

# HEALTH SYSTEM PERFORMANCE ASSESSMENT

World Health Survey, 2003

INDIA



**International Institute for  
Population Sciences (IIPS)**  
Mumbai



**World Health Organisation (WHO)**  
Geneva

**World Health Organisation  
(WHO)-India-WR Office**  
New Delhi

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## Preface

The World Health Organization initiated a multi-country World Health Survey programme in 70 countries to provide evidence based health information for health policy interventions. The broad objective of the survey is to strengthen the health information system of the country and develop capacity for policy makers to monitor health system responsiveness in terms of three major components namely burden of disease, health financing and health system responsiveness. The main objective is to provide data on a wide range of population health indicators such as health financing, health insurance, human resources for health, health state valuation, risk factors, mortality by cause, morbidity prevalence, reproductive and sexual health care and health system responsiveness relating to in-patient and out-patient care.

The World Health Organization and the Ministry of Health and Family Welfare (MOHFW), Government of India (GOI) designated the International Institute for Population Sciences (IIPS) to undertake the World Health Survey (WHS) in India. The funding and technical assistance were provided by the WHO, Geneva. Additional funding was provided by WHO, India Office, New Delhi.

The World Health Survey covered six major states of India namely Assam, Karnataka, Maharashtra, Rajasthan, Uttar Pradesh and West Bengal, which comprise about 47 percent of the country's population. The WHS-India covered a representative sample for each state. The pooled sample for India is 10,279 households. The health information questionnaire covered a sample of 9994 adult individuals in ages 18 and above in the six states.

The WHO-WHS India used standardized household and individual questionnaires in all the six states, which are also used in 70 other countries. The fieldwork for the survey was completed during February to June 2003. The instruments, sampling design, tabulations and structure of state and combined India reports were finalized in various regional and international workshops conducted by WHO. A Steering Committee comprising officials from MOHFW and researchers in the area of population health guided in the conduct of the survey.

This is the six states combined India report of the World Health Survey, 2003, which provides key population health indicators to health policy makers and researchers. For the first time in India, data is provided on a variety of population health indicators based on World Health Organization's updated definitions of health. There are several unique features, which the report unfolds. We hope that it will be useful for developing a framework for health policy interventions and further research.

**Prof. P. N. Mari Bhat**

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The World Health Survey-India, 2003 was successfully implemented in six states in the country due to the collaborative efforts of the Evidence, Information and Policy Division of the WHO, Geneva, the WHO-WR office, New Delhi, IIPS, Mumbai and a number of state level research organizations and researchers in the area of population health.

Dr. **Chris Murray**, the then Executive Director and Dr. **David Evans**, who followed him as the Executive Director of the EIP Division of WHO in Geneva provided overall leadership to the WHO-WHS multi country survey in 70 countries. Dr. **B. Ustun**, the survey coordinator and Dr. **Somanth Chatterji**, senior scientist guided the India team both in technical and operational aspects of the survey. Dr. **T.K. Roy**, the then Director, IIPS was instrumental in initiating the survey, Dr. **G. Rama Rao**, as officiating director, IIPS and Dr. **P.N. Mari Bhat**, Director & Senior Professor, IIPS also provided unreserved support in the final stages of the project. Dr. **Russell Blamey**, quality assurance advisor for WHO and Dr. **Nanjamma Chinnappa**, sampling advisor for WHO-WHS deserve special thanks for their suggestions and support.

We express our sincere thanks to the World Health Organization, Geneva for entrusting us with the task of conducting this survey in India. Special thanks are due to Mr. **Sunil Nandaraj**, National Programme Officer, WR, India for initiating the project, for being a member of the Steering Committee and regularly interacting with us at various stages of the survey. Our sincere thanks are due to the following members of the project Steering Committee for their guidance, support and encouragement:

Mr. **K.V. Krishnan**, formerly Economic Advisor to the Ministry of Health and Family Welfare, Smt. **Ganga Murthy**, Economic Advisor to the Ministry of Health and Family Welfare, Dr. **K.V. Rao**, former Chief Director, Ministry of Health and Family Welfare, Mr. **D.K. Joshi**, former Chief Director, Ministry of Health and Family Welfare, Mr. **P. Chattopadhaya**, Chief Director, Ministry of Health and Family Welfare, Prof. **P.M. Kulkarni**, Jawaharlal Nehru University, Prof. **C.A.K. Yesudian**, Tata Institute of Social Sciences and Dr. **Subash Salunke**, former Director General of Health Services, Government of Maharashtra.

Prof. **Tim Dyson**, London School of Economics reviewed the report with valuable comments for improvements for the combined six states India report. We are indeed very grateful to him.

A research team at IIPS spent long hours in preparatory work for the survey, in tabulation and in drafting the reports. In addition, a number of people at various levels and in various places contributed towards the completion of the survey.

Successful completion of the survey was possible largely due to the painstaking efforts of the research team at IIPS and the field investigators who patiently conducted the interviews and collected the required data. We sincerely thank all of them.

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# Fact Sheet-India (Pooled)

## World Health Survey-India, 2003

<b>Population</b>			
Households covered	10279	<b>Fuel Use (percent)</b>	
Individuals covered (in health modules)	9994	<i>Cooking with electricity/gas</i>	23
		Urban	67
Number of PSUs		Rural	15
Urban	94		
Rural	288	<i>Cooking with kerosene</i>	2
		Urban	7
<b>Risk Factors (percent)</b>		Rural	1
<i>Prevalence of tobacco consumption</i>	30	<i>Cooking with solid fuel<sup>4</sup></i>	75
Urban	22	Urban	26
Rural	31	Rural	84
<i>Never had an alcoholic drink<sup>1</sup></i>	91		
Urban	91	<b>Morbidity Prevalence (percent)</b>	
Rural	91	Tuberculosis screening <sup>5</sup>	2
<i>Access to piped water</i>	28	Voluntary counseling and testing for HIV/AIDS <sup>6</sup>	2
Urban	56	Condom use	6
Rural	22	Malaria <sup>7</sup>	6
<i>Access to other sources of water<sup>2</sup></i>	52	Diarrhea	30
Urban	35	Cervical cancer screening <sup>8</sup>	16
Rural	55	Breast cancer screening <sup>9</sup>	4
<i>No access to safe water</i>	21		
Urban	9	<b>Maternal Health (percent)</b>	
Rural	23	Full antenatal care <sup>10</sup>	48
		Care for delivery	34
<b>Sanitation (percent)</b>			
<i>Access to flush toilet</i>	7	<b>Immunization<sup>11</sup> (percent)</b>	
Urban	23	DPT3	43
Rural	3	Measles	32
<i>Access to other improved sources<sup>3</sup></i>	21		
Urban	40	<b>Non-communicable Diseases<sup>12</sup> (percent)</b>	
Rural	18	<i>Angina</i>	
<i>No access to improved sanitation</i>	72	Need (diagnosed)	9
Urban	38	Coverage (treated)	69
Rural	79		
		<i>Arthritis</i>	
		Need (diagnosed)	22
		Coverage (treated)	61

<i>Asthma</i>			<i>Vigorous activity</i>	
Need (diagnosed)	6		No difficulty	45
Coverage (treated)	72		Extreme difficulty	12
<i>Diabetes</i>			<i>Self care</i>	
Need (diagnosed)	3		No difficulty	71
Coverage (treated)	80		Extreme difficulty	3
<i>Depression</i>			<i>Bodily aches or pains</i>	
Need (diagnosed)	13		No difficulty	42
Coverage (treated)	13		Extreme difficulty	3
<i>Psychosis</i>			<i>Bodily discomfort</i>	
Need (diagnosed)	2		No difficulty	47
Coverage (treated)	49		Extreme difficulty	3
<i>Cataracts</i>			<i>Cognition</i>	
Need (diagnosed)	18		No difficulty	55
Coverage (treated)	52		Extreme difficulty	3
<i>Oral health problems</i>			<i>Inter-personal activities</i>	
Need (diagnosed)	28		No difficulty	70
Coverage (treated)	51		Extreme difficulty	4
<i>Road traffic injuries</i>	3		<i>Vision</i>	
<i>Other injuries</i>	2		Across the road (20m)	
			No difficulty	57
			Extreme difficulty	11
<b>Child Mortality (per 1000 live births)</b>			<i>At arm's length</i>	
Neonatal deaths (0-28 days)	44		No difficulty	58
Post neonatal deaths (1-11 months)	22		Extreme difficulty	11
Child deaths (12-47 months)	17			
Under five deaths	85			
<b>General Health State Rating<sup>13</sup> (percent)</b>			<i>Sleep</i>	
<i>Very Good health</i>			No difficulty	65
Overall	22		Extreme difficulty	2
Male	25			
Female	18		<i>Depression</i>	
Urban	28		No difficulty	53
Rural	20		Extreme difficulty	3
<i>Very Bad health</i>			<b>Health System Responsiveness</b>	
Overall	3		(normalized mean scores) <sup>15</sup>	
Male	3		<i>In-patient Services</i>	
Female	3		Overall	67
Urban	4		Autonomy	70
Rural	3		Choice	68
			Communication	73
			Confidentiality	68
			Dignity	78
			Basic Amenities	66
			Prompt attention	42
<b>Health State Rating in other domains<sup>14</sup> (percent)</b>				
<i>Mobility</i>				
No difficulty	53			
Extreme difficulty	3			

<i>Out-patient Services</i>		Drugs	52
Overall	70	Others	18
Autonomy	71	<b>Insurance Coverage (percent)</b>	
Choice	71	Overall	1.6
Communication	79	Mandatory	1.4
Confidentiality	72	Voluntary	0.4
Dignity	81	Urban	2.2
Basic Amenities	50	Rural	0.7
Prompt attention	69		
		<b>Human Resources for Health</b>	
<b>Health Expenditure (Rupees) <sup>16</sup></b>		(per 100,000 population)	
Total	117	Physicians	60
In-patient care	5	Nursing and Midwifery personnel	135
Out-patient care	35	Other health related and support occupation	245
Traditional medical practitioners	7		

#### Notes

- <sup>1</sup> Reference period is last 7 days.
- <sup>2</sup> Public standpipe, protected tube well, bore well, dug well or spring, rainwater etc.
- <sup>3</sup> Pour flush toilet, covered dry latrine etc.
- <sup>4</sup> Coal, charcoal, wood, agriculture/crop, animal dung, shrubs/grass etc.
- <sup>5</sup> Reference period is last one year.
- <sup>6</sup> Corresponds to all females of age 18-49, pregnant in last 5 years who reported in ANC clinics.
- <sup>7</sup> Reference period is last one year for children under 5 years.
- <sup>8</sup> Corresponds to females of age 18-69.
- <sup>9</sup> Females of age 40-69.
- <sup>10</sup> Corresponds to pregnancies in the last five years for women in ages 18 to 49.
- <sup>11</sup> Immunization corresponds to children under 5 years, only for cases for which immunization card is shown.
- <sup>12</sup> Reference period is one year prior to the survey.
- <sup>13</sup> Rating on the day of survey.
- <sup>14</sup> Reference period is last 30 days prior to the survey.
- <sup>15</sup> Responsiveness measured as normalized mean score which range between 0 and 100; reference period last 12 months.
- <sup>16</sup> Reference period is last one month.

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## Summary of Findings

### Objectives and coverage

The objective of WHS is to provide an evidence base on health expenditure, insurance, health resources, health state, risk factors, morbidity prevalence, and health system responsiveness for in-patient and out-patient care. In India, the World Health Survey covered six states, Assam, Karnataka, Maharashtra, Rajasthan, Uttar Pradesh and West Bengal.

### Background characteristics

Of the overall population of 58343 from 10750 households, 52 percent are males and 48 percent are females. The sex ratio of the population is 930 females per 1000 males, which is closer to the sex ratio of population in India in 2001 census. About 26 percent of the population is from rural areas and 74 percent from urban areas. The proportion of population in ages less than 15 years is 28 percent and the proportion of elderly population (60+) is 10 percent suggesting that the country is passing through third stage of demographic transition. For the household population, at each level of schooling, male compared to female population, urban compared to rural population have higher educational attainments.

The health status of the population was assessed from individual questionnaire administered to 9994 adult population in ages 18 and above. Of them, 51 percent are males and 49 percent are

females. Twenty seven percent of respondents are from urban areas and 73 percent are from rural areas.

### Use of tobacco and alcohol

The overall prevalence of tobacco use, either smoking or chewing, is 30 percent. Respondents using tobacco varies from the lowest of 25 percent in Rajasthan to the highest of 37 percent in West Bengal. The proportion of tobacco users among males is about three times higher compared to females. Prevalence of tobacco is higher in rural compared to urban areas, lower income quintile compared to higher income quintile and elderly population compared to younger population.

Ninety one percent of respondents reported that they had never ever consumed alcohol in India. The percent of respondents who had never ever consumed alcohol is 93 percent each in Rajasthan and Uttar Pradesh, 92 percent in Karnataka and 85 percent in Assam.

The percentage of respondents who never consumed alcohol is higher among females compared to males and in lower income quintiles compared to higher income quintile households. Eight percent of the respondents are infrequent heavy drinkers and above one percent are frequent heavy drinkers in India. Assam has the highest of 15 percent and Rajasthan has the lowest of six

percent of respondents as infrequent heavy drinkers. Respondents who are infrequent and frequent heavy drinkers are the highest among males compared to females and lower income quintiles compared to higher income quintile households.

#### **Nutrition and physical activities**

Seventy eight percent of respondents reported insufficient intake of fruits and vegetables and 29 percent inadequate physical activity in India. Ninety percent of the respondents in West Bengal have insufficient intake of fruits and vegetables and 33 percent have inadequate physical activity. In India, 60 percent of the respondents have insufficient intake of fruits and vegetables. Respondents with insufficient intake of fruits and vegetables are higher for lower income quintiles compared to higher income quintile households and elderly compared to population of younger ages. The percent of respondents with inadequate physical activities rises with age of the respondents and income quintile if the household. Thirty nine percent of urban respondents and 27 percent of rural respondents have inadequate physical activities. Ninety percent have insufficient intake of fruits and vegetables and seventy percent have inadequate physical activities among the respondents in ages 60 and above.

Information on the height and weight of the respondents was collected from those who knew their height and weight. For the population who reported their height and weight, the mean height of female and male respondents is 151 cm and 162 cm respectively. Nineteen percent of female and 13 percent of male respondents have a mean height less than the standard height. Thirty four percent of women in Assam and 26 percent of women in

West Bengal have a mean height less than 145 cm.

Twenty four percent of males and 29 percent of female respondents are below the standard body mass index weight of 18.5 kg/m<sup>2</sup>. About 10 percent of males and 13 percent of females have a body mass index weight more than 30.0 kg/m<sup>2</sup>. Overall, females compared to males, rural compared to urban, lower income quintile compared to higher income quintile and illiterates compared to educated respondents are in a disadvantageous position with respect to standard mean height and weight.

#### **Access to improved water sources and sanitation**

Twenty eight percent of households in India have drinking water piped to their houses and about half of the households (52 percent) have access to other sources of improved drinking water. Overall, 80 percent of the households in India have the access to either safe or improved clean drinking water, leaving 20 percent of the households with no access to improved drinking water sources.

Among the states, Maharashtra performs better in terms of improved access to safe drinking water. Forty one percent of the households in Maharashtra have water piped in to their households compared to just 12 percent in West Bengal. On the other hand, Uttar Pradesh (58 percent) has the highest percentage of households with other source of drinking water and Maharashtra (39 percent) has the lowest proportion. Rajasthan has the highest 32 percent of households with no access to improved drinking water sources.

The percentage of households having an access to improved drinking water piped to their houses is positively related to household income quintile



whereas those households depending on other sources of improved drinking water and no access to improved water sources is inversely related with household income quintiles.

Seven percent of the households have flush toilet to sewage system in India and another 21 percent of the households have access to other improved toilet facilities in India. About a third of households (72 percent) do not have any access to flush toilet or other improved sanitation. Among the states, Maharashtra (17 percent) has the highest percentage of households with flush toilet to sewage system, whereas it is less than one percent in Assam and Rajasthan. However, more than half of the households in Assam (51 percent) have other improved toilet facilities, which is only 10 percent in Maharashtra. Three fourths of the households in Uttar Pradesh, Rajasthan, Karnataka and Maharashtra, and about half of the households in Assam do not have access to improved sanitation facilities.

About two thirds of households (63 percent) in urban areas compared to just 21 percent of households in rural areas have access to flush toilet or other improved toilet facilities. The availability of improved toilet and sanitation facilities in the households proportionately increases with increasing household income quintile.

#### **Use of solid fuel**

About a fourth of the households (23 percent) are using cleaner fuels either electricity or gas for cooking in India. Two percent of households use kerosene and three fourths of the households use solid fuel for cooking. The proportion of households using electricity or gas is the highest in Maharashtra (39 Percent) and Karnataka (23

percent) with the lowest in Rajasthan (15 percent). Kerosene is used by four percent of households in Maharashtra. The use of solid fuel is the highest in Rajasthan (84 percent) and lowest in Maharashtra (57 percent). Nearly two thirds of households (67 percent) in urban areas use cleaner fuel compared to less than 15 percent of households in rural areas. More than three quarters of the households (76 percent) use cleaner fuel at the top household income quintile (Q5) compared to nil percent of bottom household income quintile (Q1). The percentage of households using electricity and gas is higher in urban compared to rural areas, and higher income quintile compared to lower income quintile households. Thus, inequalities in household environmental risk factors are clearly the direct outcome of household economic inequalities.

#### **Screening for tuberculosis, HIV/AIDS and use of condom**

With respect to communicable diseases, overall about two percent of respondents have reported tuberculosis screening in India. The highest four percent of respondents from Rajasthan and three percent each from West Bengal and Maharashtra have been screened for tuberculosis. A greater percent of males compared to females, rural compared to urban, lower income compared to higher household income quintile respondents have been screened for tuberculosis.

About two percent of women respondents in ages 18-49 have reported as having received voluntary counselling and testing for HIV/AIDS (through ANC clinics). The highest of five percent women respondents received voluntary counselling and testing for HIV/AIDS in Maharashtra followed by three percent in Karnataka. Voluntary counselling

and testing for HIV/AIDS is less than one percent in rest of the four states. Four percent of respondents in the higher income quintiles have reported that they had voluntary counselling and testing for HIV/AIDS test compared to just one percent of respondents in the lower income quintile households.

Six percent of respondents or their spouses in ages 18-49 have reported using condoms in India. Respondents using condoms is highest 10 percent each in Assam and Uttar Pradesh and lowest of two percent in Karnataka. A higher proportion of males compared to females, urban compared to rural and higher income quintile respondents compared to lower income quintile respondents are using condoms.

#### **Malaria and diarrhoea**

The information on malaria and diarrhoea were collected for children less than five years of age in respondents households. About six percent of children had an episode of malaria in India in the last one year. Prevalence of malaria is very high in Rajasthan (14 percent) followed by Maharashtra (six percent). The prevalence of malaria is one percent in Karnataka, which is the lowest. A greater percentage of male, rural and uninsured children had an episode of malaria. The Prevalence of malaria declines with increasing household income quintiles.

All the children with an episode of malaria were treated in Assam and Karnataka. Rajasthan being one of the states with highest episode of malaria, 94 percent of the children were treated. A greater percentage of males compared to females, uninsured compared insured children received treatment for malaria. The reported prevalence of

diarrhoea is 30 percent in India with the highest in Rajasthan (40 percent) and the lowest in Assam (nine percent). Prevalence of diarrhoea is higher among rural compared to urban, uninsured compared to insured and lower income quintile compared to children in the higher household income quintiles.

#### **Maternal and child health**

Overall, 16 percent of women in ages 18-69 had undergone cervical cancer screening and four percent of women in ages 40-69 have had breast cancer screening. The highest coverage of cervical cancer (31 percent) screening and breast cancer screening (nine percent) is reported in Maharashtra. The lowest seven percent of woman who had cervical cancer screening is reported each in Assam and Uttar Pradesh.

In urban areas, 25 percent of women respondents reported having had cervical cancer screening and nine percent of women had breast cancer screening. In rural areas, fifteen percent of women had cervical cancer and four percent had breast cancer screening. Expectedly, a higher percentage of uninsured respondents and higher income quintile had been screened for cervical and breast cancer.

Nearly, half of the women (48 percent) have received full antenatal care and 34 percent received care at the time of delivery in India for births that occurred in the last five years. Full antenatal coverage of women is the highest of 66 percent and 46 percent for delivery care in Maharashtra. Antenatal coverage is the lowest of 27 percent in Uttar Pradesh and care for delivery is the lowest of 10 percent in Assam.

The percent of women receiving antenatal care and

care for delivery is higher for urban compared to rural, insured compared to uninsured, higher income quintile compared to lower income quintile, educated mothers compared to illiterate mothers.

Overall, as per the immunization card, 43 percent of children received three doses of DTP immunization and 32 percent of children received measles immunisation. The highest level of immunisation coverage for three doses of DTP (59 percent) and measles immunisation (55 percent) is reported for Karnataka followed by Maharashtra. The reported coverage of three doses of DTP immunisation is lowest in West Bengal (24 percent), Assam (16 percent), and West Bengal (17 percent) have shown lowest coverage of measles immunisation. Immunisation of three doses of DTP is unfavourable to female and rural children, indicating a gender and residential gap in immunisation coverage.

#### **Asthma, arthritis, angina, diabetes, depression and psychosis**

With respect to non-communicable diseases, the highest prevalence of 22 percent is indicated for arthritis followed by 13 percent for depression. The lowest prevalence of two percent is reported for psychosis and three percent for diabetes. The reported prevalence of angina is highest in Maharashtra (19 percent) followed by Assam (nine percent). Uttar Pradesh has the lowest of three percent of respondents diagnosed with and treated for Angina. The prevalence of angina shows too little variation by residence and between insured and uninsured respondents. The reported prevalence and coverage of angina tend to increase with low-income quintile compared to higher income quintile households.

