per cent in the rural areas.

Table 2.5
Percentage distribution of households that treated water before drinking by type of treatment

Treatment of water before drinking	Rural	Urban
Ultra-violet/resin	1.2	2.5
Filter	4.2	12.7
Boiling	6.4	23.5
Cloth screen	82.7	57.5
Any disinfectant	4.4	0.7
Others	1.1	3.1
Total	100.0	100.0

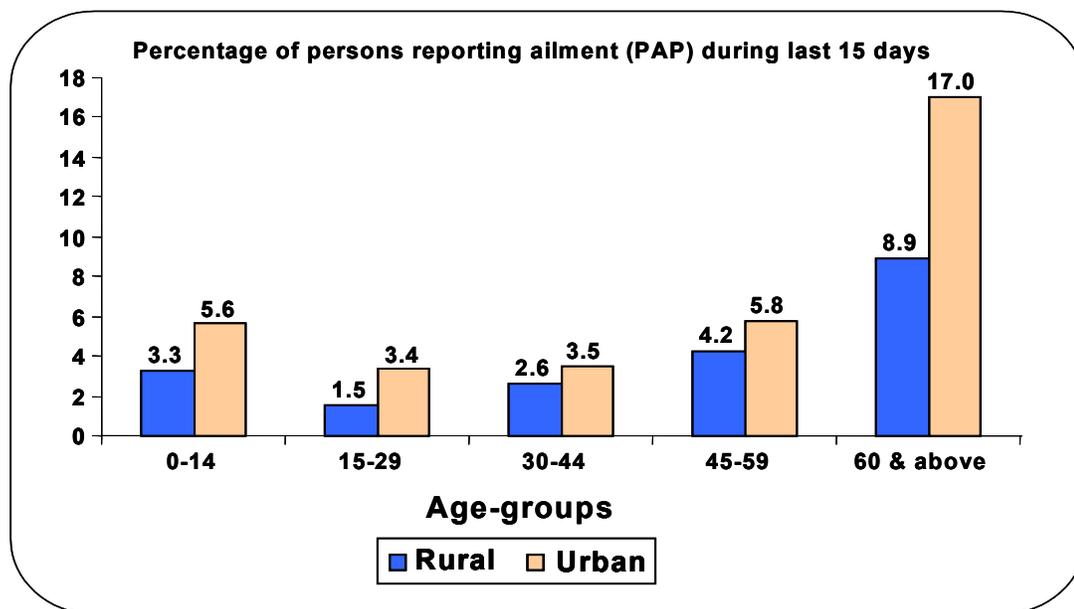
Type of pre-use treatment to drinking water



2.11 In order to study the health status of the population, for the purpose of the survey, proportion of ailing persons (PAP) was measured as the number of persons reporting ailment during a 15-day period for some broad age groups. As expected, the PAPs are found to be highest for the age groups of 60 & above, the lowest being for the youth (age group 15-29 years). The proportion was as high as 11.6 per cent for the aged persons of age 60 years and above for the state, which was even higher at 17 for the urban areas. The overall PAP was higher for urban area than rural.

Table 2.6
Percentage of persons reporting ailment (PAP) during last 15 days

Broad age-group	Rural			Urban			State		
	Male	Female	Person	Male	Female	Person	Male	Female	Person
0-14	3.5	2.9	3.3	6.0	5.1	5.6	4.4	3.7	4.1
15-29	1.5	1.6	1.5	2.4	4.4	3.4	1.9	2.8	2.3
30-44	2.0	3.2	2.6	2.2	5.1	3.5	2.1	3.9	3.0
45-59	4.0	4.5	4.2	5.3	6.4	5.8	4.5	5.2	4.8
60 & above	8.0	9.9	8.9	17.5	16.5	17.0	11.1	12.1	11.6
All	3.1	3.5	3.3	4.7	5.8	5.2	3.7	4.4	4.0



2.12 The relationship between the level of living measured by monthly per capita consumer expenditure (MPCE) and the PAP is shown in table 7, which clearly indicates for almost all classes of MPCE, that the PAP is higher in urban areas than rural areas.

Table 2.7
MPCE class wise proportion of ailing persons

Rural		Urban	
MPCE class	PAP	MPCE class	PAP
< 225	3.2	< 300	6.6
225-255	0.9	300-350	4.7
255-300	1.8	350-425	3.9
300-340	4.1	425-500	2.7
340-380	2.5	500-575	3.6
380-420	3.1	575-665	4.9
420-470	3.8	665-775	4.7
470-525	3.1	775-915	3.5
525-615	4.3	915-1120	5.2
615-775	3.5	1120-1500	6.7
775-950	4.9	1500-1925	7.5
950 & above	8.3	1925 & above	8.6
All	3.3	All	5.2

2.13 The PAPs in households belonging to different social groups can be an interesting object of study. It is seen from the table that the PAPs are found to be lowest among the STs followed by SCs and highest among the others category of persons in the State.

Table 2.8
PAP during last 15 days for each household social group

Household group	Rural	Urban	State
ST	2.1	5.0	2.5
SC	3.6	4.3	3.9
OBC	3.5	5.6	4.1
Others	3.3	5.4	4.4
All	3.3	5.2	4.0

2.14 Information on persons reporting commencement of any ailment was collected during the survey. As per the survey results, the PPC i.e. the estimated proportion of persons reporting commencement of any ailment is found to be higher in the urban areas compared to the rural areas and is higher for females than males. The PPC is found to be highest for the age-group 60 years and above.

Table 2.9
Percentage of persons reporting commencement of any ailment (PPC) during last 15 days

Broad age-group	Rural			Urban			State		
	Male	Female	Person	Male	Female	Person	Male	Female	Person
0-14	1.2	1.1	1.1	2.6	2.4	2.5	1.7	1.6	1.7
15-29	1.1	1.0	1.1	1.4	2.5	1.9	1.2	1.7	1.4
30-44	0.5	1.6	1.1	0.9	3.0	1.9	0.7	2.1	1.4
45-59	1.0	2.2	1.6	2.1	2.6	2.5	1.5	2.4	1.9
60 & above	2.0	2.5	2.2	3.9	2.2	3.1	2.6	2.4	2.5
All	1.5	1.6	1.5	2.3	3.0	2.6	1.8	2.1	2.0

2.15 There is a well-established direct association between morbidity reporting and level of health consciousness. To understand whether the health consciousness influences the morbidity reporting, infant mortality rates (IMRs) estimated through the sample registration scheme of the office of Registrar General of India are also provided alongside PAPs and PPCs for the rural and urban areas of the State. IMR is a widely accepted indication of general health of population and health related services available to it. It is seen from the table that the IMR in the rural areas is higher but the PAP & PPC both are lower than in the urban areas of the State. Hence, it can be said that in rural areas people are not as health conscious as in the urban areas.

Table 2.10
Percentage of persons reporting ailment (PAP) reporting commencement of any ailment (PPC) and IMR for rural and urban areas

Area	PAP	PPC	IMR
Rural	3.3	1.5	5.2
Urban	5.2	2.6	3.4

2.16 Persons who are ailing do not always get their ailments medically treated and sometimes resort to self-medication, home remedies or get no medical care at all. It is

observed from the table that the percentage of ailing persons who get their ailments treated is only marginally different for rural and urban areas.

Table 2.11

Percentage spell of ailments treated during last 15 days

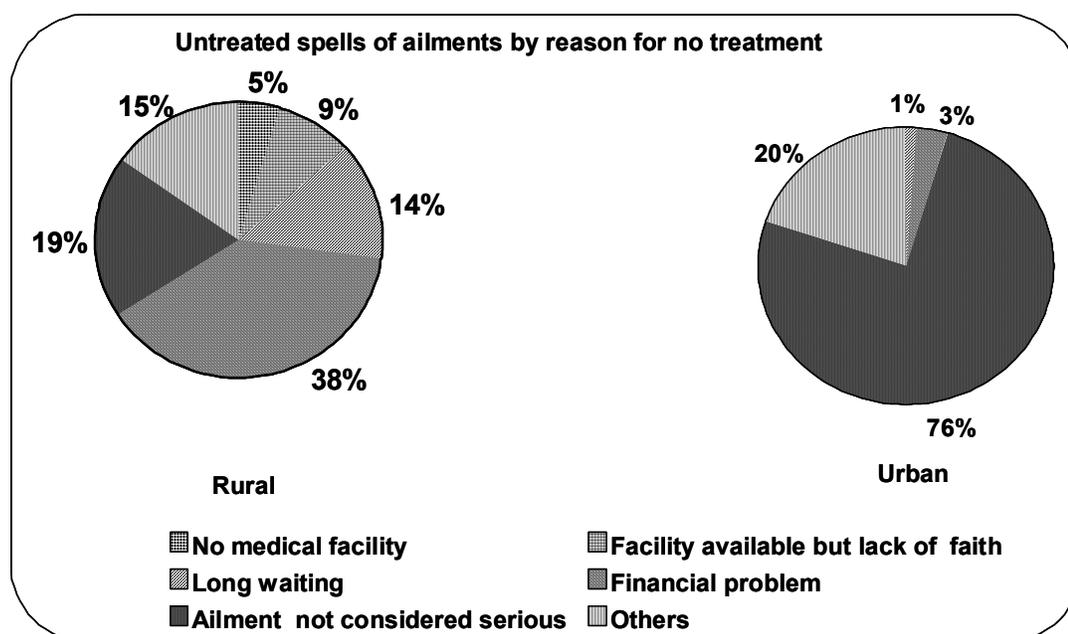
Gender	Rural	Urban
Male	91.8	91.0
Female	92.7	92.5
Persons	92.3	91.8

2.17 In this survey, in rural areas, the most common reason for untreated spell of ailments was found to be 'financial problem' (38 per cent) while in urban areas, 'ailment not considered serious' was the reason quoted by as many as 75 per cent of the people for untreated spells of ailments. A comparison with the previous survey results is also given below.

Table 2.12

Percentage distribution of untreated spell of ailment by reason for no treatment in rural and urban areas of the State

Reason for no treatment	Rural		Urban	
	52 nd round (July 95- June 96)	60 th round (Jan. 04- June 04)	52 nd round (July 95- June 96)	60 th round (Jan. 04- June 04)
No medical facility	8.2	4.8	0.0	0.0
Facility available but Lack of faith	2.1	8.8	0.0	0.1
Long waiting	0.0	13.7	1.4	1.3
Financial problem	12.6	38.2	5.9	3.4
Ailment not considered serious	69.7	19.2	64.8	75.1
Others	7.4	15.4	27.9	20.0
All	100.0	100.0	100.0	100.0



2.18 It is interesting to note that for both rural and urban areas the percentage of treated spells of ailments in govt. institutions increases with the MPCE class.

Table 2.13
Percentage distribution of treated spells of ailments during 15 days by source of treatment (institution)

MPCE class (Rs.)	Rural		MPCE class (Rs.)	Urban	
	Percentage of ailments treated			Percentage of ailments treated	
	Govt. institution	Pvt. institution		Govt. institution	Pvt. institution
< 225	68.3	31.7	< 300	87.9	12.1
225-255	82.4	17.6	300-350	87.7	12.3
255-300	88.9	11.1	350-425	72.8	27.2
300-340	81.0	19.0	425-500	84.4	15.6
340-380	68.9	31.1	500-575	75.4	24.6
380-420	74.8	25.2	575-665	78.7	21.3
420-470	82.8	17.2	665-775	82.2	17.8
470-525	75.5	24.5	775-915	82.1	17.9
525-615	82.1	17.9	915-1120	89.2	10.8
615-775	88.4	11.6	1120-1500	84.9	15.1
775-950	90.4	9.6	1500-1925	87.4	12.6
950 & above	93.6	6.4	1925 & above	93.1	6.9
All	80.9	19.1	All	85.2	14.8

2.19 Comparing the percentages of spells of ailments treated during 15 days, it is found that there is very marginal difference among the social groups. However, the 'Other' social group in rural areas relies more on private institutions for treatment than remaining social groups. Higher proportions of ST population in rural areas and SC population in urban areas rely on govt. institutions for treatment.

Table 2.14
Percentage of spells of ailments treated during 15 days for each social group

Household social group	Percentage of treated spells	Rural		Percentage of treated spells	Urban	
		Source of treatment			Source of treatment	
		Govt. institution	Pvt. institution		Govt. institution	Pvt. institution
ST	92.1	36.3	63.7	81.6	16.9	83.2
SC	89.7	20.6	79.4	91.0	23.4	76.6
OBC	93.5	19.8	80.1	87.2	14.0	86.0
Other	92.3	13.7	86.3	93.9	13.4	86.6
All	92.3	19.1	80.9	91.8	14.8	85.2

2.20 Medical treatment of an ailing person as an in-patient in any medical institution having provision for the same is considered as hospitalised treatment. It is seen that the proportion of hospitalised persons is higher in urban area (3.2%) than rural area (2.8%). The rate of hospitalization appears to increase with age, especially so with females in both rural and urban areas. The rate of hospitalisation is highest for the aged (60+) persons in both rural and urban areas. It may be noted that though the PAP and PPC both are higher for females, the proportion of hospitalised females is lower than men.

Table 2.15
Percentage of persons hospitalised during a reference period of 365 days

Broad age-group	Rural			Urban			State		
	Male	Female	Person	Male	Female	Person	Male	Female	Person
0-14	1.9	1.1	1.5	2.6	1.5	2.1	2.2	1.3	1.7
15-29	2.1	2.1	2.1	1.6	2.3	1.9	1.9	2.2	2.0
30-44	2.6	2.5	2.5	2.3	3.7	3.0	2.5	3.0	2.7
45-59	5.1	4.8	5.0	5.6	4.3	4.9	5.3	4.6	5.0
60 & above	8.4	6.3	7.4	11.5	9.3	10.4	9.4	7.3	8.4
All	3.0	2.6	2.8	3.2	3.1	3.2	3.1	2.8	3.0

2.21 The hospitalised cases were distributed by type of ailment. Febrile illness, gastro intestinal diseases and other undiagnosed ailments are found to be the major types of ailments.

Table 2.16
Percentage distribution of hospitalised cases of treatment by type of ailment

Type of Ailment	Rural	Urban
Gastro Intestinal Diseases	13.5	13.8
Cardio Vascular Diseases	8.3	11.3
Respiratory Ailments	1.5	0.3
Tuberculosis	2.3	1.3
Bronchial Asthma	3.5	2.8
Joints & Bones Disorders	4.7	3.6
Kidney/Urinary Diseases	4.2	3.2
Prostatic Disorders	0.4	0.8
Gynaecological Disorders	4.4	8.0
Neurological Disorders	2.6	3.3
Psychiatric Disorders	0.1	0.5
Eye Ailments	2.6	3.0
Skin Diseases	0.8	0.2
Goitre	0.1	0.3
Diabetes Mellitus	1.9	2.6
Under Nutrition	0.0	0.1
Anaemia	2.3	0.5
Sexually Transmitted Diseases	0.1	0.0
Febrile Illness	16.4	14.9
Tetanus	0.7	0.3
Filariasis/Elephantiasis	0.2	0.0
Disabilities	1.8	2.3
Mouth/Teeth/Gum Diseases	0.2	0.1
Accidents/Injuries/Burns/Fractures/Poisoning	11.3	9.7
Cancer & Other Tumours	1.4	1.8
Other Diagnosed Ailments	12.8	13.5
Other Undiagnosed Ailments	1.7	1.8
Total	100	100

2.22 It is seen that the private institutions dominated the field of treating the in- patients. The non-government institutions treated about 76 per cent of the hospitalised cases in both the rural and urban areas. The average duration of stay for an in- patient in a hospital during a period of 365 days was 9 days in rural and 10 days in the urban areas.