Arthritis prevalence is the highest in West Bengal (35 percent) and lowest in Rajasthan (nine percent). The gap between need and coverage of arthritis is highest in West Bengal but lowest in Rajasthan. The prevalence of depression is very high in Maharashtra (27 percent). However psychosis prevalence is highest in Rajasthan (three percent) and lowest in Karnataka (one percent).

Of the nine percent arthritis patients in Rajasthan, all of them received treatment. The prevalence of arthritis is 26 percent among females compared to 19 percent among males. Comparatively, 63 percent of female and 58 percent of male respondents received treatment for arthritis. There is not much variation in the prevalence and treatment of arthritics between rural and urban respondents. The reported prevalence is higher but coverage of arthritis is low at the lower income quintiles compared to higher income quintiles. The highest prevalence for diabetes is reported for Maharashtra and West Bengal with four percent each.

Amongst the six states the percent treated is consistently higher in Karnataka for most non-communicable diseases. Both the percent diagnosed with and percent treated for arthritis is higher among females than males. The percent diagnosed with angina, arthritis, diabetes and depression are higher in urban areas. The percent treated is also higher in urban areas except for depression. The prevalence of angina, arthritis, asthma, depression, and psychosis are higher at the lower income quintiles. In contrast, the percent treated for these diseases are higher at the higher income quintiles. Both the prevalence and coverage for arthritis, asthma, and diabetes are higher among insured than uninsured respondents. The prevalence of asthma is the

highest in Rajasthan (seven percent) and all the respondents received treatment for asthma.

#### **Coverage for vision care**

An assessment was made of those respondents diagnosed by a physician or other health professionals in the last five years as having cataracts in one or both the eyes, and if he/ she had the cataracts removed by surgery. About 18 percent of the respondents aged 60 and above are diagnosed with cataract. Among them, 52 percent had cataract surgery in India. The highest percentage diagnosed with cataract is 24 percent in Maharashtra followed by 21 percent in West Bengal and the lowest of 12 percent in Karnataka. Sixty seven percent of respondents have been treated for cataract in Assam followed by 57 percent in Karnataka. The lowest of 39 percent respondents undergone cataract surgery in Uttar Pradesh. A higher percentage of females compared to males, urban compared to rural, insured compared to uninsured and higher income quintile compared lower income quintile respondents were undergone cataract surgery in India.

#### **Coverage for oral health**

Overall, 28 percent of respondents reported oral health problems in India. The highest 42 percent of respondents with oral health problems is reported in West Bengal. Respondents treated for oral health problems ranges between 21 to 28 percent, except West Bengal. Prevalence of oral health problems does not systematically vary by residence, insurance status and by income quintiles.

Of those who were diagnosed with oral health problems, 51 percent have been treated. The

percent of respondents treated for oral health problems is highest in Karnataka (72 percent) and lowest in Assam (26 percent).

Prevalence of oral health problems is higher among females compared to males. However, the percentage who received treatment for oral health problems do not vary much by sexes. A higher percentage of urban and higher income quintile respondents received treatment for oral health problems.

#### **Coverage for injuries**

Three percent of respondents received emergency care for road traffic accidents in India. The highest five percent of respondents who have received emergency care for accidents is reported in West Bengal followed by four percent each in Uttar Pradesh and Rajasthan. Two percent of respondents have received emergency care for other injuries in India.

About five percent of male and two percent of female respondents received emergency care for road traffic accidents. The proportion who received emergency care for other injuries is four percent for male and one percent for female. The care received for road accidents and other injuries do not vary systematically by income quintiles.

#### **Child mortality**

State level child mortality rates are provided for three states of Maharashtra, Rajasthan and West Bengal. Child mortality estimates for Uttar Pradesh, Karnataka and Assam are not provided due to insufficient number of cases. For children born in the last 10 years, neonatal mortality is 44, post neonatal mortality is 22, and under five mortality is 85 per 1000 live births.

Those mothers who are illiterate, the child mortality is 106 when compared to mothers who have at least completed secondary school and above (36 per 1000 live births). Neonatal mortality is higher in rural areas compared to urban areas. Similar variation is found in post neonatal, child and under five mortality.

#### **Adult mortality**

Adult mortality is calculated for the ages 15-59 based on sibling survivorship data and verbal autopsy model. Overall an adult mortality rate is 0.199 for male and 0.213 for female during 15 years prior to the survey (1989-2003). Causes of death are known for 55 percent of female deaths and 61 percent for males from verbal autopsy module. Diarrhoea, injury and chest pain contribute to major share of deaths. Death due to injury is nine percent for female compared to 14 percent for males. Ten percent of the deaths among females occurring due to chest pain in case of males compared to 15 percent among male. Eleven percent of deaths among females is due to maternal causes.

#### **Health state valuations**

An important component of World Health Survey is an assessment of respondents valuation of their health state. The health state in general and health state in nine major domains such as mobility, self-care, pain and discomfort, cognition, interpersonal activities, vision, sleep and energy and affect were assessed. With respect to general health ratings, 22 percent of respondents rated themselves to be in very good health, 35 percent of respondents in good health followed by 27 percent in a moderate health state, 13 percent in bad health and three percent in a very bad health state in India.

Overall 62 percent of urban respondents have rated themselves in good to very good health compared to 55 percent of rural respondents. The percent of respondents reporting good to very good health state is positively associated with education and household income and inversely with age of the respondent.

The proportion of the respondents reporting difficulty (mild to extreme) ranges between 26-58 percent across various domains of health state. At the higher end, fifty eight percent of the respondents in India have aches or pains in the body. The percentage of respondents having extreme difficulty ranges from two to 12 percent for most of the domains of health state.

In India, consistently a higher proportion of respondents have reported problems of mental health and other morbidities. A higher proportion of respondents have reported problems of mental health in Maharashtra. Majority of the respondents reported severe and extreme difficulties of vision particularly seeing an object at arms length and a person across the road.

The percent of respondents who reported moderate and severe difficulties tend to increase with age, and higher for females compared to males and rural compared to urban respondents. However, most consistently, extreme difficulties are higher in urban compared to rural respondents. Also strong positive association is clearly seen between age and reported difficulty in health state.

Almost consistently in all the domains of health state valuation, the proportion of respondents rating no difficulty is highest in Karnataka followed by Assam and lowest in West Bengal. Correspondingly, those reporting difficulties of varying degree are the highest in West Bengal



followed by Maharashtra with Uttar Pradesh and Rajasthan reporting between the lower and higher extremes. Between Rajasthan and Uttar Pradesh, respondents in Uttar Pradesh have rated better health, although Rajasthan indicates better situation in various health outcome indicators.

The prevalence of reported difficulty does not indicate a consistent pattern with the advancement in health transition and social development of the states. Assam, although a less developed state indicates lower levels of perceived difficulties of health along with Karnataka. Maharashtra, though a comparatively developed state, is seen to have higher prevalence of difficulties along with West Bengal.

Around eight to 27 percent of respondents have reported severe to extreme difficulties in various domains of health. This percentage is lowest for self-care and highest for vigorous activities. The prevalence of severe to extreme difficulties increases to 70 percent in case of vigorous activities and more than 40 percent in bodily pain and aches.

The reported prevalence of severe to extreme difficulties is nearly 2-3 times higher (10 to 20 percent) for illiterates and poor household income quintiles (Q1) compared to literate and richer household income quintile (Q5). The reported prevalence of severe and extreme difficulties is about a third higher among females than males.

The higher prevalence of various forms of difficulties for the female, elderly, poor, illiterates and the rural population, consistently amongst all the health state domains clearly establish the perceived ill health of those populations. The patterns of this population health state inequalities are important evidence, in addition to the inequalities of morbidity prevalence.

### **Health system responsiveness**

Responsiveness is first assessed in terms of the percent of respondents needing health care and not needing health care in the past. About half of the respondents and 14 percent of their children needed health care in the one year prior to the survey. Fourteen percent of respondents and three percent of their children needed health care during the last 1-5 years. Overall, eighteen percent of the respondents reported that they never needed any health care. A higher percentage of females compared to males and urban compared to rural respondents needed health care. The reported need for health care indicates an increasing trend with the age of the respondents.

Of those who needed in-patient care, about 87 percent needed care for acute diseases, eight percent for child health and three percent for maternal health care. The need for maternal health care is higher in urban compared to rural respondents. Among the respondents who needed out-patient treatment, 74 percent needed care for acute diseases, 10 percent for child health, four percent for maternal health and 12 percent for non-communicable and chronic diseases.

The health system responsiveness is further measured on seven major domains, which describes respondent's personal expectations and experiences of performance of health system in India. The normalized mean scores of respondents ratings are used to assess the health system responsiveness. The mean score of 66 for in-patient treatment compared to 70 for out-patient indicates a higher expectation of health system performance for out-patient care.

The expectation for health system responsiveness was higher for treatment of chronic diseases both

for in-patient and out-patient care. Those treated in private hospital indicated a higher expectation of health system performance compared to government hospitals both for in-patient and out-patient care.

Males have higher expectations of health system responsiveness for the domains of autonomy, choice of services and dignity, whereas females have higher expectations in the domains of communication, confidentiality, basic amenities and prompt attention in in-patient services. These differences suggest the differences in respondent's experiences of health system performance, both as a result of differential expectations and cultural values, based on their background characteristics. Overall, health system responsiveness of the country can be rated as 'good' but not as excellent.

#### **Health expenditure, insurance and human resources**

Household expenditure on various services of health was assessed for one month prior to the survey. A household in India on an average spent 118 rupees in the previous month for health treatment. Of this, the households on an average spent 52 rupees on drugs, seven rupees on traditional medicines and 18 rupees on other expenses related to treatment in a month. The amount spent on in-patient treatment was five rupees and out-patient treatment was 35 rupees. A major share of health expenditure is on drugs and out-patient care.

Household health expenditure on in-patient treatment, out-patient treatment, drugs and other related expenses rose with increasing income quintiles. However, health spending on traditional medical treatment declined for higher income

quintiles, suggesting the dependence of poorer respondents on traditional medicines. Average household health expenditure is the highest of 203 rupees in Maharashtra and 138 rupees in West Bengal. Household health expenditure is the lowest 90 rupees in Karnataka.

Eighty percent of households reported that they paid their health expenditure through current income followed by 16 percent from borrowed sources. Health expenditure paid through savings (bank account) is nine rupees and income from outside the family (family members or outside) constitutes about 11 percent each. About seven percent of the households financed their health expenditure through sale of assets such as furniture, cattles, jewellery etc. Less than one percent of households relied on health insurance for their health payments.

#### **Out-of-pocket expenditure on health**

In sixty four percent of households, out of pocket expenditure as a share of households' capacity to pay (OOPCTP) is less than 10 percent. In 16 percent of households, out of pocket expenditure as a share of household capacity to pay range between 10 and 20 percent and in 12 percent of households out of pocket of expenditure as a share of capacity to pay is between 20 and 40 percent. In eight percent of the households, out-of-pocket expenditure as a share of capacity to pay is equal to or above 40 percent, which by definition constitutes catastrophic payments.

The highest proportion of out of pocket health payment is for drugs (45 percent) followed by 30 percent for out-patient treatment, 15 percent in other category and six percent for traditional medicines. The lowest four percent share of out

of pocket expenditure on health is for in-patient care.

### **Catastrophic expenditure**

Twelve percent of households in India are assessed as having catastrophic health spending. In all, the 1229 households with catastrophic spending on health on an average spent 201 rupees for health treatment in the last one month. Of this, the amount spent on drugs was the highest of 77 rupees followed by 49 rupees for out-patient fees. Households spent 22 rupees for in-patient fees, 40 rupees for other treatment and 14 rupees for traditional medicines.

Catastrophic health expenditures rise with increasing levels of income quintiles. At the lower income quintiles, on an average, the catastrophic health expenditure is 151 rupees compared to 260 rupees at the higher income quintile. Higher income quintile households on an average spent 12 times higher for in-patient treatment compared to the low-income quintile households in India.

### **Impoverishment**

The proportion of households with catastrophic expenditure in the first and second expenditure decile is 13 percent and 25 percent respectively. About 30 percent of the households had catastrophic expenditure in the third decile. Households in the middle expenditure decile e.g. fifth and sixth deciles experienced highest impoverishments. Both households of catastrophic expenditure and impoverishment due to catastrophic expenditure are concentrated in the middle health expenditure decile categories. As economic status improves that is in very high health spending categories, the catastrophic expenditure

and impoverishment levels come down.

### **Insurance**

In India, only two percent of the population are insured and the rest 98 percent of respondents are uninsured. Of the two percent insured, 1.5 percent are covered under mandatory insurance and 0.5 percent are covered under voluntary insurance. Both voluntary and mandatory insurance coverage exists at a minimum scale, but mainly in urban areas. Rajasthan and west Bengal have slightly higher levels of insurance coverage than other states. Overall, the poor insurance coverage indicates that it requires a serious policy intervention to develop it as an important source of health financing.

### **Human resources for health**

The World Health Survey indicates 60 physicians, 135 nursing and mid-wife and 245 other health related support staffs per 100,000 population in India. All these professionals are trained in a health related areas or they ever worked in health related occupations. The highest ratio of health professionals such as physicians, professionals in nursing-midwifery and other health personnel per 100,000 population is reported in Maharashtra. The availability of health professionals per 100,000 population is greater among males compared to females, urban compared to rural, higher income quintile compared to lower income quintile. Males dominate in physician category while females dominate in nursing profession with 218 female nurses compared to 57 male nurses per 100,000 population of the respective sexes.

Physicians are three times higher in urban areas



compared to rural areas. Physicians and nursing-midwifery professionals are concentrated in higher income quintile whereas the professionals in other health and support occupations are evenly distributed in income quintiles. Among the health professionals, 14 percent are physicians, 31 percent are nurses and mid-wifery professionals and 56 percent are other health and support staff.

All physicians, 17 percent of nursing and midwifery personnel, 42 percent of health and support occupation professionals have university degrees. More than 90 percent of health professionals in nursing-midwifery and other health and support occupations have secondary or less than secondary education.

Among the three categories of professionals in health occupations, physicians have the highest participation in the health occupations in the last one year. Eighty eight percent of the physicians have worked in the last one year and the rest 12 percent did not work not because they could not find a job or for other reasons. About 71 percent of the nursing and the midwifery personnel have worked in the last one year and 27 percent did not work for other reasons. Three percent of nursing and midwifery personnel could not find a job in the last year. Among other health and support occupation professionals, 66 percent have worked in the last one year and 34 percent did not work

for other reasons.

The primary work location of the health professionals indicates that three fourth of the physicians (79 percent), one fourth of professions in other health and support occupations (26 percent) and 31 percent of nursing and midwifery personnel are working in the private health facility. Twenty one percent of physicians, 54 percent of nursing and midwifery professionals and 25 percent of health and support occupation professionals are working in public health facility. The proportion of professionals in non-health services is 20 percent among nursing and midwifery professionals and 44 percent among other health and support occupations.

The nature of work reflects that direct patient care is the major activity of the physicians (90 percent). About 43 percent of nursing/mid wives and five percent other health professionals are involved in direct patient care. Those who are engaged in health education/research are more among other health staff (56 percent) and 10 percent from physicians. About 53 percent of nursing and midwifery professionals are involved in health education, research and other health related activities. Twenty percent professionals in health and support occupations and four percent of nursing professionals are involved in non-health activities.

## Introduction

### 1.1 HEALTH SYSTEM PERFORMANCE IN INDIA

The health system of a country deserve the highest priority to improve the health of the population as they provide the critical interface between life saving and life enhancing interventions and the people who need them (Deepa and Vinish, 2004). The World Health Organisation (2000) made an attempt to measure the efficiency of health systems in 191 countries across the globe using five performance indicators and found that regions vary enormously in their levels of development in health outcomes and in spite of similar levels of income and educational attainment. An assessment of the health system performance in India in terms of health outcome indicators shows tremendous improvement over the last 50 years. The crude death rate has declined from 26.1 in 1970 to 8.4 in 2001 (Registrar General, 2003). Life expectancy has risen from 36 years in 1951 to 62.1 years in 1995-2000 (United Nations, 2003). Infant mortality has been halved from 146 in 1951 to 66 in 2001.

The factors contributing to such vast improvements in health have been the three tier system of community health centers, primary health centres and primary health sub-centers,

countrywide immunization drives and improvements in determinants such as water supply, sanitation and socio-economic conditions. However, this achievement has been very meagre compared to our health policy goals. More importantly, there has been very slow progress in the 1990s in health status improvement, as several of the above indicators show a plateauing. Moreover, the improvement in health status has been very uneven across the country, where states such as Kerala have health indicators comparable with the middle-income countries and other states such as Uttar Pradesh, Madhya Pradesh, Bihar and Orissa are at the lower end levels comparable to Sub-Saharan Africa.

The experiences of some of the developing countries including India indicate that government participation in financing and provision of health care does not promote the objectives of equity (Castro-Leal et.al, 1999; Meesok 1984; van de Walle, 1992). In the Indian context too, micro level studies found that the public sector spending is not equitably distributed across expenditure quintiles and other socio-economic strata (Visaria and Gumber, 1994; Visaria et.al 1996; Gumber 1997; Sundar, 1995; Selvarajau, 2003). Also, the

experience of many countries indicates that urban areas are favoured compared to rural areas (Vogel, 1988; Hotchkiss and Gordillo, 1999).

It is therefore necessary to understand the potential for health system improvements in the states. The concern for equity in terms of providing health care to the poor masses is clearly brought out in various health policy documents related to health in India (Bhore Committee, 1946; National Health Policy 1983; GOI, 1998; Lok Sabha, 1985). Eventhough, India spends about six percent of its Gross Domestic Product, the health status indicators in terms of health status index is sufficiently lower compared to many of the developing countries. So the health system performance needs to be assessed not only by the health sector endowments but also by its efficient use. An empirical study in Cote d' Ivoire found that health care utilisation at the lower end of the income spectrum was much more sensitive to distance when compared to their richer counterparts (Gertler and Van der Gaag, 1990).

## 1.2 SHARE OF PUBLIC AND PRIVATE HEALTHCARE FACILITIES

The Government of India and the states spend less than one percent of the nations Gross Domestic Product, or about three percent of all government spending, on health. Although not quite as large as the world average of 5.5 percent of GDP spent on health, it is still sounds significant. Ninety percent of the health finance is routed through the state (provincial) governments since the Indian constitution specifies that a large number of health related activities belong to the ambit of individual states (GOI, 1996; Reddy and Selvarajau, 1994). Also, the central government spends most of the

remaining share, with local governments such as municipalities accounting for about 2.5 percent (World Bank, 1995).

The public sector plays an important role in the rural health delivery system in the country. In urban areas the public and private health systems complement each other. The public sector does a offer a source of subsidized health care to the majority of India's underprivileged, but this benefit comes at the price of subsidizing the richer groups out of proportion to their share in the population (NCAER, 2000). Rural health system performance determines the overall health outcome of the states and the country. Thus, the performance of public health system is of great significance in rural areas.

In India, patients from both rural and urban areas overwhelmingly choose public facilities (Government hospitals, Community Health Centres and Primary Health Centres) for in-patient care. The reliance on public hospitals for in-patient care was greater in hilly and backward states, among Scheduled Castes and Scheduled Tribes and those belonging to the lower monthly per capita expenditure quintile (Shariff, 1995; National Sample Survey Organisation, 1998). In the public sector, 70 percent of hospitals and 85 percent of hospital beds are located in urban areas. These facilities are used more often in cases of severe and catastrophic illness, which the private practitioners are either reluctant or unable to handle.

Poor patients depend heavily on public health services because the cost of treatment of illness is higher in private health care facilities. The patients with higher levels of income use private health care facilities because of better quality. However, other

studies suggest that only 35 percent of the patients seek care from public facilities for major illness and largely depend on private health care facilities, irrespective of their level of income (Selvarajau, 2003). In the public sector, 70 percent of hospitals and 85 percent of hospital beds are located in urban areas.

Table 1.1 presents the trend in health expenditure in India in different domains. In India, the total health expenditure was 5.3 percent of the Gross Domestic Product (GDP) in 1997 and 5.1 percent in 2001 (World Health Report, 2003). This indicates a marginal decline in the proportion of health expenditure as a percent of GDP. Private household health expenditure as a percent of total expenditure on health was 84 percent in 1997 and 82 percent in 2001. On average, a household spends 250 rupees per capita per annum on health services. Health expenditure is 40 percent higher in urban households than in rural households. Health expenditure is also positively related with

overall household expenditure (Shariff, 1995).

Private health spending out of pocket expenditure in India is one of the highest in the world and indicates an inefficient way to finance healthcare that leaves people highly vulnerable. Studies in less developed countries in general shows that subsidies on public health are not necessarily targeted well to those most in need, the poor (Selden and Wasylenko, 1992). Government expenditure on health as a percent of total government expenditure was 3.2 percent in 1997 and 3.1 percent in 2001.

Also, the share of health budget in total revenue budget of the 16 major states has come down from 6.7 percent in 1987-88 to 5.4 percent in 1996-97 (Selvarajau, 2003). Studies have shown that the use and availability of health care system varies between states, gender, and residence and by different socio-economic groups (Duraismy, 1998; Gumber, 1997; CMIE, 1997; NCAER, 2003).

**Table 1.1 Trends in health expenditure in India, 1997-2001**

	1997	1998	1999	2000	2001
Total expenditure on health <sup>1</sup> (as a percent of GDP)	5.3	5.0	5.2	5.1	5.1
General government expenditure on health (as a percent of total expenditure on health)	15.7	18.4	17.9	17.6	17.9
Private expenditure on health (as a percent of total expenditure on health)	84.3	81.6	82.1	82.4	82.1
General government expenditure on health (as a percent of total government expenditure)	3.2	3.5	3.3	3.1	3.1
External resources for health (as a percent of total expenditure on health)	2.3	2.4	2.2	2.2	0.4
Out of pocket expenditure (as a percent of private expenditure on health)	100	100	100	100	100

<sup>1</sup> Includes all public and private expenditure on health  
Source: World Health Report, 2003

Private health facilities are greatly used in urban India. However, private practitioners are well spread even in remote and backward areas, and they are usually contacted for day-to-day health care needs before availing distantly located specialist public facilities.

The growth of corporate hospitals is due to the demand for development of a health care market in which investment in state-of-the-art medical technology can give a good return. Although the private sector accounts for a significant portion of the health system facilities, human resources and expenditure in India, no adequate mechanism has been developed for monitoring and regulating the private health sector.

In most countries health sector reform involves a change in the respective shares of tax revenue, social or private insurance, user fees and external aid in financing the health sector. Services provided in the public and private sector tends to differ. Hospital subsidies are distributed much more evenly in urban population in comparison to the rural population (NCAER, 2000).

A shift takes place in the role that the state plays in the regulation and provision of health care services and the development of various types of public-private partnerships. Decentralisation, integration of services, including sector-wide approaches and reforms in logistics occur. The reform process is also affected by the geopolitical context in which a health system is embedded. This includes the bargaining position of the country in the international setting, the level of external debt and financial stability of the country and the impact of the past political structure on the health care system.

### 1.3 HEALTH SYSTEM GOALS

Health for all by the year 2000 AD is a national goal set by the Indian policy makers over Alma Ata. Since then, a lot of planning, efforts and public expenditures have been focussed and concentrated to improve the human health both in rural and urban parts of India. Supply of medicine has also improved. Despite concentrated efforts, India is one of the many developing countries, which faces a high level of morbidity, especially among the infants, children, women and the elderly. Also high incidence of infectious, communicable diseases are associated with low levels of sanitation, public hygiene and poor quality drinking water (Shariff, 1995).

The main goals of the health system are health system responsiveness and fairness in financing. Health of the population should reflect the health of individuals throughout the life course and include prevention of both premature mortality and non-fatal health outcomes as key components. Responsiveness has two key sub-components: respect of persons and client orientation (WHO, 2002).

Respect for persons involves elements of dignity, autonomy and confidentiality and captures aspects of the interaction of individuals with the health system that often have an important ethical dimension. Client orientation includes prompt attention to health needs, basic amenities of health services such as clean waiting rooms or adequate beds and food in hospitals, access to social support networks for individuals receiving care and choice of institution and individual providing care.

There are also cross-system goals to evaluate how much the health system helps or hinders education, democratic participation, economic production



etc. One of the more important cross-system goals that should be emphasised is the contribution of the health system to economic production and social aspects like education.

#### 1.4 NATIONAL HEALTH POLICY OF INDIA, 2002

In the broader context of health system goals, a new National Health Policy was formulated in 2002 to cater to the changes in the determining factors relating to the health sector since the National Health Policy of 1983. The old health policy was revised and restructured based on the United Nations Millennium Development Goals.

The main objective of the National Health Policy 2002 is to achieve an acceptable standard of good

health amongst the general population of the country. The approach would be to increase access to the decentralised public health system by establishing new infrastructure in the existing institutions.

The National Health Policy (2002) of India has noted that improvement in health status in terms of indicators such as the infant mortality rate, morbidity prevalence, life expectancy etc. has been very uneven across the rural-urban areas. The statistics also bring out wide differences between the attainments of health goals in the better performing states (Kerala, Maharashtra, Tamil Nadu) compared to the low-performing states (Rajasthan, Uttar Pradesh, Orissa, Bihar, Madhya Pradesh, Chhattisgarh and Jharkhand). So, the national average of health indices hides the wide disparities in public health. Given a situation in

The New National Health Policy (2002) has specified the following goals:

GOALS	YEAR
Eradicate Polio and Yaws	2005
Eliminate Leprosy	2005
Eliminate Kala Azar	2010
Eliminate Lymphatic Filariasis	2015
Achieve zero level growth of HIV/AIDS	2007
Reduce mortality by 50 percent on account of TB, malaria and other vector and water borne diseases	2010
Reduce prevalence of blindness to 0.5 percent	2010
Reduce IMR to 30/1000 and MMR to 100/lakh	2010
Increase utilisation of public health facilities from current level of <20 to >75 percent	2010
Establish an integrated system of surveillance, National health accounts and Health Statistics	2005
Increase health expenditure by government as a percent of GDP from the existing 0.9 percent to 2.0 percent	2010
Increase share of central grants to constitute at least 25 percent of total health spending	2010
Increase state sector health spending from 5.5 percent to 7 percent of the budget	2005
Further increase state sector health spending to 8 percent of the budget	2010

Source: National Health Policy, 2002, Government of India, Delhi.

which the national averages in respect of most indices are themselves at unacceptably low levels, the wide inter-state disparity implies that for vulnerable sections of society in several states, access to public health services is nominal and health standards are grossly inadequate. There is also a big divide with respect to health care access between the poor and the rich and by many indicators of socio-economic development.

A comprehensive evidence base is an important input for effective health policy interventions. The lack of evidence base from routine health information system is a common limitation in many developing countries including India. Given this background, the World Health Survey intends to provide evidence on the health status of the Indian population.

### **1.5 HEALTH RELATED SURVEYS IN INDIA**

In India, Census and vital (sample) registration system provide reliable data on several social-economic and demographic aspects of the population. However, very little information is available on population health, morbidity and health system performance indicators. In view of lack of routine health information, organisations such as the National Sample Survey Organisation (NSSO) and the National Council of Applied Economic Research undertook national surveys on morbidity and healthcare.

The NSSO surveys gathered information on physical and mental disability, morbidity, maternal and child health, utilisation of medical services, medical expenditure on different treatments and injuries in different rounds of the health and morbidity survey (NSSO, 1974; 1987).

Micro and macro level informations on medical care, health care needs of population in different states were gathered in NCAER surveys (NCAER, 1990; 1993).

More recent are the National Family Health Survey (NFHS) and Rapid Household Survey (RH-RCH). The two rounds of NFHS (1992-93; 1998-99) focus on the women in the ages 15-49 and provide information on fertility levels, use of family planning methods, infant and child mortality, immunisation, morbidity pattern including the prevalence of diarrhoea, malaria, leprosy, nutritional status of women and children, maternal and child health, quality of health care etc. The RCH surveys are designed to provide data at the district level on maternal and child health and various health infrastructure facilities covering primary health sub-centres, primary health centres (PHC), community health centres (CHC), first referral units (FRU) and hospitals (RCH, 1997-98; 2001-02).

In a nutshell, all these surveys are focussed on a variety of demographic indicators, general morbidity prevalence rates and maternal and child health indicators. The NSSO although focuses on morbidity prevalence more extensively, is not sufficient to assess the health system performance of a country in a broader framework.

### **1.6 WORLD HEALTH SURVEY, 2003**

Given the inadequacy in health system performance in relation to health system goals in India, there is a need to generate a systematic information database between nursing homes and the local supervising authority, and data on disease patterns for taking policy decisions on public health matters. Based on this understanding, the World Health

Organisation initiated the World Health Survey.

There are several significant features and unique techniques, which are applied in WHS. In the WHS, a psychometric tool is used as an illustration of objects or events that can be understood even by an illiterate. The illustrative tools used to collect health information from an individual are (a) vignettes and (b) cards. All the responses are coded in a five-point scale. It is also the first survey in the country to use Global Position System (GPS) device to collect Geographical Information System (GIS). The households surveyed can be distinctly identified in the maps using the GIS information.

The WHS survey coverage and information generated is based on advanced social survey interview techniques. These include information on health issues at both household and individual levels. Health system performance in terms of rising need for treatment and those actually treated, health system responsiveness, self assessed health state of the population which are very critical inputs for health policy initiative on a wide range of population health indicators.

The World Health Survey 2003 is a multi-country survey programme in 70 countries with the aim to collect good quality baseline information on the health outcomes in a population as a result of investment in health systems. The broad objectives of the survey programme are:

- 1) To develop a means for providing low cost information that would supplement the information provided by the health information systems of a country.
- 2) To develop the capability for policy makers to monitor the performance of the health system.

The survey has adopted a modular approach with the survey instrument divided into separate modules for various health and mortality components. The modules cover the following important aspects of health at the household and individual levels e.g. health expenditure, health insurance, human resources for health, socio-demographics, health states of population, risk factors, mortality, morbidity prevalence both communicable and non-communicable, health system responsiveness for in-patient and out-patient care and social capital.

An eventual outcome of the survey is to assess health status of the population using the following three summary measures (a) Disability Adjusted Life Years (DALY), (b) Disability Adjusted Life Expectancy (DALE) and care (e.g. Child survival) and (c) Equality in health.

In the past, health status assessment studies concentrated on morbidity and mortality statistics along with the incidence and prevalence of communicable diseases. Now, with the epidemiological transition from communicable to non-communicable diseases, measuring chronic diseases and injuries that are non-fatal has become more relevant in understanding the health status of populations (World Health Report, 2002). In India, the World Health Survey covered a sample of 10750 households in six states namely Assam, West Bengal, Karnataka, Maharashtra, Rajasthan and Uttar Pradesh.

This database gathered in six states and India are to be used to create state health policies to ensure better monitoring of health status of the population, responsiveness of the health system and measurement of health related parameters.



This is also an attempt to understand how people perceive and report their health status and measure the performance of the health system. A comparative profile of health status and socio economic conditions in India and the six states are provided as a background for presenting the health system performance assessment survey findings.

## 1.7 SOCIO-DEMOGRAPHIC PROFILE OF INDIA

Table 1.2 presents the socio-demographic profile

of six states and India. The data from Census, Sample Registration System and National Family Health Survey (1998-99) are used. Population in the six states constitute about 47 percent of the country's population. Uttar Pradesh has the highest share of 16 percent of population followed by Maharashtra with nine percent and Assam the lowest proportion of about three percent of the population.

The annual growth rate of population in India was 1.93 percent during 1991-2001. The population

Table 1.2 Selected socio-demographic indicators for sample states and India

Socio-demographic indicators	Assam	Karnataka	Maha-rashtra	Rajasthan	Uttar Pradesh	West Bengal	India
Population <sup>1</sup> (2001)	26,638,407	52,733,958	96,752,247	56,473,122	66,052,859	80,221,171	1,027,015,247
Annual Population growth rate <sup>1</sup> (1991-2001)	1.73	1.59	2.04	2.49	2.30	1.64	1.93
Density of Population per sq. km <sup>1</sup> (2001)	340	275	314	165	689	904	324
Percent Urban <sup>1</sup> (2001)	12.7	33.98	42.40	23.38	20.78	28.03	27.78
Sex Ratio <sup>1</sup> (Females per 1000 males)	932	964	922	922	898	934	933
Literacy Rate <sup>1</sup> Total	64	67	77	61	57	69	65
in percentages Male	72	76	86	76	70	78	76
(2001) Female	56	57	68	44	43	60	54
CBR <sup>2</sup> (2002)	26.3	21.8	19.9	30.3	31.3	20.3	24.8
CPR <sup>3</sup> (1998)	17.6	55.4	50.7	34.6	39.1	33.8	45.4
TFR <sup>2</sup> (15 – 49), (2003)	2.9	2.3	2.3	3.8	4.4	2.3	3.0
Population <sup>4</sup> (60+)	4.9	8.4	8.3	7.5	7.7	7.3	7.9

Sources:

<sup>1</sup> Office of the Register General and Census Commissioner, Census of India, 2001, Provisional Population Tables, New Delhi: Office of the Register General and Census Commissioner.

<sup>2</sup> Registrar General, India, 2005 Sample Registration System, 2003.

<sup>3</sup> Family Welfare Programme in India year Book 1997-98, Department of Family Welfare, Ministry of health & Family Welfare, Government of India, New Delhi.

<sup>4</sup> International Institute for Population Sciences (IIPS) and ORC Macro. 2000, National Family Health Survey (NFHS-2), 1998-99: India. Mumbai: IIPS.

growth rates in Karnataka, West Bengal and Assam are lower than the national average. Uttar Pradesh and Rajasthan indicate the highest population growth rate of 2.3 percent and 2.5 percent respectively in the country. West Bengal, Assam and Uttar Pradesh have higher densities above the national average of 324. For the country as a whole, 28 percent of the population are in urban areas. But, Maharashtra, Karnataka and West Bengal have higher levels of urbanisation above the national average with 42 percent, 34 percent and 28 percent respectively. Sex ratio for the country is 933 females per 1000 males. The sex ratio of the population for Maharashtra, Assam and Rajasthan are lower than the sex ratio for the country, indicating greater deficit of females.

Rajasthan, Uttar Pradesh and Assam have literacy rates below the national average of 65 percent. Assam, Uttar Pradesh and Rajasthan have crude

birth rates (CBR) and total fertility rates (TFR) higher than the national average. Maharashtra, Karnataka and West Bengal are more advanced in demographic transition than the country level average. The couple protection rate (family planning methods) in India is about 45 percent. Among the six states, Maharashtra and Karnataka have the highest proportion of couples protection rates and also higher proportion of elderly population, which is above the national average of 7.9 percent.

## 1.8 HEALTH INFRASTRUCTURE AND HEALTH STATUS PROFILE FOR INDIA

Table 1.3 presents the total number of physicians and surgeons per 100,000 population in states and India according to 1991 Census. Maharashtra performs better in terms of availability of all categories of physicians above the national average.

**Table 1.3 Number of physicians and availability of physicians per 100,000 population in states and India, 1991**

Categories of Physicians	Assam	Karnataka	Maha-rashtra	Rajasthan	Uttar Pradesh	West Bengal	India
Physicians and surgeons (allopathic)	4798(21.4)	15945(35.4)	36315(46.0)	11615(26.4)	53914(40.8)	23252(34.1)	288789(34.1)
Physicians and surgeons (Ayurvedic)	431(1.9)	3029(6.7)	7973(10.2)	5917(13.5)	9932(7.5)	2015(2.9)	59493(7.1)
Physicians and surgeons (homeopathic)	1481(6.6)	1140(2.5)	7358(9.3)	638(1.4)	6884(5.2)	14426(21.2)	64405(7.6)
Physicians and surgeons (Unani)	143(0.7)	251(0.6)	1787(2.3)	209(0.5)	2186(1.7)	867(1.3)	12515(1.5)
Dental surgeons	126(0.5)	651(1.4)	2072(2.6)	532(1.2)	2030(1.5)	815(1.2)	13016(1.5)
Public health physicians	215(0.9)	1597(3.5)	5109(6.4)	582(1.3)	11847(8.9)	1158(1.7)	42079(4.9)
Physicians and surgeons (not elsewhere classified)	183(0.8)	4922(10.9)	9068(11.5)	542(1.2)	5569(4.2)	3549(5.2)	51503(6.1)

Source: Census B-series (1991)

Note: Figures in parenthesis are physicians per 100,000 population

Table 1.4 Health professionals in states and India

Category of health professionals	Total health professionals and availability of health professionals per 100,000 population						
	Assam	Karnataka	Maha-rashtra	Rajasthan	Uttar Pradesh	West Bengal	India
Allopathic doctors (Resisted under IMC and with state medical councils, 2002)	15060 (56.5)	64012 (121.4)	84536 (87.4)	21198 (37.5)	44931* (27.1)	50794 (63.3)	605840 (59.0)
General nursing and mid wife (2001)	9104 (34.2)	82420 (156.3)	111624 (115.4)	25364 (45.0)	16903 (10.2)	43031 (53.6)	805827 (78.5)
Auxiliary nursing mid wife's (2000)	11937 (44.8)	37325 (70.8)	22125 (22.9)	20195 (35.8)	26956 (16.2)	55855 (69.6)	428568 (41.7)
Population served per dentist (2001)	2015154	-	2614919	600777	-	-	-
Health visitor and health supervisor (2000)	-	5875 (11.1)	-	444 (0.8)	-	11078 (13.8)	35904 (3.5)

Source: Government of India (2002a)

Note: Figures in parenthesis are the numbers of health professionals per 100,000 population based on 2001 census data

\* Incomplete information

- Not Available

The 1991 census of India reports 34 allopathic physicians per 1,00,000 population in the country. The number of registered health professionals with Indian medical councils and state medical councils is 59 allopathic doctors, 79 general nurses and mid wives, 42 auxiliary nursing health professionals in India per 100,000 population in 2002. There is a wide disparity across the states in terms of availability of health professionals. In general, Karnataka have a better availability and Maharashtra of health professionals per 100,000 population compared to the national average.

There are about one hospital and 67 beds in the allopathic category per 100,000 population in India. The availability of beds in all allopathic establishments such as hospitals, dispensaries, CHC's, PHC's,

sub centers, sanatorium and TB clinics and other health establishments, in aggregate there are 89 beds per 100,000 population in India as on 2002 (Government of India, 2002a). Maharashtra, Karnataka and West Bengal have a higher bed-population ratio. These statistics indicate better availability of health personnel and health infrastructure in Maharashtra, Karnataka and West Bengal compared to Assam, Rajasthan and Uttar Pradesh.

In a nutshell, Uttar Pradesh and Rajasthan are at the bottom level in health outcome shows availability of health infrastructure and demographic indicators compared to the rest of the states. On the other hand, Maharashtra and Karnataka are more advanced in health and demographic transition.

Table 1.5 presents data from various sources on health status and health infrastructure for states and India. Maharashtra and West Bengal performs better in terms of antenatal coverage when compared to other states. The lowest antenatal coverage is in Uttar Pradesh (35 percent). Tetanus toxoid coverage is highest 82 percent in West Bengal, 75 percent each in Maharashtra and

Karnataka, 52 percent each in Assam and Rajasthan and 51 percent in Uttar Pradesh. Maharashtra is showing better indicators in births delivered in medical institution (53 percent) and children fully immunised (78 percent). About 59 percent of deliveries were assisted by health professionals both in Maharashtra and Karnataka whereas it is only 17 percent each in Assam and Rajasthan.

**Table 1.5 Selected health status and health infrastructure indicators for states and India**

Health status and health infrastructure indicators	Assam	Karnataka	Maha-rashtra	Rajasthan	Uttar Pradesh	West Bengal	India
Percent of women who received atleast one ante-natal care <sup>1</sup> (1998-99)	60.1	86.3	90.4	47.5	34.6	90.0	65.4
Percent of children who received 2 doses of tetanus toxoid vaccine <sup>1</sup> (1998-99)	51.7	74.9	74.5	52.1	51.4	82.4	66.8
Percent of births delivered in medical institution <sup>1</sup> (1998-99)	17.6	51.1	52.6	21.5	15.5	40.1	33.6
Percent of deliveries assisted by health professionals <sup>1</sup> (1998-99)	50.9	59.1	59.1	35.8	22.6	44.2	42.3
Percent of children fully immunized <sup>1</sup> (1998-99)	17.0	60.0	78.4	17.3	21.2	43.8	42.0
CDR <sup>1</sup> (1998-99)	9.5	7.9	9.0	10.2	10.2	8.4	9.7
CMR <sup>1</sup> (1998-99)	21.4	19.3	15.0	37.6	39.2	19.9	29.3
IMR <sup>1</sup> (1998-99)	69.5	51.5	43.7	80.4	86.7	48.7	67.6
Under 5 mortality rate <sup>1</sup> (1998-99)	89.5	69.8	58.1	114.9	122.5	67.6	94.9
Life Expectancy at Birth <sup>2</sup> (1996–2001)							
Male	57.3	64.6	65.3	59.1	61.2	64.5	62.4
Female	58.8	64.9	68.2	60.1	60.1	67.2	63.4

Sources:

<sup>1</sup> International Institute for Population Sciences (IIPS) and ORC Macro. 2000, National Family Health Survey (NFHS-2), 1998-99: India. Mumbai: IIPS.

<sup>2</sup> Registrar General, 2005, Sample registration system (2003)

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## Methodology

### 2.1 NATIONAL SAMPLING

It was planned to survey a target sample of 10,000 households in India. Since it was decided to focus the survey at the state level, six states, Assam, West Bengal, Karnataka, Maharashtra, Rajasthan and Uttar Pradesh were selected. The selection of states was done considering their geographic location and level of development. All the states with a population five million and above except Jammu

and Kashmir of India were grouped into six regions such as north, central, east north east, west and south. Level of development was measured considering four indicators, namely, infant mortality rate, female literacy rate, percentage of safe delivery and per capita income.

The infant mortality rate is a good summary indicator of country's level of development in terms of mortality and health transition. Female literacy

Table 2.1 Classification of states by region and levels of development

Region	Level of Development					
	I	II	III	IV	V	VI
North		Punjab	Himachal Pradesh, Uttaranchal	Haryana	<b>Rajasthan</b>	
Central				Madhya Pradesh	Chhattisgarh	<b>Uttar Pradesh</b>
East			<b>West Bengal</b>		Bihar	Orissa, Jharkhand
North East				<b>Assam</b>		
West	<b>Maharashtra</b>	Gujarat				
South	Kerala, Tamilnadu	<b>Karnataka</b>	Andhra Pradesh			

\* Note: States in bold were selected for the survey.

rate is an important determinant of mother's utilization of different health care services and is also a proxy for whether her family utilises the available health care services. Percentage of safe deliveries indicates the extent utilization of health care services and an important determinant of maternal mortality. Per capita income is taken as an indicator of economic development.

A composite index of the level of development was computed by giving equal weightage to the above four indicators. The states were classified into six levels (in decreasing order) of development based on the composite index shown in table 2.1.