Table 2.17
Percentage of hospitalised cases and average duration of stay in public and private hospitals (in past 365 days)

Type of hospital	Rural		Urban	
	Treated in hospital	Average no. of days stayed in a hospital	Treated in hospital	Average no. of days stayed in a hospital
Government	2.34	9.0	2.32	9.8
Private	7.56	8.9	7.58	9.9

2.23 On an average a higher amount was spent for non-hospitalised treatment of an ailing person in urban areas than that in the rural areas. Moreover, lesser amount was spent for treatment of an ailing female than a male.

Table 2.18
Average total medical expenditure for non-hospitalised treatment during last 15 days

Area	(Rs.)		
	Male	Female	Persons
Rural	273	244	258
Urban	358	348	353

2.24 In most of the hospitalization cases, the ailing persons generally undergo treatment before getting admitted in the hospital and also after discharge from the hospital as a follow up of the on-going treatment. It is observed from the table that about 51 per cent of hospitalization cases got treatment before hospitalization, and 67 per cent continued treatment after discharge. However, the average duration of treatment before hospitalization was 49 days and the average duration of treatment after discharge was 41 days.

Table 2.19
Percentage distribution of hospitalisation cases receiving treatment before and after hospitalisation by source of treatment

Source of treatment	Treatment before hospitalisation			Treatment after discharge		
	Rural	Urban	State	Rural	Urban	State
Public hospital	13.4	12.8	13.1	17.7	22.1	19.5
Dispensary	0.6	2.0	1.2	2.2	3.2	2.6
Private hospital	27.6	21.5	24.7	39.9	37.7	39.0
Private doctor	58.4	63.7	61.0	40.2	37.0	38.9
All	100.0	100.0	100.0	100.0	100.0	100.0
Percentage of cases receiving treatment	45.9	57.4	50.7	67.9	65.0	66.7
Average duration of treatment (0.0 days)	34.9	64.7	48.9	36.5	46.6	40.6

2.25 For the treatment through hospitalization, information on expenses was collected separately for each event of hospitalisation during the reference period. The expenditure for hospitalised treatment on items such as doctor's fees, bed charges and cost of medicines and other materials and services supplied by the hospital as well as charges for

diagnostic tests done at the hospital were included in medical expenditure. The ‘other expenses’ relating to hospitalised treatment is the same as that for non-medical treatments. The estimates of ‘total expenditure’ for hospitalised treatment were arrived at as the sum of ‘medical expenditure’ and ‘other expenditure’. It is seen that on an average, higher amount was spent for treatment per hospitalised case in the urban areas (Rs.10,125) than in the rural (Rs. 6684). The average amount spent for treating a female, as an in- patient in a hospital was less than that for a male in both urban and rural areas.

Table 2.20
Average medical expenditure per hospitalisation

Area	(Rs)					
	52 nd round (July, 95 – June, 96)			60 th round (Jan.04 – June, 04)		
	Male	Female	Person	Male	Female	Person
Rural	3427	2340	2958	7657	5517	6684
Urban	5078	4252	4704	10586	9607	10125
State	4135	3199	3722	8821	7205	8076

2.26 The contributions of different sources towards financing total expenditure on hospitalisation for households at different levels of living as measured by monthly per capita expenditure is given in table 2.21. A perceptible rural-urban difference is noted in the relative importance of different sources of categories of households in both the areas, with maximum households depending on their ‘income/saving’ for financial expenditure on hospitalization. In the rural areas, the households in the lower and middle expenditure classes, however, depended more on ‘borrowing’, as their ‘income/saving’ perhaps were not adequate to meet this expenditure.

Table 2.21
Percentage distribution of households’ total expenditure on treatment on account of hospitalization during the last 365 days by source of finance for each MPCE class

MPCE class (Rs.)	Rural				MPCE class (Rs.)	Urban			
	Source of finance					Source of finance			
	Household income/saving	Borrowings	Others*	Total		Household income/saving	Borrowings	Others*	Total
< 225	31.6	40.5	27.9	100.0	< 300	58.4	22.1	19.5	100.0
225-255	72.8	16.9	10.3	100.0	300-350	65.3	8.6	26.1	100.0
255-300	26.6	34.6	38.8	100.0	350-425	60.5	25.7	13.8	100.0
300-340	30.9	42.6	26.5	100.0	425-500	64.2	20.9	14.9	100.0
340-380	36.8	38.8	24.4	100.0	500-575	63.2	28.6	8.2	100.0
380-420	40.9	32.0	27.1	100.0	575-665	67.3	17.9	14.8	100.0
420-470	47.6	37.6	14.8	100.0	665-775	49.8	29.6	20.6	100.0
470-525	57.4	26.7	15.9	100.0	775-915	57.7	25.2	17.1	100.0
525-615	56.5	30.6	12.9	100.0	915-1120	68.1	17.5	14.5	100.0
615-775	41.6	30.1	28.3	100.0	1120-1500	68.5	10.9	20.6	100.0
775-950	52.2	28.0	19.8	100.0	1500-1925	69.7	5.8	24.5	100.0
950 & above	60.9	7.9	31.2	100.0	1925 & above	68.2	6.2	14.9	100.0
All	46.8	29.8	23.4	100.0	All	68.2	14.4	17.4	100.0

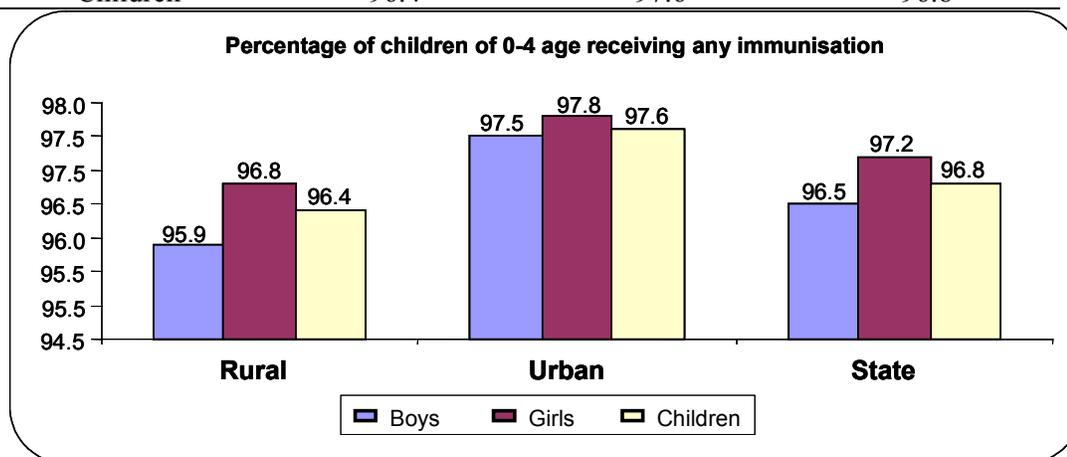
* include contribution from friends and relatives and sale of ornaments and other physical assets, animals, etc.

Immunisation and Maternity Health Care

2.27 **Immunisation rate:** A child was considered to have received immunisation if he/she had received any of the vaccinations viz. BCG, Measles, DPT (any of the three doses), polio (excluding polio which is given at the time of birth), Hepatitis vaccine (A or B), MMR, Pneumouax (for Pneumonia) and oral Typhoid. It may be noted that a child who received only a part of an immunisation package was also considered to have received immunisation. The results of the survey indicate that 97 per cent of the children had received some immunisation during this period. There is a marginal difference in rural and urban areas of one percentage point in immunization of children (0-4 years) indicating that even the rural population is as aware of the importance of immunisation as the urban population and also that the immunisation services are available in the rural areas. About 97.6 per cent of children in the urban areas received immunisation as against 96.4 per cent in the rural areas.