The states were selected purposively in such a manner that one state is selected from each region as well as from each level of development category. Accordingly Maharashtra in the western region represents the highest development category. The other five states ranked according to level of development are Karnataka (from south), West

Bengal (east), Assam (north east), Rajasthan (north) and Uttar Pradesh (central). The national level estimates are computed by pooling the data of all six states.

Allocation of households among six states was done by comparing their population size and the fact that separate estimates were required for each of them. The households to be selected in a state were distributed among its rural and urban areas in proportion to their state population.

## 2.2 SAMPLING FOR THE STATES

Table 2.2 presents the sampling distribution of households and individual respondents covered in the survey in six states and India. A total of 10750 households were covered in six states and 10279 household interviews were completed in a population of 58343. Information on individual health modules was collected from 9994 individual respondents.

**Table 2.2 Number of households and individual respondents in the World Health Survey in states and India, 2003**

States	Households contacted	Household Interviews completed <sup>1</sup>	Household Population for Households completed <sup>2</sup>	Individual Interviews completed
Assam	1224	1141	6157	1046
Karnataka	1473	1451	7883	1431
Maharashtra	2097	2051	10674	1972
Rajasthan	1943	1882	11662	1816
Uttar Pradesh	2088	2035	13138	2054
West Bengal	1925	1719	8874	1675
<b>India (pooled)</b>	<b>10750</b>	<b>10279</b>	<b>58343</b>	<b>9994</b>

Note:

<sup>1</sup> Household's interviews completed.

<sup>2</sup> Household population size for the households covered in the survey.

<sup>3</sup> Individual interviews completed, includes 9844 fully completed interviews and 150 partially completed interviews.

### *Sampling for rural areas*

A two stage stratified sampling was used for the selection of households in rural areas. The villages were the primary sampling units (PSU). Based on 1991 census, the villages in six states were categorized into three categories on the basis of number of households such as 1) less than 250 households 2) 250-500 households 3) greater than 500 households.

The contiguous regions were then arranged alternatively in ascending or descending order of female literacy rate. It was decided to cover 25 households from each PSU in the rural areas. The cumulative population of the total number of villages in the state was divided by total number of PSUs to be covered in the rural area of that state gave us the number I. Now, a number was randomly selected between 1 and I. That was the first PSU selected. After that for every  $r+1^{\text{th}}$  number, the PSU was selected. The number of households to be selected at the second stage was decided in such a way that it becomes a self-weighting design. The number of villages covered from each of the six states is given in table 2.3. A

total of 288 PSUs (villages) were selected from the six states. These were later reconfirmed as per 2001 census village directory.

### *Sampling for urban areas*

In urban areas, a three-stage design was used with the selection of wards, census enumeration blocks and households in that order. All the urban wards in the state were arranged according to the size of the city/town and geographic region. The cities/towns were classified on the basis of their population, using the 1991 census. In the first stage of sampling for the urban areas, the cities/towns were classified on the basis of their population, using 1991 census as base data.

- Group 1 : Cities with population more than 1 million
- Group 2 : Towns with population between 2 to 10 lakhs
- Group 3 : Towns with population between 50,000 and 2 lakhs
- Group 4 : Towns with population less than 50,000.

**Table 2.3 Number of PSUs (rural villages) selected for World Health Survey, 2003**

States	PSUs (Number of villages selected)
Assam	38
Karnataka	34
Maharashtra	46
Rajasthan	55
Uttar Pradesh	63
West Bengal	52
<b>India (six states pooled)</b>	<b>288</b>



**Table 2.4 Number of PSUs and urban enumeration blocks covered in World Health Survey in states and India, 2003**

States	Number of urban units selected	PSU	Number of urban enumeration blocks covered
Assam	3	3	6
Karnataka	8	8	16
Maharashtra	14	14	28
Rajasthan	7	7	14
Uttar Pradesh	7	7	14
West Bengal	8	8	16
<b>India (six states pooled)</b>	<b>47</b>	<b>47</b>	<b>94</b>

Two census enumeration blocks (as per 2001 census) were selected from each selected ward. The ward/census enumeration blocks were the urban primary sampling units. It was decided to select 30 households from each urban unit. The urban sample size and sampling units were determined proportionate to the urban population size in each state. A total of 94 urban units (Census Enumeration Blocks) were selected from the six states. Table 2.4 presents the number of urban units selected from the states.

It was decided to select two PSUs from each town/city. The cumulative population of all the cities/towns in each state was divided by the number of households to be covered. The number arrived at would give the total number of cities to be selected but, since from each of the cities two blocks would be selected the number of cities to be selected would be half of what we arrived at. Then a random number was selected between 1 and I. The remaining cities were selected in the same order of systematic sampling.

#### *Selection of Household and Individuals*

From each PSU a fixed number of 25 (+3) households in rural areas and 30 (+3) households in urban areas were systematically selected. In each household a general information table was filled for all adult members, segregated by sex.

A key informant of the household answered all queries about himself (or herself), and about the family members and the household questionnaire. An adult member of the household in the age 18 and above was randomly selected from household roster using KISH grid tables for answering the individual questionnaire modules on health. The Kish table is a statistical tool to facilitate randomness while selecting one adult member per family, to avoid taking the head of the family each time as the respondent.

The pooled sample for India from six states is 10750 households with 10279 household interviews completed and 9994 adult respondents completing interviews for the individual questionnaire.

## 2.3 QUESTIONNAIRE

The World Health Survey was conducted with the face-to-face interview technique using two instruments provided by the WHO after extensive pre-testing and standardization. The same instruments were used across 70 countries. Only a few minor additions and changes were made suited to Indian context.

### *Household questionnaire*

The first is the household questionnaire. The first section called the coversheet is structured to collect data on sampling, geo-coding as well as contact and recontact. The household roster lists all the residents in the selected household with details about their relationship, age, education, marital status and whether the person had worked or been trained in a health related field.

The household roster is used to select respondents eligible for application of the individual questionnaire. The Kish grid tables were used to randomly select one person from the list of eligible men and women.

The second section contains the household consent form, data on malaria prevention and the use of bed nets, health insurance and community health insurance programmes, permanent income indicators, household expenditure on food, housing, education and health care expenditure. The final part of this questionnaire contains series of questions on persons involved in health occupations.

### *Individual questionnaire*

The individual questionnaire uses the modular approach and is divided into nine sections. In the first module the individual consent is first obtained

and questions about the respondent's socio-demographic characteristics are then asked.

The second module is on health state descriptions where the respondent is asked to rate his physical and mental health. This section covers health states in terms of mobility, self-care, pain and discomfort, cognition, interpersonal activities, vision, sleep and energy and affect. This module also contains ten vignettes about health state descriptions.

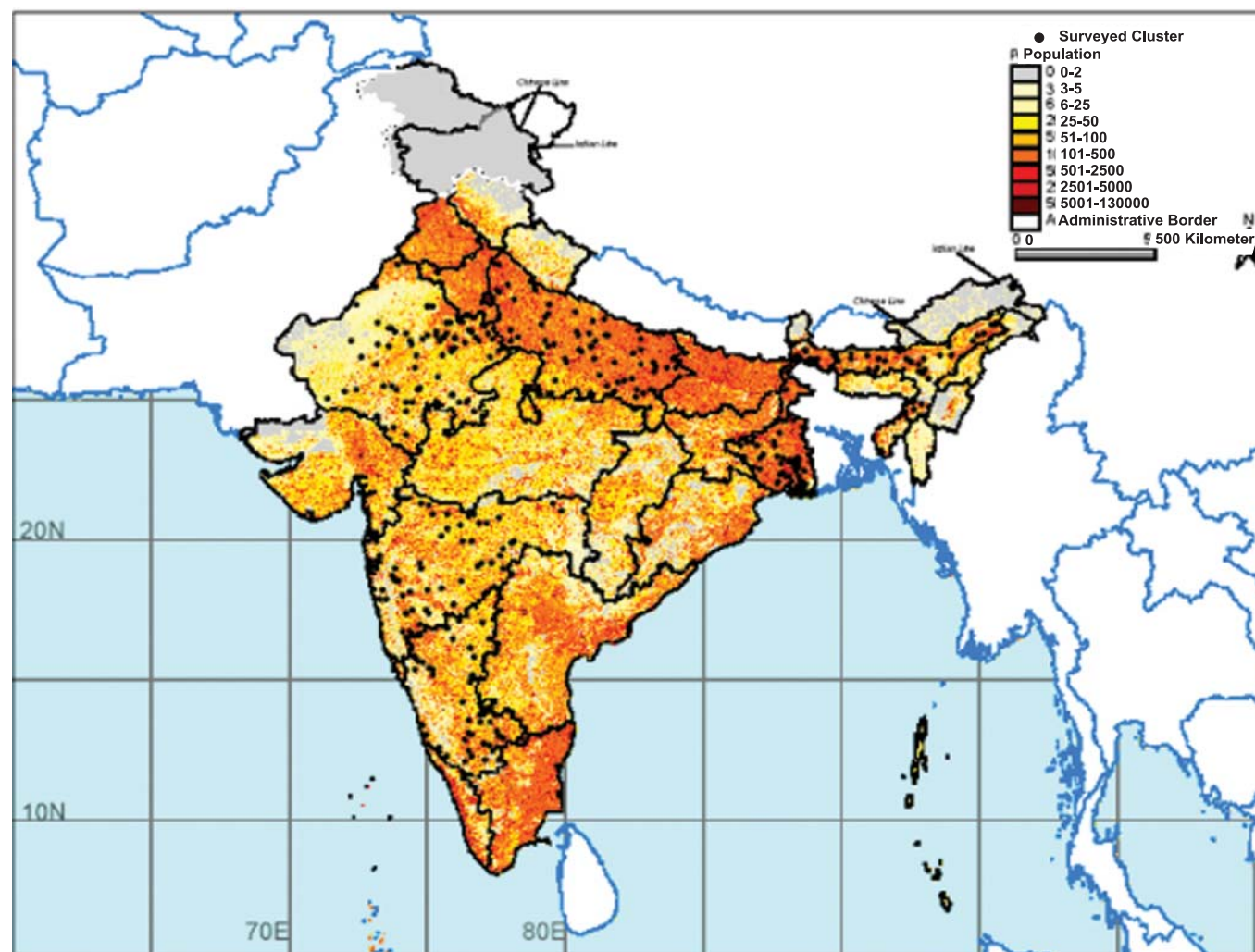
The next module pertaining to health state valuations contains two record sets, which are used in the specified manner. The first record set contains data on amputation, alcohol dependence, limited long distance vision, chronic pain and total blindness. After a series of fourteen questions, an ordinal ranking exercise is carried out where the respondents are asked to rank these health states from best to worst.

The second record set contains questions on amputation, insomnia, arthritis, major depression and quadriplegia. A similar ranking exercise was also carried out.

The fourth module contains questions related to risk factors such as consumption of tobacco and alcohol, nutrition, physical activity including both vigorous and moderate activity and environmental risk factors related to water, sanitation and the fuel used.

The fifth module contains questions related to mortality. The first section in this module contains questions on birth history to assess infant and child mortality while the second section deals with an assessment of adult mortality including sibling survivorship and a verbal autopsy to assess cause of death.

Figure 2.1 Distribution of sampled PSUs in India



## INDIA WHS 2003 Sampling Distribution



### Data Source :

- Cluster Location: collected with GPS devices during WHS 2003
- Administrative Boundaries: SALB Data set 2000
- Population figures : extracted from the Landscan database 2001

**Map Projection: UN-projected (Geographic)  
Reference System: WGS 84 datum**

**Map created 14 October 2004**

The boundaries and names shown and designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organisation connecting the legal status of any country, territory, city or area or of its authorities, or connecting the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement. WHO 2004. All rights reserved.



In the sixth module questions about coverage are asked. The first section deals with the diagnosis and treatment of chronic conditions such as arthritis, back pain, angina, asthma, depression, schizophrenia, diabetes, HIV/AIDS and tuberculosis.

This section also contains an inventory of medicines and drugs. The next section in this module contains questions on cervical and breast cancer followed by questions on maternal health care. The section on child health includes questions on both preventive and curative care. This module also contains questions on reproductive and sexual health care, vision care, oral health care, and care for road traffic and other injuries.

The seventh module deals with health system responsiveness. Starting with a general evaluation of health systems, the module covers areas such as the importance of health care, seeing health care providers, out-patient and care at home and in-patient hospital care. This module also has ten vignettes related to the questions.

The eighth module contains questions on health goals and social capital and has an ordinal ranking exercise for health system goals. This module also has ten vignettes.

The ninth and final module contains interviewer's observations about health problems noticed during the course of the interview.

## 2.4 GEOGRAPHIC INFORMATION SYSTEM

A new dimension of the WHS is the Geographic information, which is useful to analyse and display data related to positions of the clusters sampled for

the survey. The location of each surveyed cluster was obtained with the highest precision using global positioning system (GPS) device. The latitude and longitude of every household surveyed were recorded. The readings were taken in degrees and decimal degrees up to five decimal points. This ensured that every household was distinctly located in the GIS. This data is used to digitally map the location of PSUs and households and for creating thematic maps and perform spatial analysis. Figure 2.1 shows the geographic distribution of PSUs covered in the six states Assam, West Bengal, Karnataka, Maharashtra, Rajasthan and Uttar Pradesh.

## 2.5 VIGNETTES

The responsiveness section of World Health Survey focused on the Vignette linked questions for cross population comparability, which illustrate differences when making comparisons of measurements derived from self reports on health. The self assessed experience of a respondent recorded with different self reports in a population could vary due to differences in characteristics of the population. The linkage to vignettes for these particular question means that individual's response on health state can be made comparable across both sub groups within countries and across counties. Vignettes are hypothetical stories about peoples' health condition and their experience with health care system. In vignettes, the respondents are asked to rate the condition and experience of the person in the story as if it was respondents' own experience. This rating will be used to calibrate respondent's self-reports on his own health.

The responses on the health system performances by the respondents were ranked on an ordinal scale



(bad-1, good-2, moderate-3, good-4, very good-5). It provides the scale cardinal properties so that the differences between one and two, and two and three for example, have the same meaning. This is an essential step to say whether the differences between “very good” (labelled five) and good (labelled four) are the same as the difference between “good” and “moderate” (labelled three).

Secondly, the responses on each domain are rescaled from zero to 100, by setting all the responses equal to and better than the experience described in the best vignette to 100, and all responses described as equal to or worse than the experience in the worst vignette, to zero.

## 2.6 INCOME QUINTILE

The quintiles used in this analysis reflect relative inequalities in income within each state. In this report, the income quintile is based on possession of 20 permanent income (assets) such as number of rooms in the house, chairs, tables, cars, electricity, bicycle, clock, bucket, washing machine for dishes, washing machine for clothes, refrigerator, telephone, mobile/cellular telephone, television, computer, moped/scooter/motorcycle, livestock (cattles only), sewing machine, radio/transistor/tape-recorder and bullock cart. Quintile is a statistical division of sample households based on income (assets) distribution of the total sample into five parts. The variable takes on the values 1-5 with 1 being the quintile with the poorest households and 5 being the quintile with the richest households. The analysis comparing the bottom quintile to the top quintile within each data set will be reflecting those in relative poverty.

## 2.7 TRAINING, DATA COLLECTION AND PROCESSING, AND QUALITY ASSURANCE PROCEDURE

The training for the investigators and supervisors was first conducted for eight days in February 2003 at the International Institute for Population Sciences, Mumbai. Subsequently investigators training was organised for each state for a similar 8 day duration. All the investigators for the World Health Survey in the six states were graduates and had experience in similar large-scale surveys.

During the training programme the investigators were provided with the background, rationale of the study, techniques of interview and a thorough understanding of each question of the instrument. The roles and responsibilities of the investigators were explained in detail. The principal investigators in addition to presentations and discussions by medical experts and WHO advisors conducted the training. The training also contained video presentations and mock interviews. At the end of training, a pilot test and field training was organised for the investigators followed by an interactive session to discuss feed back from field training.

In each state, 3 to 4 field teams (based on the sample size for the state), with each comprising one supervisor and four investigators completed the survey during February-May 2003. A principal investigator of the project and a number of research team at International Institute for Population Sciences (IIPS) supervised the field teams. All the completed questionnaires were sent to International Institute for Population Sciences, Mumbai, where the data entry work was undertaken.

Considering the volume of data to be entered it was

decided to entrust the job to known persons outside the institute in addition to the data entry operators hired on a monthly basis. The data was simultaneously entered by 25 data entry operators and as per the requirements of WHO, double entry was done. The data was electronically transmitted to the WHO headquarters on a weekly basis. The WHO assigned weights to the data set and transmitted the data back to IIPS where the necessary tables were generated using STATA (statistical analysis package). The International Institute for Population Sciences undertook the report writing for six states and a consolidated India report.

#### *Quality assurance*

The World Health Organisation deputed a quality assurance advisor to monitor the progress of the survey in India in accordance with the recommended plans with respect to sampling, instrument, training of investigators, pilot test, retest and survey implementation. The advisor submitted an overall assessment to WHO, stating that WHS in India was overall progressing well.

## **2.8 FIELD EXPERIENCE OF THE INVESTIGATORS**

The first reaction of the investigators when they saw the questionnaire was a bit of disbelief because most of them had never seen such a lengthy instrument before. However, the investigators grasped the content of the questionnaire through rigorous training with detailed explanations and examples. At the end of the training programme when the investigators were taken to the field for practice interviews, it was found that they frequently had to refer to the Question-by-Question manual provided by the WHO. Consequently, the interviews took longer than expected and fatigue

set in by the end of the second interview. This stage was passed after few interviews, and the investigators became conversant with the questionnaire and the interview could be completed in the expected duration of 60 to 90 minutes.

Initial challenges of the investigators have been to keep the respondents interested in the interview, completed interview in one session or subsequent session. One of the problems faced by the investigators is the question from those who have not selected in the sample. They had to explain to them why everybody in the village could not be interviewed and why sampling was done.

As a policy of the institute, it was decided not to pay any monetary incentive to the respondents and this was beneficial, as otherwise individuals not selected may have demanded interview and payments. A practical problem was that of carrying the bundles of questionnaires from place to place. But this was overcome as each research team was provided with vehicle through out the survey. In some rural PSU's in Rajasthan, investigators team faced some initial resistance from the villagers, which was sorted out in consultation with the principal investigators in IIPS and talking to knowledgeable people in the villages. In Maharashtra the investigators managed very well. The overall response was very good. However, response rate in urban areas was marginally lower than rural areas. In Rajasthan, investigators had tough task to perform in PSU's in the desert districts. Typically, each household in some desert villages is quite apart distance of not less than half a kilometre and the investigators have to walk long distances on desert sand to meet the respondents.

## 2.9 LIMITATIONS OF THE DATA/STUDY AND CAUTION TO BE TAKEN

The information collected in World Health Survey is self-reported by the respondents and therefore caution is needed when interpreting the data on morbidity, mortality and health state valuation. Caution is particularly needed in the following aspects.

1. The data on morbidity prevalence depends on the extent of accuracy of respondents reporting.
2. Since only six states are covered, the national estimates (six states pooled) relating to population age-sex distribution, child and adult mortality may be under or unrepresentative of the country.
3. Indicators in this report although may be similar to those used in NFHS and NSSO note that the method of calculation might vary and therefore the estimates may vary.
4. Seasonal variations could affect the availability and thereby the intake of fruits and

vegetables. The survey was carried out during the Feb-May. Also, observance of religious customs and practices could influence the intake of fruits and vegetables on particular days.

5. No height measuring board and weighting scale were used for height and weight: Height and weight data were collected only from those respondents who knew and reported their height and weight well. So the data does not represent the full sample and is subject to reporting errors.

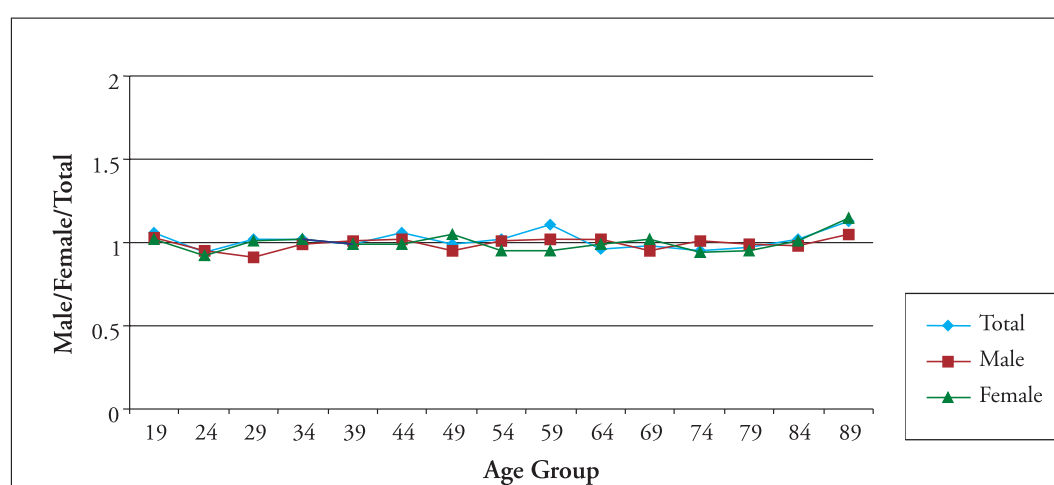
## 2.10 SURVEY METRICS

The survey metrics section deals with an assessment of quality of data in terms of household and individual sample deviation index, response rate, comparison of test and retest estimates and kappa values that plot the item responses.

### *Sample deviation index*

The representativeness of the surveyed population is assessed in terms of Sample Deviation Index

Figure 2.2 Sample deviation index for household population for India (pooled)



Note :  $N = 10750$ ,  $M/F = 1.07$ ,  $P = 0.00$ ,  $Pi\text{-star} = 0.15$

(SDI). Two sample deviation indices namely Household Sample Deviation Index (HSDI) for the household population and Individual Sample Deviation Index (ISDI) for the respondents of individual questionnaire are used.

**Household sample deviation index**

When a multi-stage cluster sampling is used, where homogeneity is large within clusters and small between clusters, representativeness is a concern. The sample deviation index for each category is the ratio of the proportion of a sub group in the sample to that in the population. The sub groups used in this survey include age group and sex.

Figure 2.2 presents the sample deviation index for

the household population in India showing three different lines on the graph. A ratio, which is close to 1, indicates that the sample is representative of the population considering sex and age.

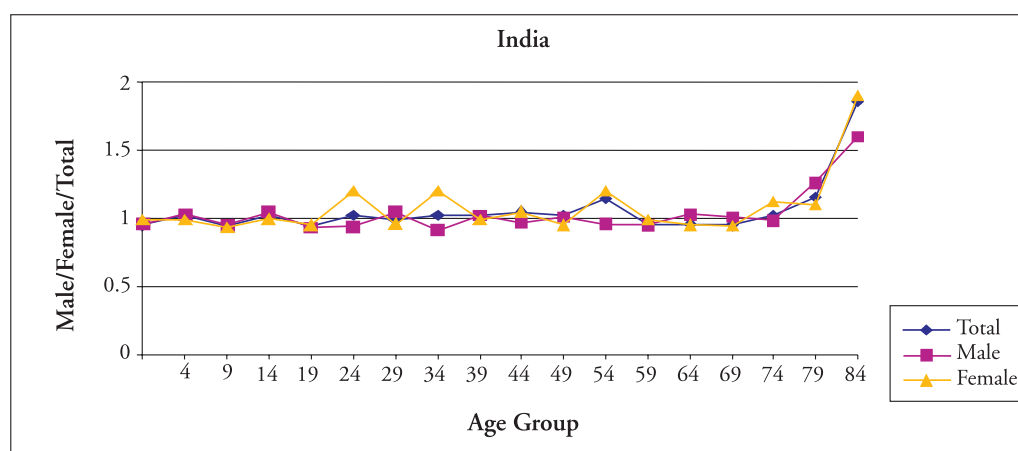
The p value is 0.00 showing a significant difference between the sample and population, but this may be due to the large sample size (N=10750). The pi-star value is small (0.17) which means that only 17 percent of the sample does not follow the characteristics in age. Overall, the sample can be considered as representative. The index indicates slight over representation in the ages 59-64. In the older ages there is a deviation and the sample is slightly over represented. This is due to a small

**Table 2.5 Pi-star values and M/F ratios in India and sample states (household population)**

States	No. of Household Interviews completed	Pi-star value	M/F
Assam	1141	0.17	1.02
Karnataka	1451	0.14	1.09
Maharashtra	2051	0.15	1.09
Rajasthan	1882	0.13	1.07
Uttar Pradesh	2035	0.15	1.09
West Bengal	1719	0.15	1.07
<b>India (pooled)</b>	<b>10279</b>	<b>0.15</b>	<b>1.07</b>

Note: p value is 0.00 in all the states

**Figure 2.3 Sample deviation index for respondents for India (pooled)**



Note: N=58343, M/F = 1.04, P = 0.00, Pi-star = 0.11



number of observations in the 80 plus age group. Table 2.5 represents the pi-star values and M/F ratio in the sample states. Only Karnataka p-values are slightly over represented than national average by one percent.

#### *Individual sample deviation index*

Figure 2.3 presents the sample deviation index for the individual respondents. All the ratios are close to 1 indicating that the sample is representative of the population by sex and age. The pi-star values of states for individual respondents are given in table 2.6.

The p value is 0.00 showing a significant difference between the sample and population, but this can be due to the small sample size (N=9994). The pi-star value is small (0.17), indicating that only 17 percent

of the sample does not follow the characteristics in age and the sample can be considered as representative. The index shows slight over representation in the ages 29-34 and 39-44. Also, in the older ages there is an over representation.

#### 2.11 RESPONSE RATE

The response rate for household and individual questionnaires indicates the extent of response from households and individual adults respectively. The response rate also has a direct relationship with the degree of representativeness of the sample.

In all the six states, a total of 10750 households were covered and 10279 households were the response cases amounted to 96 percent response

**Table 2.6 Pi-star values and M/F ratios in India and sample states (individual respondents)**

States	No. of Individual Interviews completed	Pi-star value	M/F
Assam	1046	0.13	1.09
Karnataka	1431	0.18	0.89
Maharashtra	1972	0.16	1.32
Rajasthan	1816	0.16	1.04
Uttar Pradesh	2054	0.17	1.02
West Bengal	1675	0.16	0.98
<b>India (pooled)</b>	<b>9994</b>	<b>0.17</b>	<b>1.04</b>

*Note: p value is 0.00 in all the states*

**Table 2.7 Household and individual questionnaire response rates in states and India, 2003**

States	HH response rate (%)	Individual rate response (%)
Assam	93.2	85.5
Karnataka	98.5	97.1
Maharashtra	97.8	94.0
Rajasthan	96.9	93.5
Uttar Pradesh	97.5	98.4
West Bengal	89.3	87.0
<b>India (pooled)</b>	<b>95.6</b>	<b>93.0</b>

*Note: p value is 0.00 in all the states*

rate for the household questionnaire (table 2.6).

Karnataka has recorded the highest of 98 percent response rate followed by Maharashtra and Uttar Pradesh with 97 percent each. West Bengal has the lowest response rate of 89 percent.

From the households, a total sample of 9994 adult individuals (respondents) was arranged for the individual questionnaire. The response rate for the individual questionnaire is 93 percent. Uttar Pradesh has the highest and Assam the lowest response rate for the individual questionnaire.

In the World Health Survey India, the final result codes with respect to completion of questionnaire

are 1) interview completed 2) interview partially completed 3) interview refused 4) interview not conducted. Response rate is the percent of interview fully and partially completed out of all households i.e.,  $(1+2)/(1+2+3+4)$ . Non-response rate is percent of households who are refused to answer or cannot be contacted  $(3+4)/(1+2+3+4)$ . As found in other large-scale surveys, the overall response rate of 93 percent is very good. However, this may mask the variations in response rates by socio- demographic characteristics of the respondents. To study such variations, response rates have been examined for selected characteristics such as place of residence, age, sex,

**Table 2.8 Response rate by selected background characteristics of Respondents in states and India, 2003**

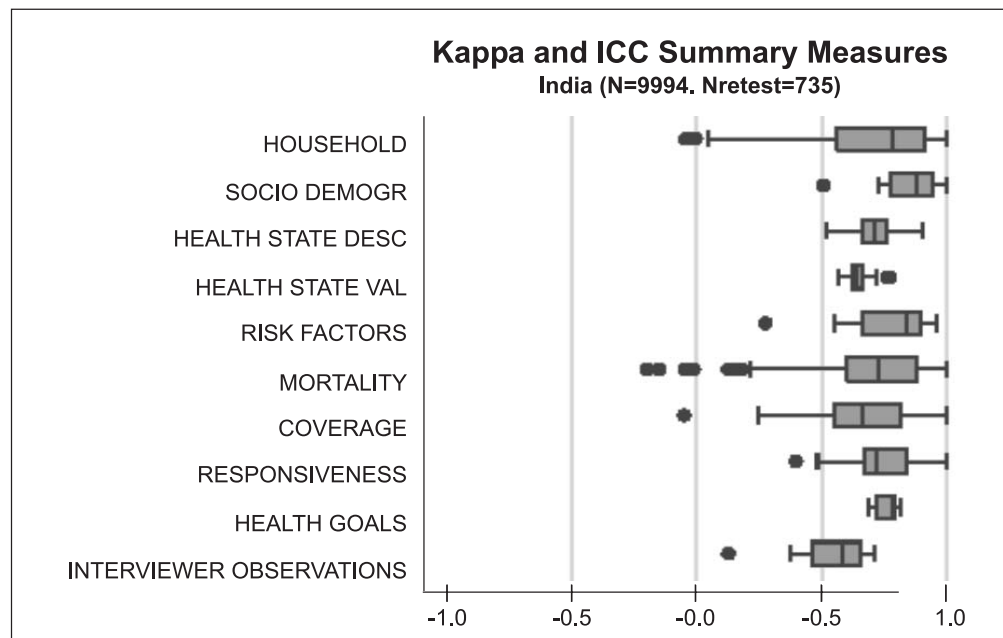
Characteristics	Response Rate (%)						
	Assam	Karnataka	Maha-rashtra	Rajasthan	Uttar Pradesh	West Bengal	India (pooled)
<b>Residence</b>							
Urban	72.1	96.2	91.5	90.6	98.7	85.4	90.7
Rural	88.0	97.7	95.8	94.3	98.3	87.7	93.8
<b>Sex</b>							
Male	84.6	96.4	94.1	92.5	98.6	85.0	92.3
Female	92.2	98.0	97.7	96.3	98.4	94.7	96.5
<b>Age group (in years)</b>							
15-29	86.8	96.6	95.4	93.2	98.1	87.8	93.4
30-39	87.8	97.9	96.8	94.6	99.4	91.0	94.9
40-49	89.6	97.5	96.4	95.5	99.0	88.9	94.8
50-59	86.5	98.4	94.1	96.9	98.6	91.4	94.9
60-69	95.7	94.9	98.0	96.3	98.8	91.4	96.0
70+	91.9	98.3	94.9	88.5	95.3	93.5	93.7
<b>Education</b>							
Illiterate	92.7	96.8	97.1	94.7	98.8	93.8	95.9
Literate	86.0	97.5	95.6	94.3	98.3	87.7	93.5
<b>Total</b>	<b>85.5</b>	<b>97.2</b>	<b>94.0</b>	<b>93.5</b>	<b>98.4</b>	<b>87.0</b>	<b>93.0</b>
<b>No. of Individual interviews completed</b>	<b>1046</b>	<b>1931</b>	<b>1972</b>	<b>1816</b>	<b>2054</b>	<b>1675</b>	<b>9994</b>

Note:

*Response rate = (interview completed + interview partially completed)/(interview completed + interview partially completed + interview refused + interview not conducted)*

*Non response rate = (interview refused + interview not conducted)/(interview completed + interview partially completed + interview refused + interview not conducted)*

Figure 2.4 Individual missing items/non-response/kappa value



and education. The response rate is higher in rural compared to urban, females compared to males, illiterates compared to literates. The non-response rate for urban is nine percent compared to six percent for rural areas. None-response rate is twice higher for males (eight percent) compared to females (four percent) and it does not vary much among different age groups.

## 2.12 RELIABILITY

The World Health Survey has provided an inbuilt retest mechanism to check the reliability of data. In all the states, retest interview was conducted among 10 percent of households. The retest was conducted in 10 percent of randomly selected PSUs out of total PSUs covered in the states. Different teams of investigators were used for retest. The kappa values for most of the domains lies between 0.8 and 1.0 indicating that most observations on each test and retest are identical (figure 2.4)

## 2.13 WEIGHTING

The World Health Survey (India) in 6 states adopted a multistage stratified cluster sample design. Design weights were calculated taking the specific sample design into consideration. Both household and individual weights were calculated to perform analysis at the household and individual level. The distribution of these weights was then inspected and outlier weights that were below 1% and over 99% of the distribution were trimmed such that weights below the 1st percentile were set to the weight of the 1st percentile and weights over the 99th percentile were set to the weight of the 99th percentile. Post stratification corrections were made to these weights to compensate for undercoverage. The UN 2000 population figures for India were used as the reference population. All analyses that are reported are carried out using these normalized probability weights and variance estimations take into account the complex design with the Taylor series method implemented in STATA.

## Socio-Demographic Profile of Household Population and Respondents

### INTRODUCTION

The World Health Survey collected information on the socio-demographic profile of the household population (household questionnaire) and the individual respondents (individual questionnaire). From the roster of adult household members, a respondent was randomly selected for administering individual questionnaire. A key informant answered the household questionnaire and the respondents selected through kish grid table answered the individual questionnaire.

### 3.1 HOUSEHOLD POPULATION PROFILE

This section provides the distribution of household population characteristics namely age, sex, marital status and education. A household roster was administered to a key informant of the household. The age-sex distribution covers the population of all the ages, marital status is calculated for the population in ages 15 and above and educational status for ages above six. The information was collected from 10750 households. The household size is 58343 with about 52 percent of males and

48 percent females. The population of rural and urban households constitute 26 percent and 74 percent respectively.

#### 3.1.1 AGE-SEX DISTRIBUTION OF HOUSEHOLD POPULATION

In the survey, the data was collected according to different age groups and by residence. The age-sex structure for India is presented by three major age groups of 0-14, 15-59 and 60 above. The data for India is obtained by pooling the state level data. Table 3.1 presents the socio-demographic characteristics of household population in India and the states by age, sex, marital and educational status. Table 3.2 and table 3.3 present the same attributes of rural and urban households respectively. In India, about a fourth (28 percent) of the household population are in the ages less than 14, 62 percent are in the ages 15-59 and 10 percent in the elderly ages of 60 and above.

Urban compared to rural areas have lower proportion of population in the younger ages. Population in the working ages is higher in urban compared to rural

areas. Karnataka has the lowest proportion of 24 percent and Rajasthan has the highest percent of household population in the ages of 0-14. Elderly population is the highest in Maharashtra. However, urban elderly is higher in West Bengal.

The population pyramid (Figure 3.1) depicts the age-sex distribution of household population for India. The age distribution of population in India is typical of populations in which fertility has fallen recently. The estimation of age sex-distribution in World Health survey corroborates with the findings of National Family Health Survey 1998-99. However, across the states, the child population in age 0-14 years appears to be lower in the range of 0-3 percent compared to the data from NFHS-

2 and 2001 census. It is possible that part of the decline is due to falling fertility and some undercount of child population because the household roster was not designed as in the DHS survey.

### 3.1.2 MARITAL STATUS

Information on marital status of the household population aged 15 and above was collected. A fourth of the household population (24 percent) is never married and 69 percent are currently married in India. The proportion of population widowed is five percent. Separated, divorced and cohabiting altogether constitute less than one percent.

Figure 3.1 Population pyramid (household population) for India, (pooled) 2003

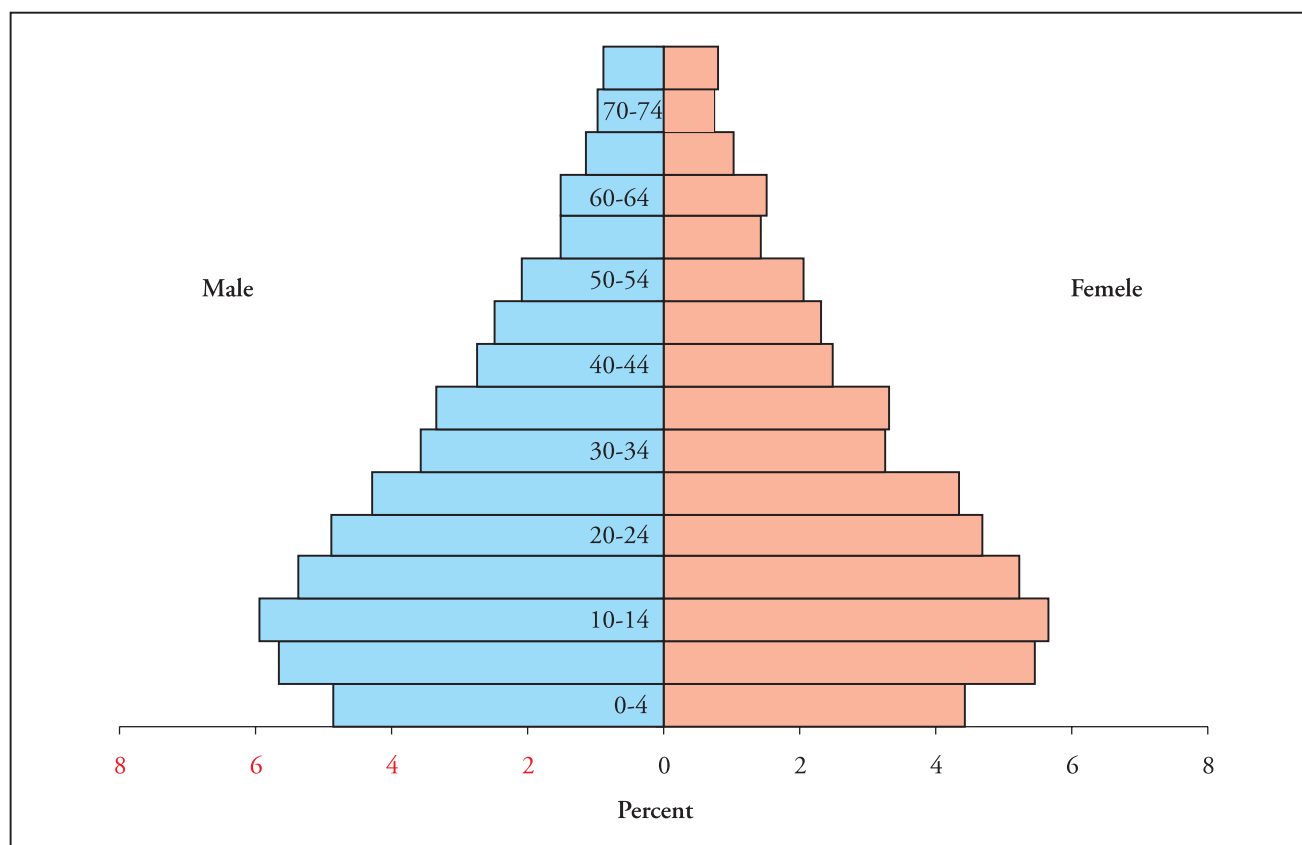


Table 3.1 Percent distribution of household population by socio-demographic characteristics in states and India (pooled) total, 2003

Characteristics	Assam	Karnataka	Maha-rashtra	Rajasthan	Uttar Pradesh	West Bengal	India (pooled)
<b>Sex<sup>1</sup></b>							
Male	50.6	51.0	52.3	51.9	52.0	51.8	51.8
Female	49.4	49.0	47.7	48.1	48.0	48.2	48.2
<b>Age group in years<sup>1</sup></b>							
0-14	27.2	23.7	27.1	33.9	29.3	27.7	28.2
15-59	64.0	66.4	62.2	57.4	61.4	62.8	62.1
60+	8.9	9.9	10.7	8.8	9.3	9.5	9.7
<b>Marital status<sup>2</sup></b>							
Never married	36.3	27.6	24.1	18.1	23.2	25.6	24.4
Currently married	56.6	67.6	68.2	74.8	70.5	65.6	68.7
Separated	0.5	0.1	0.7	0.6	0.2	0.6	0.4
Divorced	0.2	0.1	0.1	0.04	0.1	0.3	0.1
Widowed	6.3	3.7	6.3	5.9	4.6	6.9	5.4
Cohabiting	0.02	-	0.02	0.02	0.7	0.1	0.2
Missing	0.3	1.0	0.4	0.5	0.7	1.0	0.7
<b>Education status<sup>3</sup></b>							
<b>Male</b>							
No formal schooling	18.8	22.7	12.5	21.2	21.7	21.1	19.6
Less than primary school	18.8	14.9	21.1	20.2	14.4	21.5	18.1
Primary school completed	33.8	26.5	30.6	34.0	26.0	32.8	29.7
Secondary school completed	12.2	17.4	17.6	12.7	16.2	10.5	15.1
High school completed	6.2	9.8	10.6	6.8	10.9	6.5	9.1
College completed	7.8	6.6	5.1	3.3	6.6	5.7	5.7
Post graduate degree completed	2.4	2.0	2.4	1.7	4.1	1.9	2.6
Missing	0.1	0.1	0.1	0.2	0.2	-	0.1
<b>Female</b>							
No formal schooling	27.9	37.5	27.4	54.8	47.4	35.8	39.8
Less than primary school	22.1	12.4	22.7	18.3	13.9	24.0	18.1
Primary school completed	32.3	26.6	29.1	20.0	20.8	24.4	24.6
Secondary school completed	9.8	13.6	12.5	3.6	7.4	7.6	9.2
High school completed	3.2	5.4	4.8	2.0	6.3	3.2	4.6
College completed	3.4	4.0	2.5	0.6	2.6	3.2	2.6
Post graduate degree completed	1.1	0.3	0.9	0.7	1.2	1.7	1.0
Missing	0.2	0.2	0.1	0.3	0.5	0.03	0.2
<b>Household size<sup>1</sup></b>							
1-5	18.4	34.2	21.2	22.6	13.0	14.8	20.5
6-10	69.9	51.0	56.1	61.6	58.3	46.7	55.1
11+	11.8	14.8	22.7	15.8	28.6	38.5	24.4
<b>Mean Household size</b>	5.4	5.2	5.4	5.2	6.2	6.5	5.7
<b>Population in all ages</b>	6157	8874	7838	10674	11662	13138	58343
<b>Population in ages 6+</b>	5533	7968	7154	9444	10005	11654	51758
<b>Population in ages 15+</b>	4252	6270	5717	7474	7265	8689	39667

Note:

<sup>1</sup> Age, sex and household size distribution is calculated for the total population (all ages)

<sup>2</sup> Marital status distribution is calculated for the population in ages 15+

<sup>3</sup> Education status distribution is calculated for the population in ages 6+

- No cases reported

Table 3.2 Percent distribution of household population by socio-demographic characteristics in states and India (pooled) urban, 2003