Table 2.22
Percentage of children of 0-4 age receiving any immunisation

Gender	Rural	Urban	State
Boys	95.9	97.5	96.5
Girls	96.8	97.8	97.2
Children	96.4	97.6	96.8



2.28 Average expenditure incurred by the household for any immunisation of children in the age group 0-4 year is given for different monthly per capita expenditure class. A wide gap in average expenditure for immunisation of children is noticed between rural and urban areas. On an average, around Rs.28 were spent for immunisation of a rural child and Rs. 165 (nearly 6 times as much) for an urban child. The reason could be that although the government provides free immunisation service in both rural and urban areas, there is a preference among a sizeable section of the urban population to rely on private doctors.

Table 2.23
Average expenditure per child of age 0-4 years on immunisation
in each household MPCE class

MPCE class	Rural			MPCE class	Urban		
	Average expenditure on immunisation (Rs.)				Average expenditure on immunisation (Rs.)		
	Boys	Girls	Children		Boys	Girls	Children
< 225	6.49	1.99	4.15	< 300	130.40	15.03	116.44
225-255	7.17	7.06	7.11	300-350	33.52	8.03	19.56
255-300	6.53	15.30	11.02	350-425	136.51	28.10	80.56
300-340	13.42	12.21	12.66	425-500	44.77	16.17	32.57
340-380	26.17	19.77	23.63	500-575	70.35	41.82	56.26
380-420	31.80	21.18	27.04	575-665	64.38	69.40	66.69
420-470	24.04	21.82	22.84	665-775	86.64	146.16	114.96
470-525	53.68	54.95	54.33	775-915	210.94	65.94	141.42
525-615	41.77	45.00	43.37	915-1120	189.73	164.35	177.09
615-775	47.33	71.1	57.31	1120-1500	236.87	295.55	265.81
775-950	27.94	5.99	21.67	1500-1925	349.98	395.66	379.30
950 & above	129.79	40.45	76.67	1925 & above	1137.56	567.65	894.92
All	28.41	26.95	27.12	All	183.02	146.2	165.32

2.29 Expenditure on childbirth during the last 365 days: An average of Rs.1,435 was spent for childbirth during January-June, 2004. There was a perceptible difference in the expenditure incurred for childbirth between the rural and urban areas; with the expenditure in rural and urban areas at Rs. 1,025 and Rs.2,456 respectively. The cost of a delivery in private hospital was more (Rs.4,455) as compared to that in a Government hospital (Rs.1,435). On the other hand average cost for delivery of a child at home was only Rs.191. It may also be noted that the average expenditure per childbirth was lower in rural Govt. hospital (Rs.186) than their urban counterpart (Rs. 415).

Table 2.24
Average expenditure per childbirth by place of delivery
(Rs.)

Area	Govt. hospital	Pvt. Hospital	Home	All
Rural	186	3008	200	1025
Urban	415	4453	103	2456
State	256	3600	191	1435

2.30 Antenatal and post-natal care: Information on maternal care taken by women who were pregnant at any time during the last 365 days was collected in the survey together with the expenditure incurred. For availing ante-natal and post-natal services it is seen that about 87 per cent of pregnant women had taken some ante-natal care in the rural areas, while in urban areas this proportion was slightly high i.e. 90 per cent. It is also observed that the availing service of post-natal care was less common among the women giving childbirth in both the areas of the State. Such percentage in rural and urban areas was 45 and 62 per cent respectively. It is also seen that the private institutions played a major role in providing the maternal care services in the urban areas of the State.

Table 2.25
Percentage of women who availed ante-natal care services (PWANC),
post-natal care services (PWPNC) and proportion of these services
availed from government and private sources

Area	Ante-natal care			Post natal care		
	PWANC	Source		PWPNC	Source	
		Govt.	Pvt.		Govt.	Pvt.
Rural	87.3	71.6	28.4	73.2	55.2	44.8
Urban	90.1	35.6	64.4	78.4	37.6	62.4

Health Care of the Aged

2.31 According to findings of this survey conducted during January to June 2004 the estimated percentage of the aged persons was 8.2 in the rural and 6.3 in the urban areas. Comparative figures for three censuses and the next rounds of NSS are given in the table. Although the estimated number of aged persons as per the present survey was lower than that of census 2001, proportions of aged obtained from the surveys and census reveal similar trend over time. It is revealed from the table that the proportion of aged in total population is higher in the rural areas than in the urban areas. The proportion of female is higher than male in both rural and urban areas.

Table 2.26
Percentage of the aged to total population obtained from surveys
and population censuses

Source	Rural			Urban		
	Male	Female	Person	Male	Female	Person
Census 1981	6.8	7.3	7.1	4.7	5.5	5.1
NSS 43 rd round (1987-88)	6.7	7.7	7.2	5.1	6.2	5.6
Census 1991	7.7	8.1	7.9	5.2	5.9	5.5
NSS 50 th round (1993-94)	7.5	7.8	7.6	5.3	6.5	5.9
Census 2001	9.2	11.3	10.2	6.0	7.5	6.7
NSS 60 th round (Jan-June 2004)	8.0	8.4	8.2	6.1	6.5	6.3

2.32 **Old age dependency ratio:** In India, generally, persons aged 15 to 59 years are supposed to form the working population and people generally retire or withdraw themselves from work at or after 60. The population aged 60 and above divided by the number of persons aged between 15 to 59 years gives the old age dependency ratio. It is observed from the table that this ratio is higher in the rural than in the urban areas. According to both the census & NSS survey estimates, the ratio has increased over time. The marginally decreased ratio for census 2001 and 60th round may be due to sampling error.

Table 2.27
Percentage of old age dependency obtained from NSS surveys and census

Source	Rural	Urban	State
Census 1981	13.4	8.6	11.6
NSS 43 rd round (1987-88)	12.9	9.2	11.6
Census 1991	14.5	9.1	12.2
NSS 50 th round (1993-94)	13.2	9.4	11.8
Census 2001	18.4	10.5	14.8
NSS 60 th round (Jan-June 2004)	12.1	8.8	10.8

2.33 **Sex ratio:** According to population census the sex ratio among the aged which was 1038 females per 1000 males during 1981, dropped to 1018 during 1991 and thereafter increased to 1104 in 2001. According to NSS survey, the sex ratio among the aged declined during the period 1987-88 to 1993-94 and has again declined in 2004. In urban areas the sex ratio increased during 1987-88 to 1993-94 and dropped in 2004.

Table 2.28
Sex ratio (number of females per 1000 males) among aged persons obtained from census and surveys

Source	Rural	Urban	State
Census 1981	1056	994	1038
NSS 43rd round (1987-88)	1130	1074	1115
Census 1991	1134	984	1018
NSS 50th round (1993-94)	990	1091	1018
Census 2001	1150	1173	1104
NSS 60th round (Jan-June 2004)	997	959	984

2.34 It is observed from the table that in the rural areas about 95 per cent and in the urban areas about 93 per cent of aged persons had at least one surviving child.

Table 2.29
Proportion (per 1000) of aged persons by number of their surviving children for each sex

Area	Sex	No. of surviving children			
		0	1	2	At least one
Rural	Male	40	65	113	960
	Female	56	102	113	944
	Persons	48	84	113	952
Urban	Male	62	95	182	938
	Female	82	129	139	918
	Persons	72	112	161	928

2.35 It can be seen from table that the percentage of aged persons living alone is higher in rural area than in urban area. The percentage of aged persons living with family members is 57.5 per cent in rural and 59 per cent in urban areas.

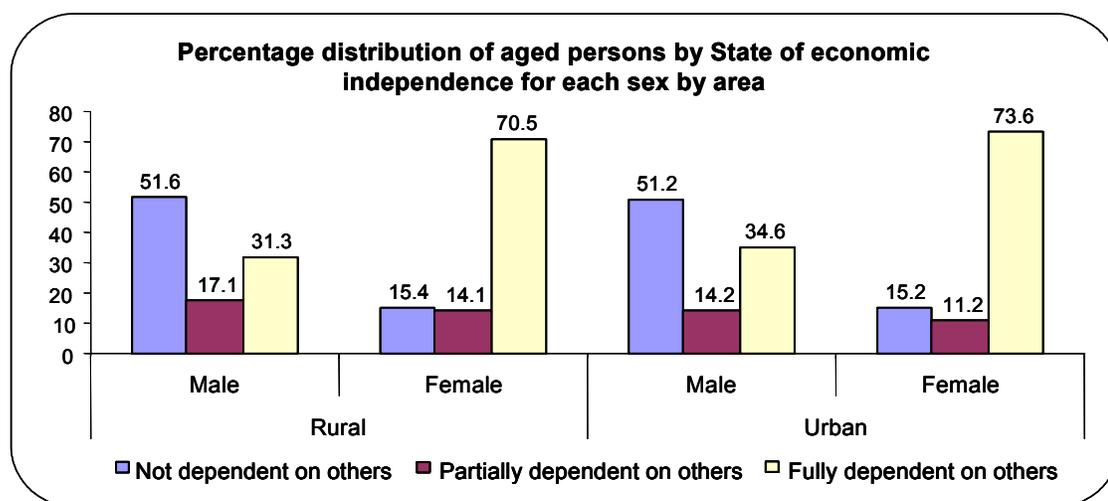
Table 2.30
Percentage distribution of aged persons by type of living arrangements for each sex by areas

Living arrangements	Rural			Urban		
	Male	Female	Persons	Male	Female	Persons
1. Alone	2.5	8.2	5.3	2.8	5.9	4.3
2. With spouse only	17.1	8.5	12.8	14.6	9.3	12.0
3. With spouse and other members	62.6	26.7	44.7	63.0	30.4	47.1
4. With spouse (2+3)	79.7	35.2	57.5	77.6	39.7	59.1
5. With children	14.6	50.7	32.6	17.6	47.9	32.4
6. With other relation and non-relation	3.2	5.9	4.5	2.0	6.5	4.2

2.36 Economic independence: The living arrangement describes how the physical well being of the aged is taken care of in the family in our society. Similarly, the economic independence reveals the associated problem of day to day maintenance of livelihood of the elderly. It is seen from the table that about 50.9 and 53.6 per cent of persons in the rural and urban areas respectively were economically fully dependent on others; the situation is found to be worse for the aged females with the percentages as high as 70.5 and 73.6 for rural and urban areas respectively. The percentage of partially economic dependence of aged persons was found to be 15.6 and 12.8 respectively in the rural and urban areas. Interestingly, the percentage of economically not dependent was found to be about 34 in both the rural and urban areas.

Table 2.31
Percentage distribution of aged persons by State of economic independence for each sex by area

Area	Sex	State of economic independence		
		Not dependent on others	Partially dependent on others	Fully dependent on others
Rural	Male	51.6	17.1	31.3
	Female	15.4	14.1	70.5
	Persons	33.5	15.6	50.9
Urban	Male	51.2	14.2	34.6
	Female	15.2	11.2	73.6
	Persons	33.6	12.8	53.6



2.37 It has been observed that a large proportion of the elderly are economically dependent on others for their livelihood. It is therefore pertinent to know who are the persons providing economic support to these elderly. It is observed from the table that among the economically dependent aged persons more than eighty per cent were dependent on their own children in both the rural and urban areas. This is followed by spouse, others and grand children in both the rural and urban areas. About 6 per cent males were dependent on their spouse in both rural and urban areas while nearly double the females

were dependent on their spouse. In both rural and urban areas, the percentage of persons dependent on others is higher than that for grand child.

Table 2.32
Percentage distribution of economically dependent aged persons by category of persons supporting them for each sex by area

Area	Sex	Category of persons supporting				Total
		Spouse	Own children	Grand children	Others	
Rural	Male	5.9	85.4	2.7	6.0	100.0
	Female	12.2	80.1	3.3	4.4	100.0
	Persons	9.9	82.0	3.1	5.0	100.0
Urban	Male	6.5	87.8	2.4	3.3	100.0
	Female	16.8	73.4	3.8	5.9	100.0
	Persons	13.0	78.8	3.3	4.9	100.0

2.38 Number of dependents: It is observed from the table that the economically independent persons having no dependent were found to be 35.7 and 33 per cent in the rural and urban areas respectively, while about 21 and 34 per cent aged persons had one dependent. The percentage of economically independent aged persons having 6 and above dependents was found to be 7.7 and 4.7 in the rural and urban areas respectively. The percentages of economically independent males having at least one dependent was found to be higher than the economically independent aged females, while more economically independent females had no dependents than males.

Table 2.33
Percentage distribution of economically independent aged persons by number of dependents for each sex

Area	Sex	No. of dependents				
		No	1	2	3-5	6 or more
Rural	Male	25.8	23.0	11.5	29.8	9.8
	Female	69.1	13.2	8.9	8.3	0.5
	Persons	35.7	20.8	10.9	24.9	7.7
Urban	Male	23.6	38.2	14.2	18.0	6.0
	Female	66.3	19.1	2.1	12.5	0.0
	Persons	33.0	33.9	11.5	16.9	4.7

2.39 Physical mobility: For the aged persons the ability to move is an important indicator of their physical condition (health) and also indicates the degree of their dependence on others for movement and performing their daily routine. About 9 per cent of the aged persons were either confined to their home or bed. The proportion of aged persons reporting confinement to their home or bed was found to be increasing with the age for all categories and it was high for persons aged 80 or more. The incidence of confinement is seen to be higher among female than among male in both the rural and urban areas. In urban areas the overall percentage of confined aged persons is slightly less than that for rural.

Table 2.34
Proportion of aged persons who are confined to bed or home

Age-group	Rural			Urban		
	Male	Female	Persons	Male	Female	Persons
60-64	3.7	4.9	4.3	5.8	4.1	5.0
64-69	9.1	8.1	8.6	5.3	5.1	5.3
70-74	6.7	6.4	6.5	6.0	10.6	8.2
75-79	13.0	23.0	18.4	5.7	8.0	7.6
80 & above	20.4	43.7	34.4	22.6	51.2	37.2
All aged	7.6	10.8	9.2	7.1	10.4	8.7

2.40 Own perception about health: The perception about one's health is an important factor in getting an idea about a person's actual health condition. A person may be considered as being in good health if he feels so. This is the criterion generally used in NSS surveys to classify an individual as sick or otherwise. It can be seen that 72 per cent in rural and 78 per cent in urban persons aged with sickness felt that they were in a good or fair condition of health. The same proportion among the aged without sickness was 68 and 70 respectively, (possibly they associated their sickness as a problem of ageing). Among the aged, the men seemed to be feeling that they had a better health condition even with sickness compared to the aged women. About 16.5 and 11.1 per cent of aged persons without sickness reported to have perception about their health as 'poor' in rural and urban areas respectively while about 22.2 and 24.3 per cent of the same category reported to have excellent health.