Characteristics	Assam	Karnataka	Maha-rashtra	Rajasthan	Uttar Pradesh	West Bengal	India (pooled)
<b>Sex<sup>1</sup></b>							
Male	49.7	50.8	51.8	52.3	52.6	50.3	51.4
Female	50.3	49.2	48.2	47.7	47.4	49.7	48.6
<b>Age group in years<sup>1</sup></b>							
0-14	16.1	21.6	23.3	26.7	26.0	19.5	22.8
15-59	72.7	69.1	67.0	66.0	66.9	66.7	67.4
60+	11.3	9.3	9.8	7.2	7.1	13.8	9.8
<b>Marital status<sup>2</sup></b>							
Never married	41.9	34.0	29.1	26.8	32.3	29.7	30.9
Currently married	49.4	60.0	63.9	66.6	62.7	61.4	62.3
Separated	0.7	0.3	0.3	0.3	0.1	0.6	0.3
Divorced	-	0.03	0.1	-	0.1	0.1	0.1
Widowed	7.5	5.1	5.9	5.7	4.3	7.4	5.8
Cohabiting	-	-	-	-	-	-	-
Missing	0.7	0.6	0.6	0.6	0.4	0.9	0.7
<b>Education status<sup>3</sup></b>							
<b>Male</b>							
No formal schooling	4.3	11.7	5.5	11.4	15.9	9.4	9.8
Less than primary school	17.2	10.0	13.5	23.0	17.0	14.0	14.6
Primary school completed	28.2	31.3	31.0	35.0	30.5	31.7	31.5
Secondary school completed	17.1	21.7	24.0	13.3	14.8	15.6	19.1
High school completed	12.6	9.9	10.1	11.1	11.2	14.1	11.1
College completed	17.8	13.0	13.1	3.8	6.5	12.4	11.0
Post graduate degree completed	2.7	2.4	2.8	2.4	3.9	2.7	2.8
Missing	-	0.1	0.1	0.1	0.1	-	0.1
<b>Female</b>							
No formal schooling	9.1	21.8	16.5	30.9	30.5	20.6	21.9
Less than primary school	17.5	8.8	18.3	23.9	17.7	16.2	16.3
Primary school completed	30.4	32.0	30.6	26.8	25.9	30.2	29.7
Secondary school completed	17.9	19.3	17.8	8.6	10.2	14.0	15.3
High school completed	11.2	8.0	6.4	5.8	8.6	8.6	7.6
College completed	12.0	9.1	8.8	2.4	4.3	8.4	7.5
Post graduate degree completed	1.9	0.4	1.7	1.3	2.7	2.1	1.6
Missing	-	0.6	0.03	0.2	0.2	-	0.2
<b>Household size<sup>1</sup></b>							
1-5	31.9	23.8	33.4	18.8	22.3	39.0	28.9
6-10	59.4	62.2	56.0	69.2	50.3	48.1	56.8
11+	8.8	14.0	10.6	12.0	27.4	13.0	14.4
<b>Mean Household size</b>	4.9	5.3	4.9	5.6	5.9	4.7	5.2
<b>Population in all ages</b>	850	2767	4179	2424	2277	2611	15108
<b>Population in ages 6+</b>	800	2545	3743	2169	2074	2408	13739
<b>Population in ages 15+</b>	678	2067	3054	1673	1600	2040	11112

Note:

<sup>1</sup> Age, sex and household size distribution is calculated for the total population (all ages)

<sup>2</sup> Marital status distribution is calculated for the population in ages 15+

<sup>3</sup> Education status distribution is calculated for the population in ages 6+

- No cases reported



Table 3.3 Percent distribution of household population by socio-demographic characteristics in states and India (pooled) rural, 2003

Characteristics	Assam	Karnataka	Maha-rashtra	Rajasthan	Uttar Pradesh	West Bengal	India (pooled)
<b>Sex<sup>1</sup></b>							
Male	50.6	51.0	52.4	51.8	52.0	52.1	51.8
Female	49.4	49.0	47.6	48.2	48.0	47.9	48.2
<b>Age group in years<sup>1</sup></b>							
0-14	28.2	24.2	28.1	34.7	29.6	29.4	29.1
15-59	63.1	65.8	61.0	56.3	60.8	62.0	61.2
60+	8.7	10.1	11.0	9.0	9.6	8.6	9.6
<b>Marital status<sup>2</sup></b>							
Never married	35.6	26.2	22.8	17.0	22.4	24.7	23.3
Currently married	57.4	69.3	69.4	75.9	71.3	66.5	69.9
Separated	0.5	0.03	0.8	0.6	0.2	0.6	0.4
Divorced	0.2	0.1	0.1	0.04	0.1	0.3	0.1
Widowed	6.1	3.4	6.4	5.9	4.7	6.7	5.4
Cohabiting	0.03	-	0.02	0.02	0.7	0.1	0.2
Missing	0.2	1.1	0.4	0.5	0.7	1.0	0.7
<b>Education status<sup>3</sup></b>							
<b>Male</b>							
No formal schooling	20.3	25.1	14.3	22.5	22.3	23.6	21.3
Less than primary school	19.0	16.0	23.1	19.9	14.1	23.0	18.7
Primary school completed	34.4	25.4	30.5	33.8	25.6	33.1	29.4
Secondary school completed	11.7	16.4	15.9	12.7	16.3	9.4	14.4
High school completed	5.6	9.7	10.7	6.2	10.9	4.9	8.8
College completed	6.8	5.2	3.0	3.2	6.6	4.3	4.7
Post graduate degree completed	2.3	2.0	2.4	1.6	4.2	1.7	2.6
Missing	0.1	0.1	0.2	0.2	0.2	-	0.1
<b>Female</b>							
No formal schooling	29.9	41.1	30.2	57.8	48.9	39.2	42.9
Less than primary school	22.6	13.2	23.8	17.7	13.5	25.7	18.4
Primary school completed	32.5	25.4	28.8	18.8	20.3	23.2	23.7
Secondary school completed	9.0	12.3	11.1	2.9	7.2	6.2	8.2
High school completed	2.3	4.8	4.4	1.5	6.1	2.0	4.0
College completed	2.5	2.8	0.9	0.4	2.4	2.1	1.8
Post graduate degree completed	1.0	0.3	0.7	0.6	1.0	1.6	0.9
Missing	0.2	0.1	0.1	0.3	0.5	0.04	0.3
<b>Household size<sup>1</sup></b>							
1-5	17.1	20.7	19.9	12.3	14.1	33.3	19.1
6-10	70.9	54.8	63.1	57.0	46.4	51.6	54.8
11+	12.0	24.6	17.1	30.7	39.6	15.1	26.1
<b>Mean Household size</b>	5.5	5.5	5.4	6.4	6.6	5.4	5.9
<b>Population in all ages</b>	5307	5071	6495	9238	10861	6263	43235
<b>Population in ages 6+</b>	4733	4609	5701	7836	9580	5560	38019
<b>Population in ages 15+</b>	3574	3650	4420	5592	7089	4230	28555

Note :

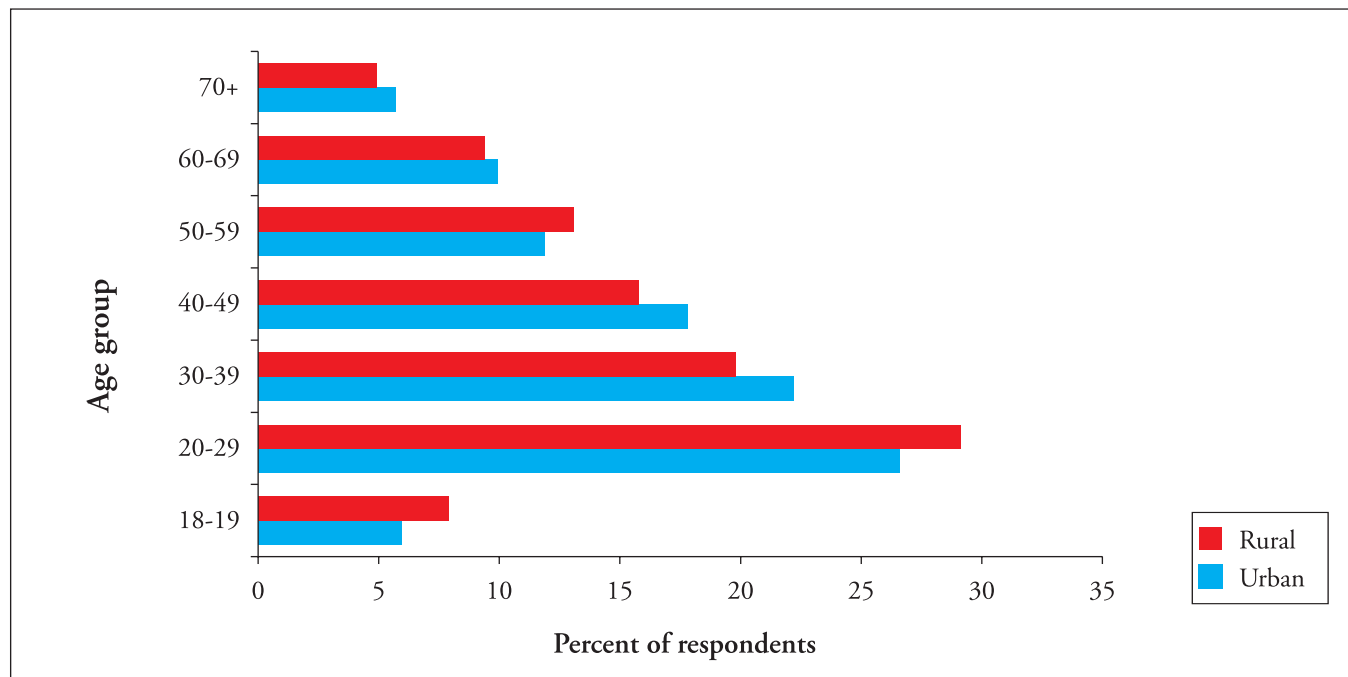
<sup>1</sup> Age, sex and household size distribution is calculated for the total population (all ages)

<sup>2</sup> Marital status distribution is calculated for the population in ages 15+

<sup>3</sup> Education status distribution is calculated for the population in ages 6+

- No cases reported

Figure 3.2 Age distribution of respondents by residence in India, 2003



The highest proportion of 36 percent of respondents in Assam is never married compared to the lowest of 18 percent in Rajasthan. The married household population ranges between 57 to 75 percent amongst the states with Assam indicating the highest and Rajasthan the lowest percentage. The proportion of never married population in urban and rural areas is 31 percent and 23 percent respectively. The percent of separated, divorced and cohabiting indicates less variation between urban and rural areas.

### 3.1.3 EDUCATIONAL STATUS

The educational status distribution of household population in India and states in ages 6 and above is presented in table 3.1. At each level of schooling, males compared to females have higher educational completion rates. Also, interstate variations are indicated in terms of educational attainment. For

India, the proportion with no formal education is twice more among females (40 percent) compared to males (20 percent). Fifteen percent of male and nine percent of female respondents have completed secondary school education. The proportion of males who have completed high school, college and post-graduation is about twice higher among males compared to females.

Twenty three percent of the males in Karnataka had no formal schooling. More than half of the females in Rajasthan have no formal education compared to a fourth among males. High school completion rates are highest for males in Maharashtra and Uttar Pradesh and the lowest in Rajasthan for females. Assam and Karnataka have the highest proportion of male respondents who has completed college education.

Attainment of education by residence shows that

Table 3.4 Percent distribution of individual respondents by socio-demographic characteristics in states and India (pooled) total, 2003

Characteristics	Assam	Karnataka	Maha-rashtra	Rajasthan	Uttar Pradesh	West Bengal	India (pooled)
<b>Sex</b>							
Male	52.5	50.6	47.1	51.2	56.9	49.6	51.1
Female	47.5	49.5	52.9	48.9	43.1	50.4	48.9
<b>Age group in years</b>							
18-19	8.6	9.4	7.1	6.9	8.2	5.9	7.6
20-29	26.8	26.6	28.3	28.2	33.5	26.5	28.7
30-39	22.1	20.1	19.6	21.1	17.7	23.0	20.2
40-49	13.6	14.6	18.6	17.4	14.9	15.5	16.1
50-59	12.6	14.5	11.6	12.7	13.4	12.6	12.9
60-69	9.1	9.5	10.1	9.9	8.0	10.2	9.5
70+	7.3	5.3	4.9	3.8	4.4	6.4	5.1
<b>Marital status</b>							
Never married	25.7	23.9	16.6	11.2	19.5	15.6	18.0
Currently married	64.4	67.4	75.4	80.7	72.4	73.8	73.3
Separated	0.3	0.6	0.6	0.7	0.4	0.2	0.5
Divorced	-	0.3	0.1	0.1	0.3	0.2	0.2
Widowed	9.5	6.3	7.3	7.3	6.2	10.1	7.5
Cohabiting	0.1	1.5	0.02	0.03	1.3	0.1	0.6
<b>Education status</b>							
<i>Male</i>							
No formal schooling	23.2	26.7	15.8	28.5	23.6	24.7	23.3
Less than primary school	8.5	10.7	16.1	9.1	5.8	16.5	11.3
Primary school completed	15.5	8.3	23.8	23.4	10.1	35.6	19.2
Secondary school completed	27.0	9.3	20.4	18.1	14.3	12.8	15.6
High school completed	16.1	19.6	11.8	10.9	21.4	4.3	14.4
College completed	9.1	23.7	9.4	7.7	18.0	4.9	13.1
Post graduate degree completed	0.6	1.6	2.7	2.3	6.8	1.3	3.1
<i>Female</i>							
No formal schooling	42.4	47.1	41.0	69.5	59.0	50.9	51.5
Less than primary school	9.8	6.8	13.9	7.4	7.8	10.8	9.7
Primary school completed	17.2	8.8	19.7	11.6	8.1	27.8	15.6
Secondary school completed	18.1	11.3	14.3	5.4	9.6	6.3	10.3
High school completed	9.5	14.3	5.9	4.2	6.4	1.4	6.7
College completed	2.9	11.6	4.3	1.3	6.7	2.3	5.3
Post graduate degree completed	0.2	0.1	0.9	0.5	2.5	0.6	0.9
<b>Religion</b>							
Hindu	64.7	90.4	82.8	78.2	85.1	75.1	81.9
Muslim	28.3	5.9	7.4	7.4	10.4	18.6	10.6
Others <sup>1</sup>	7.1	3.7	9.8	14.4	4.5	6.3	7.5
<b>Total</b>	<b>1046</b>	<b>1431</b>	<b>1972</b>	<b>1816</b>	<b>2054</b>	<b>1675</b>	<b>9994</b>

Note: - No cases reported

<sup>1</sup> Others include Christian, Sikh, Buddhists, Jains, others etc.

rural respondents compared to urban respondents are at a greater disadvantage. Twenty one percent of males and 10 percent of females in urban areas do not have any formal education. However, this proportion is 21 percent and 43 percent in rural areas. No variation is indicated between the sexes who have completed primary schooling in urban areas, whereas a slightly higher proportion of males have completed primary school compared to females.

Differences are indicated between sexes in terms of secondary school completion among rural household population compared to urban. High school completion rates are about twice higher in rural and urban areas among males compared to females. For males it ranges between five percent and 11 percent for males in rural areas compared to 10 percent to 14 percent in urban areas. For females, the high school completion rates ranges between one and six percent for females in rural areas and six percent to 11 percent in urban areas across the states. College and post graduation completion levels are relatively lower in the rural than urban areas.

#### *Household size*

About 21 percent of the households in India have a household size of less than five members and 55 percent have a household size of 6-10 members. A fourth of households in India have a household size of more than 10. Thirty nine percent of households in Uttar Pradesh have a household size of more than 11 members or more. The overall mean size of household is 5.7 persons. West Bengal has the highest and Rajasthan the lowest proportion of households with less than five members. The mean household size is highest in Uttar Pradesh (6.5) followed by Rajasthan (6.2).

Maharashtra and West Bengal indicate the lowest proportion of households with lowest mean household size.

Rural-urban and interstate differences exist in terms of mean household size. Nineteen percent of households have a household size of less 1-5 members in rural compared to 29 percent in urban areas. The mean size of the household in rural and urban areas is 5.9 and 5.2 respectively.

### **3.2 SOCIO-DEMOGRAPHIC PROFILE OF RESPONDENTS (INDIVIDUAL QUESTIONNAIRE)**

This section provides the characteristics of respondents of age 18 and above by age, sex, marital status, educational and ethnic status. These are respondents selected for the individual questionnaire of the survey. In India, information was collected from 9994 individuals, out of which 5107 (51 percent) are males and 4887 (49 percent) are females.

Table 3.1 shows the socio-demographic characteristics of respondents by age, sex, marital status, educational status and ethnicity. The socio demographic profile of urban and rural respondents is indicated in table 3.2 and 3.3 respectively.

#### **3.2.1 AGE-SEX DISTRIBUTION**

The highest proportion of respondents (29 percent) is in age 20-29 and the lowest in 70 and above (five percent). More than half the respondents (57 percent) are in the age group 18-39. Thirty-nine percent of the respondents are in age 40-69 (table 3.4). Figure 3.4 highlights the concentration of respondents in the younger adult ages.

Among the states, Karnataka has the highest (nine percent) and West Bengal has the lowest proportion (six percent) of respondents in the ages

Table 3.5 Percent distribution of individual respondents by socio-demographic characteristics in states and India (pooled) urban, 2003

Characteristics	Assam	Karnataka	Maha- rashtra	Rajasthan	Uttar Pradesh	West Bengal	India (pooled)
<b>Sex</b>							
Male	50.7	47.8	49.6	46.7	58.9	47.1	49.5
Female	49.4	52.2	50.4	53.4	41.8	52.9	50.5
<b>Age group in years</b>							
18-19	6.8	7.6	5.1	7.8	5.9	4.2	5.9
20-29	25.2	24.7	28.5	32.4	28.9	20.8	26.6
30-39	21.4	25.2	20.6	22.1	20.7	22.5	22.2
40-49	18.6	15.2	17.5	18.1	20.5	19.2	17.8
50-59	14.9	13.4	12.6	7.7	12.6	10.4	11.9
60-69	6.2	9.5	10.4	8.7	6.5	13.3	9.9
70+	7.0	4.4	5.3	3.2	5.0	9.7	5.7
<b>Marital status</b>							
Never married	28.7	25.1	22.4	21.5	23.9	22.3	23.2
Currently married	61.5	67.8	70.0	70.2	71.1	66.4	68.7
Separated	-	0.1	0.3	0.5	-	0.2	0.2
Divorced	-	-	0.1	0.3	0.6	-	0.1
Widowed	9.9	6.3	7.2	7.6	4.5	11.1	7.5
Cohabiting	-	0.7	0.1	-	-	-	0.2
<b>Education status</b>							
<i>Male</i>							
No formal schooling	7.62	10.4	7.8	12.9	19.7	12.1	11.5
Less than primary school	4.2	8.5	6.2	8.2	4.6	6.4	6.7
Primary school completed	10.7	9.2	20.9	14.4	8.8	33.3	17.9
Secondary school completed	19.9	7.7	30.5	24.7	11.3	12.8	18.7
High school completed	31.2	32.6	17.3	17.9	22.0	11.2	20.6
College completed	21.6	28.4	15.5	17.1	25.9	18.6	20.6
Post graduate degree completed	5.0	3.2	1.8	4.9	7.6	5.6	4.1
<i>Female</i>							
No formal schooling	11.0	24.4	23.2	44.5	36.5	25.5	27.5
Less than primary school	6.3	7.1	8.4	7.4	3.4	10.1	7.7
Primary school completed	13.3	12.1	21.8	17.0	5.8	26.4	18.0
Secondary school completed	34.0	14.3	22.3	10.5	9.8	17.9	17.2
High school completed	24.0	23.4	10.1	12.7	10.7	5.5	12.9
College completed	9.9	18.2	12.7	6.6	21.6	11.8	13.9
Post graduate degree completed	1.6	0.6	1.7	1.4	12.2	2.9	2.7
<b>Religion</b>							
Hindu	93.6	76.1	84.2	67.4	74.9	76.9	78.2
Muslim	4.1	16.1	9.1	13.0	21.4	14.2	13.4
Others <sup>1</sup>	2.3	7.8	6.8	19.7	3.7	8.9	8.4
<b>Total</b>	<b>142</b>	<b>508</b>	<b>799</b>	<b>415</b>	<b>385</b>	<b>479</b>	<b>2728</b>

Note: - No cases reported

<sup>1</sup> Others include Christian, Sikh, Buddhists, Jains, others etc.