Table 2.35
Percentage distribution of aged persons by own perception above their health

Own perception about current state of health	Aged persons with sickness			Aged persons without sickness		
	Male	Female	Persons	Male	Female	Persons
Rural						
Excellent/very good	18.3	4.6	11.2	24.5	19.1	22.2
Good/fair	63.3	80.6	72.3	65.8	67.9	66.7
Poor	18.4	14.8	16.5	9.7	13.0	11.1
All aged	100.0	100.0	100.0	100.0	100.0	100.0
Urban						
Excellent/very good	9.8	10.1	10.0	27.6	20.3	24.3
Good/fair	76.3	79.5	77.8	67.1	74.0	70.2
Poor	13.9	10.4	12.2	5.4	5.7	5.5
All aged	100.0	100.0	100.0	100.0	100.0	100.0

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GOVERNMENT OF MAHARASHTRA

A REPORT ON

‘MORBIDITY AND HELTH CARE’

BASED ON DATA COLLECTED IN STATE SAMPLE OF

**60Th ROUND OF NATIONAL SAMPLE SURVEY
(JANUARY, 2004 – JUNE, 2004)**

VOL.II

**Directorate of Economics and Statistics, Planning Department,
Government of Maharashtra,
Mumbai**

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Note: Hard copy of detailed tables is available at the Directorate of Economics and Statistics, Government of Maharashtra, Mumbai Office.

Chapter - Two

CONCEPTS AND DEFINITIONS

2.1 The concepts and definitions of the terms used in this report are briefly discussed in this chapter. For better morbidity reporting, some probing questions were put to the informants during data collection. Such special attempts to elicit information on morbidity and treatment of ailments are also indicated in this chapter.

2.2 **Household:** A group of persons normally living together and taking food from a common kitchen constitutes a household. The word “normally” means that temporary visitors are excluded but temporary stay-aways are included. Thus, a son or daughter residing in a hostel for studies is excluded from the household of his/her parents, but a resident employee or resident domestic servant or paying guest (but not just a tenant in the house) is included in the employer/host’s household. “Living together” is usually given more importance than “sharing food from a common kitchen” in drawing the boundaries of a household in case the two criteria are in conflict; however, in the special case of a person taking food with his family but sleeping elsewhere (say, in a shop or a different house) due to space shortage, the household formed by such a person’s family members is taken to include the person also. Each inmate of a mess, hotel, boarding and lodging house, hostel, etc. is considered as a single-member household except that a family living in a hotel (say) is considered as one household only; the same applies to residential staff of such establishments.

2.3 **Ailment - illness or injury:** Ailment i.e. illness or injury, mean any deviation from the state of physical and mental well-being. An ailment may not cause any necessity of hospitalisation, confinement to bed or restricted activity. An ailing member is a normal member of the household who was suffering from any ailment during the reference period. For the purpose of survey, one will be treated as sick if one feels sick. This will also include among other things:

- Cases of visual, hearing, speech, locomotor and mental disabilities;
- Injuries will cover all types of damages, such as cuts, wounds, haemorrhage, fractures and burns caused by an accident, including bites to any part of the body;
- Cases of spontaneous abortion- natural or accidental;

This will not include:

- Cases of sterilisation, insertion of IUD, getting MTP, etc.
- Cases of pregnancy and childbirth.

Cases of sterilisation, insertion of IUD, getting MTP, etc., under family planning programme, pregnancy and child birth are not treated as ailment. But a spontaneous abortion, is treated as a deviation from the state of normal health and thus considered to be illness.

2.4 For ascertaining whether an individual had suffered from any ailment during the reference period and whether she/he had received any medical treatment on that account, the following set of probing questions was put, in the survey, to the informant:

- During the reference period, did the member feel anything wrong relating to skin, head, eyes, ears, nose, throat, arms, hands, chest, heart, stomach, liver, kidney, legs, feet or any other organ of the body
- Does the member suffer from any disease of a chronic nature relating to stomach, lungs, nervous system, circulation system, bones and joints, eye, ear, mouth or any other organ of the body?
- Does the member have any kind of hearing, visual, speech or locomotor disability?
- Did the member take, during the reference period, any medicine or medical advice for his/her own ailment or injury?

2.5 **Hospitalisation:** One was considered hospitalised if one had availed of medical services as an indoor patient in any hospital. Hospital, for the purpose of survey, referred to any medical institution having provision for admission of sick persons as indoor patients (inpatients) for treatment. Hospitals covered public hospitals, community health centres and primary health centres (if provided with beds), ESI hospitals, private hospitals, nursing homes, etc. In this context it may be noted that admission for treatment of ailment and discharge thereof from the hospital was considered as case of hospitalisation irrespective of the duration of stay in the hospital. It may also be noted that hospitalisation in the cases of normal pregnancy and childbirth were treated as hospitalisation cases.

2.6 **Confinement to bed:** It referred to a state of health where the ailing person is required or compelled to mostly stay in bed at his/her residence/home.

2.7 **Restriction of activity:** By disability or restricted activity it was meant the state of health which prevents the ailing person from doing any of his/her normal avocations. For economically employed persons, restricted activity meant abstention from the economic activity. In the case of a housewife, this meant cutting down of the day's chores. In the case of retired persons, this referred to the pruning of his/her normal activity. In the case of students attending educational institution, this referred to absence from attending classes. For infants below school going age and for the very old, restricted activity was not to be considered in view of the fact that their usual activities are of restricted nature.

2.8 **Spell of ailment:** A continuous period of sickness owing to a specific ailment will be treated as a spell of ailment.

2.9 **Duration of ailment:** Duration of ailment is the period between the commencement of the ailment and termination of it by recovery. For ascertaining the period of ailment during the reference period, commencement was taken as on the first day of the reference period if it was on a day beyond the reference period. Similarly, if the ailment was found to be continuing on the date of enquiry, the day of termination of the ailment was taken as the last day of the reference period.

2.10 Medical treatment: A person was considered to have received medical treatment if he/she had consulted a doctor anywhere (in OPD of a hospital, community health centre, primary health centre/sub-centre, dispensary, doctor's chamber, private residence, etc.) and obtained medical advice on his/her ailment. The doctor consulted may follow any system of medicine, viz. allopathic, homeopathic, ayurvedic, unani, hakimi or some other recognised system. Treatment taken on the basis of medical advice/prescription of a doctor obtained earlier for similar ailment(s) was also considered as medical treatment. Self-doctoring or acting on the advice of non-medical persons such as friends, relatives, pharmacists, etc. was not considered as treatment.

2.11 Expenditure for medical treatment: Total expenditure incurred for medical treatment received during the reference period (15 days for non-hospitalised treatment and 365 days for hospitalised treatment) included expenditure on items like

bed charges (with charges for food included in it)
medicines (including drips)
materials for bandage, plaster, etc.
fees for the services of medical and para-medical personnel
charges - for diagnostic tests
operations and therapies
charges of ambulance
costs of oxygen, blood, etc.

All other types of expenditure incurred for treatment, such as lodging charges of escort, attendant charges, cost of transport other than ambulance, and cost of personal medical appliances, were excluded from medical expenditure.

2.12 Disability: A person with restrictions or lack of abilities to perform an activity in the manner or within the range considered normal for a human being was treated as having disability. It excluded illness/injury of recent origin (morbidity) resulting into temporary loss of ability to see, hear, speak or move.

2.13 Mental disability: Persons who had difficulty in understanding routine instructions, who do not carry out their activities like others of similar age or exhibit behaviours like talking to self, laughing/crying, staring, violence, fear and suspicion without reason were considered as mentally disabled for the purpose of the survey. The "activities like others of similar age" included activities of communication (speech), self-care (cleaning of teeth, wearing clothes, taking bath, taking food, personal hygiene, etc.), home living (doing some household chores) and social skills.

2.14 Visual disability: By visual disability, it was meant, loss or lack of ability to execute tasks requiring adequate visual acuity. For the survey, visually disabled included (a) those who did not have any light perception - both eyes taken together and (b) those who had light perception but could not correctly count fingers of hand (with spectacles/contact lens if he/she used spectacles/contact lenses) from a distance of 3 metres (or 10 feet) in good day light with both eyes open. Night blindness was not considered as visual disability.