Table 3.6 Percent distribution of individual respondents by socio-demographic characteristics in states and India (pooled) rural, 2003

Characteristics	Assam	Karnataka	Maha- rashtra	Rajasthan	Uttar Pradesh	West Bengal	India (pooled)
<b>Sex</b>							
Male	52.8	51.2	46.4	51.8	56.7	50.2	51.4
Female	47.3	48.8	53.6	48.2	43.3	49.8	48.6
<b>Age group in years</b>							
18-19	8.8	9.8	7.6	6.8	8.4	6.2	7.9
20-29	27.0	27.1	28.2	27.6	34.0	27.8	29.1
30-39	22.2	18.9	19.3	21.0	17.4	23.1	19.8
40-49	13.0	14.5	18.9	17.3	14.3	14.7	15.8
50-59	12.3	14.7	11.3	13.4	13.5	13.1	13.1
60-69	9.4	9.5	10.0	10.1	8.2	9.5	9.4
70+	7.3	5.6	4.7	3.9	4.3	5.6	4.9
<b>Marital status</b>							
Never married	25.4	23.6	14.9	9.8	19.0	14.1	17.0
Currently married	64.7	67.3	76.9	82.2	72.5	75.5	74.1
Separated	0.3	0.8	0.7	0.7	0.4	0.2	0.5
Divorced	-	0.4	0.1	0.1	0.2	0.3	0.2
Widowed	9.5	6.4	7.4	7.2	6.4	9.8	7.5
Cohabiting	0.1	1.6	-	0.03	1.5	0.1	0.7
<b>Education status</b>							
<b>Male</b>							
No formal schooling	24.8	30.2	18.2	30.5	24.0	27.4	25.5
Less than primary school	8.9	11.2	19.0	9.2	6.0	18.6	12.2
Primary school completed	16.1	8.1	24.7	24.6	10.3	36.1	19.4
Secondary school completed	27.8	9.7	17.3	17.3	14.6	12.8	15.0
High school completed	14.5	16.8	10.2	10.0	21.3	2.9	13.2
College completed	7.8	22.7	7.6	6.5	17.2	2.0	11.7
Post graduate degree completed	0.1	1.3	3.0	2.0	6.7	0.4	2.9
<b>Female</b>							
No formal schooling	46.1	52.7	45.6	73.5	61.3	56.8	56.3
Less than primary school	10.2	6.8	15.4	7.4	8.2	11.0	10.1
Primary school completed	17.6	8.0	19.2	10.8	8.3	28.1	15.1
Secondary school completed	16.2	10.6	12.2	4.6	9.6	3.6	8.9
High school completed	7.8	12.0	4.8	2.9	5.9	0.4	5.5
College completed	2.0	10.0	2.2	0.5	5.2	0.1	3.6
Post graduate degree completed	0.1	-	0.7	0.4	1.5	-	0.5
<b>Religion</b>							
Hindu	61.4	93.7	82.5	79.8	86.1	74.7	82.7
Muslim	31.0	3.6	6.9	6.6	9.3	19.6	10.0
Others <sup>1</sup>	7.6	2.8	10.6	13.7	4.6	5.7	7.3
<b>Total</b>	<b>904</b>	<b>923</b>	<b>1173</b>	<b>1401</b>	<b>1669</b>	<b>1196</b>	<b>7266</b>

Note: - No cases reported

<sup>1</sup> Others include Christian, Sikh, Buddhists, Jains, others etc.

18-19. Respondents in the ages 20-29 ranges between 26 and 34 percent with highest proportion in Uttar Pradesh and lowest in West Bengal. The proportion of elderly respondents constitutes four to seven percent in the six states.

The pooled India data shows that about 36 percent of the respondents are in the ages 18-29. The proportion of respondents in rural areas (37 percent) is slightly higher compared to urban areas (33 percent) in the ages 18-29. Rajasthan has the highest of 40 percent in urban areas and West Bengal the lowest 25 percent respondents in the ages 18-29. In rural areas, Uttar Pradesh has the highest 42 percent and West Bengal and Rajasthan the lowest of 34 percent of respondents in the age group 18-29. About five percent of respondents are elderly, with a relatively higher proportion in urban compared to rural areas.

### 3.2.2 MARITAL STATUS

Two thirds of the respondents (73 percent) are currently married and 18 percent never married. Proportion of currently married is higher because of sample population is selected among these in ages 18 and above. Separated, divorced and cohabiting persons constitutes only less than one percent. Widowed proportion is about eight percent.

Assam has the highest (26 percent) never married respondents followed by Karnataka with 24 percent. The lowest proportion of 11 percent never married respondents is in Rajasthan. Between six and 10 percent of respondents are widowed in the six states with the highest percentage in West Bengal and the lowest in Uttar Pradesh. Separated and divorced constitute less than one percent in all the states. Cohabiting persons are about two percent in Karnataka.

About two thirds of the rural respondents (74 percent) are currently married compared to 69 percent urban respondents. Almost a fourth of the respondents in urban areas (23 percent) are never married compared 17 percent rural areas. Assam has the highest and Rajasthan the lowest proportion of never married respondents in both in rural and urban areas. Among the states, the proportion of currently married respondents ranges between 61 and 71 percent in urban and 65 and 82 percent in rural areas. Widowed respondents range between five and 11 percent in urban and rural areas. Less than one percent of the respondents are separated, divorced.

### 3.2.3 EDUCATIONAL STATUS

Information was collected about the educational status of individual respondents in the ages 18 and above. At each level of education, males compared to females, urban compared to rural respondents have higher educational completion rates. The proportion of respondents with no formal education is twice higher among females (52 percent) compared to male respondents (23 percent). There is also significant gap between males and females with respect to educational attainment. Nineteen percent of males and 16 percent of females have completed primary school education. Sixteen percent of males and 10 percent of females have completed their secondary school education. The proportion of males who have completed high school education is twice (14 percent) than their female counterparts (seven percent). Similar male-female difference is found in completion of college education. Those who have completed post graduation is three percent for males and less than one percent for females.

Rajasthan and Maharashtra respectively have the



highest and lowest proportion of respondents (males and females) with no formal schooling. On the other hand, West Bengal indicate the highest proportion of respondents (males and females) who have completed primary schooling whereas Karnataka and Uttar Pradesh has the lowest proportion of females who have completed primary schooling. However, Karnataka has the highest proportion of both males and females who have completed college education. Even though, Uttar Pradesh performs poorly in basic education, respondents completing post graduation is highest among all the six states. The proportion of respondents who have completed post graduation is two times higher in Uttar Pradesh (seven percent) compared to the national average (three percent).

A higher proportion of male respondents compared to female respondents have completed high school, secondary school, college and post-graduation in urban areas. Uttar Pradesh has highest proportion of male respondents with no formal schooling whereas Rajasthan has the lowest proportion of female respondents with no formal education in urban areas. West Bengal has the highest 33 percent of male and 26 percent of female respondents who have completed primary schooling.

Fifty six percent) of the female and a fourth of male respondents (26 percent) in rural areas do not have formal schooling. In urban areas, 28 percent of females compared to 12 percent males have had no formal education. Those who have completed secondary school education are twice among males (13 percent) compared to females (six percent). Three percent of males and less than one percent

of females have completed post graduation in rural areas. Rajasthan has the highest proportion of illiterate respondents among males and females in rural areas. West Bengal has the highest and Karnataka has the lowest proportion of males and females who have completed primary school education. College completion rates are highest for both the males and female respondents in Karnataka. Post graduation completion rates for males range between one and eight percent, whereas for females it is less than one percent in all the six states, except in Uttar Pradesh where it is three percent.

#### 3.2.4 RELIGION

The pooled India figures indicate that about eighty-two percent of the respondents are Hindus, 11 percent are Muslims and the remaining eight percent belong to other categories such as Christian, Sikh, Buddhists, Jains, etc.

Amongst the states, the lowest 61 percent of respondents are Hindus in Assam and with the highest 94 percent in Karnataka. In Assam, more than a fourth of the respondents (28 percent) are Muslims followed by West Bengal (19 percent). Only six percent of the respondents in Karnataka are Muslims.

The proportion of Hindus is slightly greater in rural areas (83 percent) compared to urban areas (78 percent). Muslims and others are concentrated more in urban than in rural areas. However, in rural areas of Assam 31 percent of the respondents are Muslims compared to 20 percent in West Bengal. However in urban areas of Uttar Pradesh 21 percent are Muslims compared to four percent in Assam.

## Risk Factors

### INTRODUCTION

People are exposed to an almost limitless array of risks to their health throughout their lives in the form of communicable and non-communicable diseases. They are also exposed to injury, violence and natural catastrophes. Risk factors are defined as the attributes, characteristics or exposure that increases the likelihood of developing a disease. In the context of public health, population measures of risk factors are used to describe the distribution of future disease in a population, rather than predicting the health of a specific individual. Knowledge of risk factors can then be applied to shift population distributions of these factors and to reduce the risks for the people, especially where individuals have very little control over their exposure to risks.

This chapter identifies the risk to health and measures how these risks are distributed in the population. It is necessary to identify risks to focus on the interventions that can improve health of future populations through the effective inter-sectoral collaborations. The rationale behind the inclusion of risk factors in the World Health survey is 1) it has the greatest impact on mortality and

morbidity from non-communicable diseases and 2) modification is possible through effective primary prevention if measurement of risk factors is valid and reliable. Data have been collected on five major risk factors such as use of tobacco, alcohol consumption, nutrition, categories of physical activities and environmental related risk factors. The use of tobacco and liquor has considerable impact on the health of the individual because of their detrimental effects on health. The nutrition content of food, vegetables and the level of physical activity are directly associated with health.

The environmental risk factors such as access to improved drinking water, improved sanitation facilities and the use of fuel for cooking etc. are crucial determinants of human health. Environmental challenges in the home, workplace, outdoor and transportation environments vary considerably between countries and within a country. Interventions towards safe environments offer a large potential for disease prevention and can help to reduce health inequalities. The questions in the risk factor module were asked to all respondents in ages 18 and above.

## 4. 1 USE OF TOBACCO, ALCOHOL CONSUMPTION, NUTRITION AND PHYSICAL ACTIVITIES

### 4.1.1 TOBACCO AND ALCOHOL CONSUMPTION

Smoking is the main way tobacco is used world wide, and the manufactured filter tipped cigarette is becoming increasingly dominant as the major tobacco product. Other forms of smoked tobacco are potentially as dangerous, although the adverse consequences of some of them are more limited because the smoke is not usually inhaled. In certain cultures tobacco is chewed, sucked or inhaled with adverse effects on the local tissues. Chewing tobacco is the most widespread form of tobacco consumption (Bonita R, De Courten M, Dwyer, T. Jamorozik, K. Winkelmann R, 2001). All forms of tobacco consumption have adverse effect on health, whether smoked or chewed.

Alcohol consumption has a U-shaped relationship with ischaemic heart disease and is a strong risk factor for hepatic cirrhosis and many other types of injury (particularly motor vehicle accidents). It has also been constantly and positively associated with cancers such as breast cancer (WHO, 2004). Defining the risk associated with its consumption is therefore, complicated.

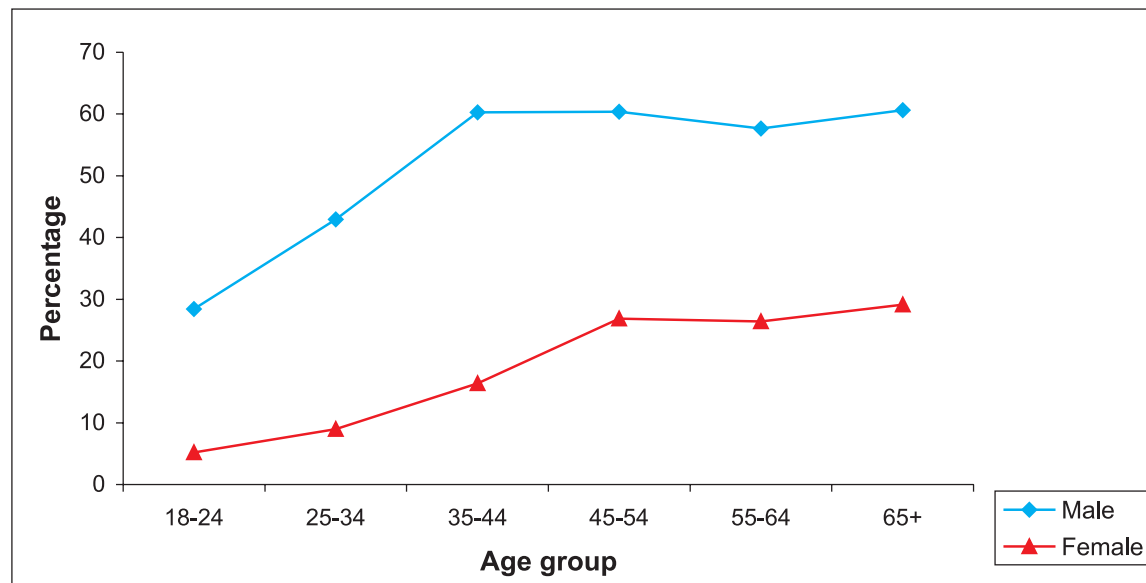
Alcohol drinking has a strong influence on the risk of non-communicable diseases, with occasional heavy drinking associated with injury and with hemorrhagic stroke. It is very difficult to obtain the exact statistics regarding the consumption of alcohol because it varies from culture to culture and from society to society due to social stigma. So in order to avoid such difficulties, the survey has collected information on the amount of drink consumed by an individual in the past seven days.

Data was recorded for each day of the week. The World Health Organization classified drinkers into two categories such as infrequent heavy drinkers who had drinks for two days in the last week and frequent heavy drinkers who had drinks more than four days the last week. It needs to be mentioned that social stigma attached to drinking, if any, might result in underreporting of the event. Such underreporting is likely to be linked to socio-economic and demographic characteristics of individuals.

Table 4.1 presents the percent of men and women in ages 18 and above who use tobacco and liquor in six states and India. Overall, in India, 30 percent of respondents use tobacco either smoking or chewing. The proportion of respondents using tobacco (daily consumption) varies from 23 to 36 percent across six states with the highest of 36 percent each in Assam followed by West Bengal and Uttar Pradesh with 34 percent each and the lowest of 23 percent in Karnataka.

Table 4.2 shows the percent of respondents who use tobacco and liquor according to their background characteristics. The proportion of tobacco users among males is about three times higher compared to females. Forty-four percent of males consume tobacco compared to 15 percent among females. Tobacco consumption is more among the rural (31 percent) than urban respondents (22 percent). The National Family Health Survey finding also concluded that chewing of panmasala or tobacco is more common in rural than in urban areas (NFHS 2, 1998-99). The proportion using tobacco increases with age from 15 percent in ages 18-24 to 44 percent in ages 65 and above. The data shows that the proportion of respondents using tobacco decreases with increasing income quintiles.

Figure 4.1 Percentage of respondents using tobacco by age and sex in India, 2003



At the lowest income quintile, 42 percent of the respondents use tobacco compared to 16 percent in the highest income quintile. There is an increasing trend in the consumption of tobacco until ages 35-44 for males and 45-54 for males, and attains a flat shape thereafter (Figure 4.1)

Table 4.1 also presents the proportion of respondents who are frequent and infrequent drinkers for states and India. Overall, 91 percent of respondents reported that they never had alcoholic drinks. The percent of never drinkers is 93 percent each in Rajasthan and Uttar Prade

Table 4.1 Prevalence of risk factors in states and India, 2003

States	Percentage of respondents						No. of Respondents
	Smoking	Alcohol			Nutrition & Physical activities		
	With daily tobacco consumption	Never had drink	Infrequent heavy drinkers <sup>1</sup>	Frequent heavy drinkers <sup>2</sup>	With insufficient intake of fruits & vegetables <sup>3</sup>	With inadequate physical activities <sup>4</sup>	
Assam	36.3	84.7	15.0	0.4	75.1	20.9	1046
Karnataka	25.7	91.6	6.1	2.3	80.6	26.1	1431
Maharashtra	29.9	90.4	8.1	1.5	61.7	28.2	1972
Rajasthan	25.4	93.1	6.0	1.0	90.9	30.4	1816
Uttar Pradesh	33.9	92.8	6.2	1.1	74.1	28.2	2054
West Bengal	37.4	88.3	10.7	1.0	94.7	32.8	1675
<b>India (pooled)</b>	<b>29.7</b>	<b>90.9</b>	<b>7.7</b>	<b>1.3</b>	<b>78.3</b>	<b>28.6</b>	<b>9994</b>

Note:

<sup>1</sup> Infrequent heavy drinkers: 1 to 3 days with 5+ standard drinks per one week (in last 7 days)

<sup>2</sup> Frequent heavy drinkers: 4+ days with 5+ standard drinks per one week (in last 7 days)

<sup>3</sup> Fruit & Vegetables: 5 or more servings per one typical day. Insufficient intake of fruits and vegetables: Less than 5 servings per one typical day.

<sup>4</sup> Physical Activity: Sufficiently active for health: 'time' $\geq$ 150 minutes. Insufficiently active 1 $\leq$ 'time' $\leq$ 149 minutes.

sh, 92 percent in Karnataka and 85 percent in Assam.

About eight percent of the respondents in India are infrequent heavy drinkers. Assam has the highest proportion of infrequent heavy drinkers (15 percent) while Rajasthan, Uttar Pradesh and Karnataka have the lowest of six percent each. Just a little more than one percent of the respondents in India are frequent heavy drinkers.

Table 4.2 presents alcohol consumption pattern of the respondents by their background characteristics. About 83 percent of male respondents never had alcoholic drinks in the past one week compared to 99 percent of females. The percent who never had a drink in the past week shows no variation by age of the respondents. The prevalence of alcohol drinking does not indicate variation by residence, but increases slightly in the higher income quintiles.

Among males the proportion of infrequent heavy drinkers is 14 percent and three percent are frequent heavy drinkers. The lowest proportion of infrequent drinkers is in the younger ages 18-24 and the highest in the ages 25-34. The proportion of infrequent heavy drinkers does not vary between urban and rural areas, but varies positively with income quintiles. The proportion of frequent heavy drinkers increases with age and with elderly persons consuming more than the younger generation.

#### 4.1.2 NUTRITION

Information on dietary habits and their changing patterns are very important for rational planning and improvement on nutrition related health policies and programmes. Information on fruits and vegetables and their intake can provide an idea of a

causal association of consumption and the reduction in cardio vascular diseases and certain cancers. The measurement of certain selected items such as fruits and vegetables have been taken to indicate the availability of nutrition since data is not collected on overall food intake. The WHO recommended two measurements of intake of fruits and vegetables in terms of sufficient (five or more servings per one typical day) and insufficient (less than five servings per one typical day) intake.

Table 4.1 presents the proportion of population with insufficient intake of fruits and vegetables in India. It also presents the level of insufficient physical activities in the state. Overall, 78 percent of the respondents reported insufficient intake of fruits and vegetables in India. West Bengal has the highest proportion of respondents (95 percent) with insufficient intake of fruits and vegetables followed by Rajasthan with 91 percent. The lowest 62 percent of respondents reported insufficient intake of fruits and vegetables in Maharashtra.

The proportion of population with insufficient intake of fruits and vegetables indicates very little differences by sex (table 4.2). In rural areas, 79 percent of the respondents have insufficient intake of fruits and vegetables compared to 73 percent in urban areas. Lower income quintiles indicate the highest proportion of population with insufficient intake of fruits and vegetables. The proportion with insufficient food intake increases with age. Ninety one percent of the respondents in the ages 65 and above have insufficient intake of fruits and vegetables indicating that they are at a greater disadvantage.

#### 4.1.3 PHYSICAL ACTIVITIES

Physical activities refer to activities undertaken at

work, around the home and garden, to get to and from places (i.e. for transport) and for recreation, fitness exercise or sport. Regular physical activity has a significant protective effect against ischaemic heart diseases, ischaemic stroke, type two diabetes mellitus, and breast-cancer and colon cancer.

Emerging evidence indicates that physical activity is important in preserving the residual fraction once peripheral arterial disease and chronic airways disease have developed, increases sensitivity to insulin, raises HDL cholesterol levels and reduces blood pressure. In addition, recreational physical

Table 4.2 Prevalence of risk factors by respondents characteristics in India (pooled), 2003

Characteristics	Percentage of respondents						Total
	Smoking	Alcohol			Nutrition & Physical activities		
	With daily tobacco consumption	Never had drink	Infrequent heavy drinkers <sup>1</sup>	Frequent heavy drinkers <sup>2</sup>	With insufficient intake of fruits & vegetables <sup>3</sup>	With inadequate physical activities <sup>4</sup>	
<b>Sex</b>							
Male	43.8	83.4	14.0	2.6	78.1	23.6	4849
Female	15.0	98.8	1.2	0.1	78.6	33.8	5145
<b>Age group</b>							
18-24	14.7	95.4	3.9	0.6	77.6	24.0	3138
25-34	23.8	86.7	11.2	2.1	77.1	20.7	3457
35-44	35.9	89.3	9.4	1.4	78.6	29.4	2052
54-54	39.0	90.9	7.3	1.9	81.8	51.1	867
55-64	38.5	88.2	10.5	1.3	81.1	55.5	376
65+	43.9	94.0	4.5	1.4	91.1	76.5	104
<b>Residence</b>							
Urban	21.5	90.9	7.9	1.2	72.7	38.7	2728
Rural	31.3	90.9	7.7	1.4	79.4	26.6	7266
<b>Income quintiles<sup>5</sup></b>							
Q1	41.8	87.7	10.4	1.8	84.5	24.7	2006
Q2	39.5	89.7	9.2	1.1	83.6	21.5	1996
Q3	30.9	92.1	6.8	1.1	80.7	27.1	2004
Q4	23.7	91.5	7.0	1.4	75.7	30.4	1995
Q5	15.5	92.9	7.7	1.3	78.3	28.6	9994
<b>Total</b>	<b>29.7</b>	<b>90.9</b>	<b>7.7</b>	<b>1.3</b>	<b>78.3</b>	<b>28.6</b>	<b>9994</b>

Note:

<sup>1</sup> Infrequent heavy drinkers: 1 to 3 days with 5+ standard drinks per one week (in last 7 days)

<sup>2</sup> Frequent heavy drinkers: 4+ days with 5+ standard drinks per one week (in last 7 days)

<sup>3</sup> Fruit & Vegetables: 5 or more servings per one typical day. Insufficient intake of fruits and vegetables: Less than 5 servings per one typical day.

<sup>4</sup> Physical Activity: Sufficiently active for health: 'time' $\geq$ 150 minutes. Insufficiently active 1 $\leq$ 'time' $\leq$ 149 minutes

<sup>5</sup> Income quintile is based on 20 permanent income asset indicators.



activity helps to reduce minor anxiety, depression and weight. The World Health Survey considers only activities meeting specific thresholds of intensity that were undertaken in the seven days preceding the survey.

Overall in India, 29 percent of respondents were found with inadequate physical activity (table 4.1). West Bengal has a higher proportion of population with inadequate physical activity (33 percent) followed by Rajasthan with 30 percent. Assam has the lowest 20 percent of respondents with inadequate physical activities.