2.15 Hearing disability: This refers to persons' inability to hear properly. Hearing disability was to be judged taking into consideration the disability of the better ear. In other words, if one ear of a person was normal and the other ear has total hearing loss, then the person was to be judged as normal in hearing for the purpose of the survey. Hearing disability was judged without taking into consideration the use of hearing aids (i.e., the position for the person when hearing aid was not used). Persons with hearing disability might have different degrees of disability, such as profound, severe or moderate. A person was treated as having 'profound' hearing disability if he/she could not hear at all or could only hear loud sounds, such as, thunder or understands only gestures. A person was treated as having 'severe' hearing disability if he/she could hear only shouted words or can hear only if the speaker is sitting in the front. A person was treated as having 'moderate' hearing disability if his/her disability was neither profound nor severe. Such a person would usually ask to repeat the words spoken by the speaker or would like to see the face of the speaker while he/she spoke or felt difficulty in conducting conversations.

2.16 Speech disability: This referred to persons' inability to speak properly. Speech of a person was judged to be disordered if the person's speech was not understood by the listener. Persons with speech disability included those who cannot speak, can speak only with limited words or those with loss of voice. It also included those whose speech was not understood due to defects in speech, such as stammering, nasal voice, hoarse voice and discordant voice and articulation defects, etc.

2.17 Locomotor disability: A person with - (a) loss or lack of normal ability to execute distinctive activities associated with the movement of himself/herself and objects from place to place and (b) physical deformities, other than those involving the hand or leg or both, regardless of whether the same caused loss or lack of normal movement of body - was considered as disabled with locomotor disability. Thus, persons having locomotor disability included those with (a) loss of absence or inactivity of whole or part of hand or leg or both due to amputation, paralysis, deformity or dysfunction of joints which affects his/her "normal ability to move self or objects" and (b) those with physical deformities in the body (other than limbs), such as, hunch back, deformed spine, etc. Dwarfs and persons with stiff neck of permanent nature who generally did not have difficulty in the normal movement of body and limbs were also treated as disabled.

2.18 Abortion: Abortion is the case of foetus born before the completion of 28 weeks since conception and showing no sign of life at birth.

2.19 Live-birth: When a child shows any evidence of life at birth, irrespective of the interval since conception, it is the cases of a live-birth, however, expire within a very short time after birth.

2.20 Still birth: It is the case of a baby born after completion of 28 weeks and showing no sign of life. The birth of a foetus caused by abortion is not considered a 'still-birth'.

Chapter – Three

SAMPLE DESIGN AND ESTIMATION PROCEDURE

3.0 Sample design

3.1 **Outline of sample design:** A stratified multi-stage design had been adopted for the 60th round survey. The first stage units (FSU) were the 1991 census villages in the rural sector and Urban Frame Survey (UFS) blocks in the urban sector. The ultimate stage units (USU) were households in both the sectors. In case of large villages/blocks requiring hamlet-group (hg)/sub-block (sb) formation, one intermediate stage was the selection of two hgs/sbs from each FSU.

3.2 **Sampling frame for first-stage units:** For the rural sector, the list of Census 1991 constituted the sampling frame. For urban areas the latest UFS frame was used. For stratification of towns by size class, provisional populations of towns as per Census 2001 were used.

3.3 Stratification

3.3.1 **Rural Sector:** Two **special strata** were formed at the State level, viz.

Stratum 1: all FSUs with population between 0 to 50, and

Stratum 2: FSUs with population more than 15,000 as per census 1991.

Special stratum 1 had been formed if at least 50 such FSUs were found in a State. Similarly, special stratum 2 had been formed if at least 4 such FSUs were found in a State. Otherwise, such FSUs were merged with the general strata.

From FSUs other than those covered under special strata 1 & 2, general strata were formed and its numbering starting from 3. Each district of a State was normally treated as a separate stratum. However, if the census rural population of the district was greater than or equal to 2.5 million as per Population Census 2001 or 2 million as per Population Census 1991, the district had been split into two or more strata, by grouping contiguous tehsils to form strata.

3.3.2 **Urban sector:** In the urban sector, strata were formed within each NSS region on the basis of size class of towns as per Population Census 2001. The stratum numbers and their composition (within each region) are given below.

Stratum 1: all towns with population less than 50,000

Stratum 2: all towns with population 50,000 or more but less than 2 lakhs

Stratum 3: all towns with population 2 lakhs or more but less than 10 lakhs

Stratum 4, 5, 6: each city with population 10 lakhs or more

The stratum numbers had been kept as above even if, in some regions, some of the strata were not formed.

3.4 Allocation of total sample to States: The total number of sample FSUs was allocated to the States in proportion to provisional population as per Census 2001 subject to the availability of investigators ensuring more or less uniform work-load.

3.5 Allocation to strata: Within each sector of a State, the respective sample size had been allocated to the different strata in proportion to the stratum population as per Census 2001. Allocations at stratum level were adjusted to a multiple of 4 with a minimum sample size of 4.

3.6 Selection of FSUs: FSUs were selected with Probability Proportional to Size With Replacement (PPSWR), size being the population as per Population Census 1991 in all the strata for rural sector except for stratum 1. In stratum 1 of rural sector and in all the strata of the urban sector, selection was done using Simple Random Sampling Without Replacement (SRSWOR). Within each stratum, samples had been drawn in the form of two independent sub-samples in both rural and urban sectors.

3.7 Selection of hamlet-groups, sub-blocks and households

3.8.1 Criterion for hamlet-group/sub-block formation: Large villages / blocks having approximate population of 1200 or more were divided into a suitable number of 'hamlet-groups' in the rural sector and 'sub-blocks' in the urban sector as stated below.

approximate present population of the sample village/block	no.of hamlet-groups/ sub-blocks to be formed
less than 1200 (no h-gs/s-bs formation)	1
1200 to 1799	3
1800 to 2399	4
2400 to 2999	5
3000 to 3599	6
...and so on	

4.0 Formation of Second Stage Strata and allocation of households:

4.1 Schedule 25.0: In each selected village/block/hamlet-groups/sub-block, four second stage strata (SSS) were formed as given below.

Composition of SSS	Number of households to be surveyed for schedule 25.0	
	without hg/sb formation	with hg/sb formation
SSS 1: households with at least one member hospitalized during last 365 days	4	2
SSS 2: from the remaining households, households having at least one child of age below 5 years	2	1
SSS 3: from the remaining households, households with at least one member of age 60 years or above	2	1
SSS 4: other households	2	1

4.2 **Selection of households:** From each SSS the sample households for all the schedules were selected by SRSWOR. If a household was selected for more than one schedule only one schedule was canvassed in that household in the priority order of Schedule 1.0, Schedule 10 and Schedule 25.0 and in that case the household was replaced for the other schedule. If a household had been selected for Schedule 1.0, it was not again selected for Schedule 10 or Schedule 25.0. Similarly, if a household had not been selected for Schedule 1.0 but selected for Schedule 10, it was not selected for Schedule 25.0. However, for the households selected from SSSI of Schedule 25.0, the Schedule 25.0 was canvassed even if the household had been selected for other schedules.

5. Estimation Procedure

Procedure followed for obtaining estimates of aggregates, ratios is briefly indicated below

5.1 Notations:

s = subscript for s-th stratum

m = subscript for sub-sample (m=1,2)

i = subscript for i-th FSU [village (panchayat ward)/block]

d = subscript for a hamlet-group/sub-block (d= 1,2)

j = subscript for j-th second stage stratum in an FSU/hg/sb

k = subscript for k-th sample household under a particular second stage stratum within an FSU/hg/sb

D = total number of h-g's/s-b's formed in the sample village(panchayat ward)/block

D*= 1 if D = 1

= D÷2 for FSUs with D > 1

N = total number of FSUs in rural stratum 1 or in any urban stratum

Z = total size of a rural stratum other than stratum 1 (= sum of sizes for all the FSUs of a rural stratum other than stratum 1)

z = size of sample village used for selection

n = number of sample village/block surveyed including zero cases but excluding casualty for a particular sub-sample and stratum

H = total number of households listed in a second-stage stratum of a hamlet-group/sub-block of sample FSU

h = number of households surveyed in a second-stage stratum of a hamlet-group/sub-block of sample FSU

x,y= observed value of characteristics x,y under estimation

X,Y= estimate of population total X,Y for the characteristics x,y

Under the above symbols,

y_{smidjk} = observed value of the characteristic y for the k-th household in the j-th second stage stratum of the d-th hg/sb (d = 1, 2) of the i-th FSU belonging to the m-th sub-sample for the s-th stratum;

However, for ease of understanding, a few symbols have been suppressed in following paragraphs where they are obvious.

5.2 Estimation of aggregates for a particular sub-sample (m) and stratum (s) in rural/urban sector:

5.2.2 Schedule 1.0/10/25.0:

Rural:

(a) Estimation formula for stratum 1:

(i) For households selected in j-th second stage stratum:

$$\hat{Y}_j = \frac{N}{n_j} \sum_{i=1}^{n_j} D_i^* \left[\frac{H_{ij}}{h_{ij}} \sum_{k=1}^{h_{ij}} y_{ijk} + \frac{H_{i2j}}{h_{i2j}} \sum_{k=1}^{h_{i2j}} y_{i2jk} \right] ; j=1,2.$$

(ii) For all selected households:

$$\hat{Y} = \sum_j \hat{Y}_j$$

b) Estimation formula for other strata:

(i) For households selected in j-th second stage stratum:

$$\hat{Y}_j = \frac{Z}{n_j} \sum_{i=1}^{n_j} D_i^* \left[\frac{H_{ij}}{h_{ij}} \sum_{k=1}^{h_{ij}} y_{ijk} + \frac{H_{i2j}}{h_{i2j}} \sum_{k=1}^{h_{i2j}} y_{i2jk} \right]$$

(ii) For all selected households:

$$\hat{Y} = \sum_j \hat{Y}_j$$

Urban:

(a) Estimation formula for a stratum:

(i) For households selected in j-th second stage stratum:

$$\hat{Y}_j = \frac{N}{n_j} \sum_{i=1}^{n_j} D_i^* \left[\frac{H_{ij}}{h_{ij}} \sum_{k=1}^{h_{ij}} y_{ijk} + \frac{H_{i2j}}{h_{i2j}} \sum_{k=1}^{h_{i2j}} y_{i2jk} \right]$$

ii) For all selected households:

$$\hat{Y} = \sum_j \hat{Y}_j$$

Note: i) Values of j for different schedules are as follows:

- for sch. 1.0, j = 1 or 2;
- for sch. 10, j = 1 or 2 and
- for sch. 25.0, j = 1, 2, 3 or 4

5.3 Overall Estimate for Aggregates for a stratum:

Overall estimate for aggregates for a stratum (\hat{Y}_s) based on two sub-samples is obtained as:

$$\hat{Y}_s = \frac{1}{2} \sum_{m=1}^2 \hat{Y}_{sm}$$

5.4 Overall Estimate of Aggregates at State level:

The overall estimate \hat{Y} at the State level is obtained by summing the stratum estimates \hat{Y}_s over all strata belonging to the State.

5.5 Estimates of Ratios:

Let Y and X be the overall estimate of the aggregates Y and X for two characteristics y and x respectively at the State level.

Then the combined ratio estimate (R) of the ratio ($R = \frac{Y}{X}$) is obtained as

$$\hat{R} = \frac{\hat{Y}}{\hat{X}}$$

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5.0 Estimation Procedure

Procedure followed for obtaining estimates of aggregates, ratios is briefly indicated below

5.1 Notations:

s = subscript for s-th stratum

m = subscript for sub-sample (m=1,2)

i = subscript for i-th FSU [village (panchayat ward)/block]

d = subscript for a hamlet-group/sub-block (d= 1,2)

j = subscript for j-th second stage stratum in an FSU/hg/sb

k = subscript for k-th sample household under a particular second stage stratum within an FSU/hg/sb

D = total number of h-g's/s-b's formed in the sample village(panchayat ward)/block

D*= 1 if D =1

= D÷2 for FSUs with D > 1

N = total number of FSUs in rural stratum 1 or in any urban stratum

Z = total size of a rural stratum other than stratum 1 (= sum of sizes for all the FSUs of a rural stratum other than stratum 1)

z = size of sample village used for selection

n = number of sample village/block surveyed including zero cases but excluding casualty for a particular sub-sample and stratum

H = total number of households listed in a second-stage stratum of a hamlet-group/sub-block of sample FSU

h = number of households surveyed in a second-stage stratum of a hamlet-group/sub-block of sample FSU

x,y= observed value of characteristics x,y under estimation

X,Y= estimate of population total X,Y for the characteristics x,y

Under the above symbols,

y_{smidjk} = observed value of the characteristic y for the k-th household in the j-th second stage stratum of the d-th hg/sb (d = 1, 2) of the i-th FSU belonging to the m-th sub-sample for the s-th stratum;

However, for ease of understanding, a few symbols have been suppressed in following paragraphs where they are obvious.

5.2 Estimation of aggregates for a particular sub-sample (m) and stratum (s) in rural/urban sector:

5.2.2 Schedule 25.0:

Rural:

(a) Estimation formula for stratum 1:

(i) For households selected in j-th second stage stratum:

$$\hat{Y}_j = \frac{N}{n_j} \sum_{i=1}^{n_j} D_i^* \left[\frac{H_{ij}}{h_{ij}} \sum_{k=1}^{h_{ij}} y_{ijk} + \frac{H_{i2j}}{h_{i2j}} \sum_{k=1}^{h_{i2j}} y_{i2jk} \right] ; j=1,2.$$

(ii) For all selected households:

$$\hat{Y} = \sum_j \hat{Y}_j$$

b) Estimation formula for other strata:

(i) For households selected in j-th second stage stratum:

$$\hat{Y}_j = \frac{Z}{n_j} \sum_{i=1}^{n_j} D_i^* \left[\frac{H_{ij}}{h_{ij}} \sum_{k=1}^{h_{ij}} y_{ijk} + \frac{H_{i2j}}{h_{i2j}} \sum_{k=1}^{h_{i2j}} y_{i2jk} \right]$$

(ii) For all selected households:

$$\hat{Y} = \sum_j \hat{Y}_j$$

Urban:

(a) Estimation formula for a stratum:

(i) For households selected in j-th second stage stratum:

$$\hat{Y}_j = \frac{N}{n_j} \sum_{i=1}^{n_j} D_i^* \left[\frac{H_{ij}}{h_{ij}} \sum_{k=1}^{h_{ij}} y_{ijk} + \frac{H_{i2j}}{h_{i2j}} \sum_{k=1}^{h_{i2j}} y_{i2jk} \right]$$

ii) For all selected households:

$$\hat{Y} = \sum_j \hat{Y}_j$$

Note: Values of j for sch. 25.0, j = 1, 2, 3 or 4

5.3 Overall Estimate for Aggregates for a stratum:

Overall estimate for aggregates for a stratum (\hat{Y}_s) based on two sub-samples is obtained as:

$$\hat{Y}_s = \frac{1}{2} \sum_{m=1}^2 \hat{Y}_{sm}$$

4.4 Overall Estimate of Aggregates at State level:

The overall estimate \hat{Y} at the State level is obtained by summing the stratum estimates \hat{Y}_s over all strata belonging to the State.

4.5 Estimates of Ratios:

Let Y and X be the overall estimate of the aggregates Y and X for two characteristics y and x respectively at the State level.

Then the combined ratio estimate (R) of the ratio ($R = \frac{Y}{X}$) is obtained as

$$\hat{R} = \frac{\hat{Y}}{\hat{X}}$$

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