Twenty four percent of males compared to 34 percent of females have reported inadequate physical activities (table 4.2). The proportion of respondents with inadequate physical activity is 39 percent in urban and 27 percent in rural areas. The proportion of respondents with insufficient physical activity increases with age of the respondent and income quintile.

#### 4.1.4 NUTRITIONAL STATUS OF WOMEN IN INDIA

Table 4.3 presents data on nutritional status of women in terms of mean height in states and India. The World Health Survey did not use height and weight measuring equipments to assess the height of the respondents. Height and weight information are self-reported and collected only from respondents who knew their height and weight.

The importance of height and weight nutritional data is well known. For instance, women's height can be used to identify women at risk of having a difficult delivery, since small stature is often related to small pelvic size. The risk of having a baby with a low birth weight is also higher for mothers who are short (NFHS, 1998-99: 243).

Overall, the mean height of female respondents is 151 cm, which is close to that of NFHS 1998-99 estimates. Mean height of women in India ranges between 147 and 153 cm with little interstate variations. The pooled data for India

Table 4.3 Nutritional status<sup>1</sup> of women in states and India, 2003

States	Height			Weight-for-height (BMI)			
	Mean height (cm)	Percentage below 145 cm	Number of women	Percentage with BMI below 18.5 kg/m <sup>2</sup>	Percentage with BMI of 25.0 kg/m <sup>2</sup> or more	Percentage with BMI of 30.0 kg/m <sup>2</sup> or more	Number of women for BMI
Assam	146.7	34.1	519	14.3	14.8	2.6	523
Karnataka	151.4	13.6	667	23.7	15.0	4.5	732
Maharashtra	150.5	24.4	1042	34.9	13.4	3.9	1038
Rajasthan	153.1	11.6	916	27.2	11.2	3.7	933
Uttar Pradesh	153.4	10.1	943	38.3	7.5	1.7	953
West Bengal	150.9	26.4	790	19.3	16.2	1.4	788
<b>India (pooled)</b>	<b>151.3</b>	<b>18.6</b>	<b>4877</b>	<b>29.1</b>	<b>12.7</b>	<b>3.1</b>	<b>4967</b>

Note:

<sup>1</sup> Nutritional status is calculated only for cases where nutritional information was reported.



Table 4.4 Nutritional status<sup>1</sup> of women by selected background characteristics in India, 2003

Characteristics	Height			Weight-for-height (BMI)			
	Mean height (cm)	Percentage below 145 cm	Number of women	Percentage with BMI below 18.5 kg/m <sup>2</sup>	Percentage with BMI of 25.0 kg/m <sup>2</sup> or more	Percentage with BMI of 30.0 kg/m <sup>2</sup> or more	Number of women for BMI
<b>Residence</b>							
Urban	152.1	15.8	1403	21.0	19.9	5.5	1393
Rural	151.1	19.2	3474	30.8	11.2	2.6	3574
<b>Income quintiles</b>							
Q1	150.6	22.1	1001	35.6	8.5	1.4	1023
Q2	150.7	21.0	950	34.5	9.7	2.2	966
Q3	151.5	16.5	1001	32.7	10.6	3.5	1020
Q4	150.9	19.7	984	23.6	14.0	3.8	1000
Q5	152.7	14.0	941	21.1	20.1	4.2	958
<b>Education status</b>							
No formal schooling	151.0	19.5	2518	28.6	12.2	2.8	2570
Less than primary school	149.9	24.2	419	30.1	14.1	5.3	430
Primary school completed	151.1	21.1	756	30.4	13.7	3.8	766
Secondary school completed	151.4	16.4	526	30.0	11.1	2.9	530
High school completed	152.9	11.3	317	26.4	16.2	1.5	326
College completed	153.6	9.4	278	33.3	10.3	2.9	281
Post graduate degree	157.0	1.6	63	12.0	16.4	-	64
<b>Total</b>	<b>151.3</b>	<b>18.6</b>	<b>4877</b>	<b>29.1</b>	<b>12.7</b>	<b>3.1</b>	<b>4967</b>

Note:

<sup>1</sup> Nutritional status is calculated only for cases nutritional information is reported.

- No cases reported

shows that 19 percent of women are shorter than 145 cm, which is the standard height. In Assam and West Bengal the height of more than a fourth of the women respondents is less than standard height of 145 cm. Only 10 percent of women in Uttar Pradesh are having less than the standard height of 145 cm. Overall, 29 percent of women have BMI below 18.5 kg/m<sup>2</sup> and 13 percent of women have BMI of 25 kg/m<sup>2</sup> or more. The proportion of women with BMI of more than 30 kg/m<sup>2</sup> is three percent. The highest 38 percent of women with BMI below 18.5 kg/m<sup>2</sup> is in Uttar Pradesh followed by 35 percent in Maharashtra while the lowest is in Assam (14 percent).

Table 4.4 presents the nutritional status of women by selected background characteristics. Mean

height of urban women is 152 cm and is slightly higher than that of rural women (151 cm). A higher proportion of rural women (19 percent) compared to urban women (16 percent) are shorter than the standard height of 145 cm.

Thirty one percent of rural and 21 percent of urban women had BMI below 18.5 kg/m<sup>2</sup>. The proportion of women with BMI of 25 kg/m<sup>2</sup> or more is 11 percent among rural and 20 percent among urban respondents. The proportion of respondents with BMI of 30 kg/m<sup>2</sup> or more is twice higher among urban (six percent) compared to rural (three percent) women.

The mean height of women in the lowest income quintile is 151 cm compared to 153 cm in the highest income quintile. The proportion of women

shorter than 145 cm is 22 percent in the lowest income quintile compared to 14 percent in the highest income quintile.

Thirty six percent of women have a BMI lower than 18.5 kg/m<sup>2</sup> in the lowest income quintile compared to 21 percent in the highest income quintile. As economic status improves the proportion of population below the standard BMI declines. The proportion of respondents with BMI of 25 kg/m<sup>2</sup> more and 30 kg/m<sup>2</sup> increase with income.

The mean height of women ranged between 151 cm among those who have no formal schooling and 157 cm among those who completed post graduation. However, the proportion of women shorter than 145 cm is about 10 times higher among those who have no formal education (20 percent) compared to those who completed post graduation (two percent). Among women whose BMI is below 18.5 kg/m<sup>2</sup>, 29 percent have no formal schooling compared to 33 percent who have completed college education. Only 12 percent of women with no formal schooling compared to 16 percent with postgraduates have

a BMI more than 25 kg/m<sup>2</sup>. Five percent of women with primary school had BMI more than 30 kg/m<sup>2</sup> compared to women who have completed high school (two percent).

#### 4.1.5 NUTRITIONAL STATUS OF MEN IN INDIA

Table 4.5 presents data on nutritional status of men in India. Overall, the mean height of male respondents is 162 cm. The mean height of the respondents varies between 160 and 164 cm in the states. The percentage of men below 152 cm is the highest of 22 percent in Karnataka followed by 19 percent in Assam. Overall, thirteen percent of men are shorter than 152 cm, which is the standard. A fourth of the male respondents (24 percent) have BMI below 18.5 kg/m<sup>2</sup> and 10 percent of men have BMI of 25 kg/m<sup>2</sup> or more. The proportion of men with BMI of more than 30 kg/m<sup>2</sup> is about one percent.

Table 4.6 shows the nutritional status of men by selected background characteristics in India. Mean height does not vary between urban and rural men

Table 4.5 Nutritional status<sup>1</sup> of men in states and India, 2003

States	Height			Weight-for-height (BMI)			
	Mean height (cm)	Percentage below 152 cm	Number of men	Percentage with BMI below 18.5 kg/m <sup>2</sup>	Percentage with BMI of 25.0 kg/m <sup>2</sup> or more	Percentage with BMI of 30.0 kg/m <sup>2</sup> or more	Number of women for BMI
Assam	159.9	19.3	509	14.3	8.6	0.4	510
Karnataka	159.8	22.4	562	16.3	11.6	1.4	641
Maharashtra	161.6	11.1	893	28.5	11.1	1.4	894
Rajasthan	164.3	9.3	856	27.5	6.7	0.4	865
Uttar Pradesh	163.2	8.2	1068	26.2	11.4	1.4	1081
West Bengal	161.0	13.4	724	20.8	10.0	0.2	744
<b>India (pooled)</b>	<b>161.7</b>	<b>12.8</b>	<b>4612</b>	<b>23.9</b>	<b>10.4</b>	<b>1.1</b>	<b>4735</b>

Note:

<sup>1</sup> Nutritional status is calculated only for cases where nutritional information is reported.

Table 4.6 Nutritional status<sup>1</sup> of men by selected background characteristics in India, 2003

Characteristics	Height			Weight-for-height (BMI)			
	Mean height (cm)	Percentage below 152 cm	Number of men	Percentage with BMI below 18.5 kg/m <sup>2</sup>	Percentage with BMI of 25.0 kg/m <sup>2</sup> or more	Percentage with BMI of 30.0 kg/m <sup>2</sup> or more	Number of men for BMI
<b>Residence</b>							
Urban	162.2	10.3	1258	18.8	17.2	2.0	1259
Rural	161.6	13.3	3354	24.9	9.1	0.9	3476
<b>Income quintiles</b>							
Q1	159.7	19.2	847	34.6	3.7	0.2	880
Q2	160.5	16.8	938	31.2	6.8	1.0	961
Q3	161.0	13.9	907	24.9	11.8	0.7	929
Q4	162.5	10.9	941	20.9	11.3	1.8	959
Q5	164.2	5.2	979	11.7	15.9	1.4	1006
<b>Education status</b>							
No formal schooling	160.3	17.9	1183	27.5	8.8	1.1	1204
Less than primary school	160.1	20.9	466	28.7	9.6	0.3	483
Primary school completed	160.6	14.1	910	30.4	7.2	1.0	928
Secondary school completed	162.9	8.9	743	22.2	9.8	0.8	754
High school completed	162.6	7.8	634	21.0	12.4	1.0	656
College completed	163.2	7.2	545	13.5	13.7	1.9	577
Post graduate degree	167.8	3.8	131	5.5	22.8	1.6	133
<b>Total</b>	<b>161.7</b>	<b>12.8</b>	<b>4612</b>	<b>23.9</b>	<b>10.4</b>	<b>1.1</b>	<b>4735</b>

Note:

<sup>1</sup> Nutritional status is calculated only for cases nutritional information is reported.

(162 cm). A higher proportion of rural men (13 percent) compared to urban men (10 percent) are shorter than 152 cm. Twenty-five percent of rural and 19 percent of urban men had BMI below 18.5 kg/m<sup>2</sup>. The proportion of men with a BMI of 25 kg/m<sup>2</sup> or more is nine percent among rural and 17 percent among urban respondents. The proportion of men with BMI of 30 kg/m<sup>2</sup> or more is two percent among urban respondents compared to less than one percent among rural respondents.

The mean height of the respondents significantly varies among different income quintiles. In the lowest income quintile the mean height of men is 160 cm compared to 164 cm in the highest income quintile. The proportion of men shorter than 152 cm is 19 percent at the lowest income

quintile compared to five percent at the highest income quintile. Thirty five percent of men have BMI lower than 18.5 kg/m<sup>2</sup> BMI in the lowest income quintile compared to 12 percent in the highest income quintile. The proportion of respondents with BMI more than 25 kg/m<sup>2</sup> is four times higher in the highest income quintile (16 percent) compared to the lowest income quintile (four percent).

The mean height of men ranged between 160 cm among those who have no formal education compared to 168 cm among those who completed post graduation. The proportion of men shorter than 152 cm is about four times higher among those who have no formal education (18 percent) compared to those who completed college education (four percent). Among men whose

BMI is below 18.5 kg/m<sup>2</sup>, 28 percent have no formal schooling and six percent have post graduate degree. The proportion of respondents with BMI of 25.0 kg/m<sup>2</sup> or more is about two times higher among postgraduates (23 percent) compared to those who are with no formal education (nine percent).

## 4.2 ACCESS TO IMPROVED WATER SOURCES

Access to water supply is a fundamental need and a human right. It is vital for the dignity and health of the people. Water-borne diseases contribute to about 22 percent of the diseases along with food and soil borne diseases (WHO-WHR: 1998). Adverse health outcomes are associated with unsafe water, lack of access to water for hygiene purposes and inadequate management of water resources and systems, especially in agriculture.

Infectious diarrhoea, malaria, schistosomiasis, trachoma etc. are some of the major water borne contributory factors to the burden of disease. The Millennium Development Goals (2000) seek to halve the proportion of people without sustainable access to safe drinking water by 2015.

Adequate quantities of safe water for consumption and its use are complementary measures to promote hygiene and for protecting health. Households with safe drinking water facilities reduce the risk of transmission of water borne diseases compared to other households that do not have access to safe drinking water. The quantity of water that people use depends upon easy access. If safe water is accessible to a household, people use large quantities for hygiene, but consumption drops significantly when water must be carried from distant places.

In the World Health Survey in India, information was collected about access to improved drinking water piped to the household. Table 4.7 provides information on access to improved drinking water facilities. A fourth of the households in India have drinking water piped to their houses and more than half the households have access to other sources of improved drinking water. Almost 79 percent of the households have access to either safe and improved clean drinking water sources. About 21 percent of households do not have any access to improved drinking water sources.

Of the six states, Maharashtra is a better performing state in terms of improved access to safe drinking water. Forty one percent of the households in Maharashtra have water piped in to their households compared to just 12 percent in West Bengal. About a fourth of the households in Assam, Karnataka, Rajasthan and Uttar Pradesh have water piped to their households.

Almost two thirds of the households in West Bengal (72 percent) and half the households in Assam, Karnataka and Uttar Pradesh have access to other sources of drinking water. Thirty two percent of households in Rajasthan do not have any access to improved water sources compared to 15 percent in Uttar Pradesh. Rajasthan is at a greater disadvantage in terms of access to improved drinking water sources.

Table 4.8 presents the percent distribution of households with drinking water facilities by background characteristics. Twenty two percent households in rural areas and more than half the households in urban areas have access to piped drinking water facility. Conversely, 55 percent of rural and 35 percent of urban households have access to improved water sources. Households with

no access to improved water sources are two times higher in rural areas compared to urban areas.

The proportion with access to improved drinking water piped to the household increases with increasing income. Only four percent of households in the lowest income quintile have improved access to drinking water sources compared to 62 percent in the highest income quintile. Overall, the proportion of households having accessibility to other sources of improved drinking water declines with an improvement in the economic status. A similar trend is found with respect to the proportion having no access to improved drinking water.

#### 4.2.1 ACCESS TO IMPROVED SANITATION

Sanitation facilities too play a crucial role in health, personnel hygiene and the spread of communi-

cable diseases across a population. Epidemiological evidence suggests that sanitation is at least as effective in preventing disease as in the case of improved water supply (WHO, 2003a). Often sanitation is viewed as important for adults, but the disposal of children's faeces is of crucial importance because they are the victims of diarrhoea and other faecal oral diseases.

The Millennium Development Goals aim at achieving a significant improvement in the lives of at least 100 million slum dwellers by 2020. The percentage of urban population with access to improved sanitation is one of the indicators used to measure progress towards this goal (WHO and UNICEF, 2000).

The World Health Survey in India, provides data on the proportion of households with access to a

**Table 4.7 Percent distribution of households with access to improved drinking water sources and improved sanitation in states and India, 2003**

States	Drinking water sources			Sanitation			Total
	Improved drinking water	Other sources of improved drinking water	No access to improved water sources <sup>3</sup>	Flush toilet to sewage sources <sup>4</sup>	Other improved toilet facilities <sup>5</sup>	No access to improved sanitation <sup>6</sup>	
Assam	26.1	54.7	19.3	0.2	51.1	48.7	1046
Karnataka	25.8	49.7	24.5	4.7	20.7	74.6	1431
Maharashtra	41.2	38.9	19.9	17.3	9.5	73.2	1972
Rajasthan	27.7	40.2	32.2	1.0	22.2	76.8	1816
Uttar Pradesh	26.8	58.3	14.9	5.1	17.9	76.9	2054
West Bengal	11.9	72.1	16.1	1.8	34.7	63.5	1675
<b>India (pooled)</b>	<b>27.6</b>	<b>51.6</b>	<b>20.8</b>	<b>6.6</b>	<b>21.4</b>	<b>72.0</b>	<b>9994</b>

Note:

<sup>1</sup> Piped water through house connection or yard.

<sup>2</sup> Public standpipe, protected tube well or bore well, protected dug well or protected spring, rain water etc.

<sup>3</sup> Unprotected dug well or spring, water taken directly from pond-water or stream, tanker-truck, vendor etc.

<sup>4</sup> Flush to piped sewage system, flush to septic tank etc.

<sup>5</sup> Pour flush latrine, covered dry latrine etc.

<sup>6</sup> Uncovered dry latrine, bucket latrine, no facilities, other etc.

**Table 4.8 Percent distribution of households with access to improved drinking water sources and improved sanitation by selected background characteristics in India (pooled), 2003**

Characteristics	Drinking water sources			Sanitation			No. of Respondents
	Improved drinking water <sup>1</sup>	Other sources of improved drinking water <sup>2</sup>	No access to improved water sources <sup>3</sup>	Flush toilet to sewage sources <sup>4</sup>	Other improved toilet facilities <sup>5</sup>	No access to improved sanitation <sup>6</sup>	
<b>Residence</b>							
Urban	55.5	35.1	9.4	22.9	39.6	37.5	2728
Rural	22.3	54.7	23.0	3.4	17.9	78.7	7266
<b>Income quintiles</b>							
Q1	4.4	63.4	32.2	-	2.6	97.4	2006
Q2	11.5	64.4	24.2	0.2	5.6	94.2	1996
Q3	21.9	54.4	23.7	2.5	13.1	84.3	2004
Q4	34.2	48.5	17.3	6.2	30.6	63.2	1995
Q5	61.8	29.4	8.8	23.2	51.0	25.8	1993
<b>Total (pooled)</b>	<b>27.6</b>	<b>51.6</b>	<b>20.8</b>	<b>6.6</b>	<b>21.4</b>	<b>72.1</b>	<b>9994</b>

Note:

<sup>1</sup> Piped water through house connection or yard.

<sup>2</sup> Public standpipe, protected tube well or bore well, protected dug well or protected spring, rain water etc.

<sup>3</sup> Unprotected dug well or spring, water taken directly from pond-water or stream, tanker-truck, vendor etc.

<sup>4</sup> Flush to piped sewage system, flush to septic tank etc.

<sup>5</sup> Pour flush latrine, covered dry latrine etc.

<sup>6</sup> Uncovered dry latrine, bucket latrine, no facilities, other etc.

- No cases reported

flush toilet to sewage system (a high technology where sanitation does not take place onsite but municipally and thereby minimizes the risk of contamination with excreta), the population with access to other improved sanitation facilities, and the population without access to improved sanitation. Table 4.7 provides data on access to improved sanitation facilities in six states and for India. Good sanitation facilities refer to those technologies that are likely to provide adequate sanitation; for example, hygienically separate human excreta from human contact.

Overall, seven percent of households in India have access to flush toilet with sewage system. The proportion of households having other improved toilet facility is 21 percent and 72 percent of households have no access to improved sanitation. It means that nearly two-thirds of households are

still deprived of access to improved sanitation facilities.

Among the states, Maharashtra (17 percent) has the highest proportion of households with flush toilet to sewage system, whereas this proportion is less than one percent in Assam and Rajasthan. Fifty one percent of households in Assam have other improved toilet facilities while in Maharashtra it is 10 percent. Seventy seven percent of households each in Uttar Pradesh and Rajasthan do not have any access to improved sanitation compared to 49 percent of households in Assam. This shows the vulnerability of the households that are not able to have improved sanitation facilities.

Table 4.8 presents percent of households with sanitation facilities according to background



**Table 4.9 Percent distribution of households by cooking fuel use in states and India, 2003**

States	Electricity, gas	Kerosene	Solid fuel <sup>1</sup>	No. of Respondents
Assam	15.9	0.8	83.3	1046
Karnataka	22.8	1.8	75.4	1431
Maharashtra	39.1	3.7	57.2	1972
Rajasthan	15.1	0.6	84.2	1816
Uttar Pradesh	17.0	0.4	82.6	2054
West Bengal	16.9	3.0	80.0	1675
<b>India (pooled)</b>	<b>23.0</b>	<b>2.0</b>	<b>75.0</b>	<b>9994</b>

*Note:*

<sup>1</sup> *Coal, charcoal, wood, agriculture/crop, animal dung, shrubs/grass and other etc.*

characteristics. Twenty three percent of households in urban areas of India have access to flush toilet with sewage system. The proportion with other improved toilet facilities are 40 percent, and 38 percent do not have any access to improved sanitation in urban areas. In rural areas, just three percent of households have access to flush toilet with sewage system. The proportion with other improved toilet facilities is 18 percent and more than two thirds (78 percent) of households do not have any access to improved sanitation.

The accessibility to both flush toilet and other improved toilet facilities improves with economic status of the households. The proportion having accessibility to flush toilet is less than one percent in lowest income quintile, which rises to 23 percent for highest income quintile. Similarly, the proportion having accessibility to other improved toilet facilities increases from three percent in the lowest income quintile to 51 percent in the highest income quintile. The proportion having no access to improved sanitation declines sharply with increasing household income quintile.

### 4.3 SOLID FUEL USE

The use of solid fuel such as wood, coal, agricultural

and crop residues can cause serious effects on respiratory health. Traditional low efficiency stoves produce heavy smoke with fine particles, carbon monoxide and carcinogenic compounds.

Infants are at risk of suffering from acute respiratory infections, particularly pneumonia, due to the immaturity of their respiratory organ systems and their high exposure when carried on their mother's back or placed near the stove. Women are at high risk of chronic respiratory disease as they spend a lot of time at home, particularly during cooking. Cooking and heating in environments with little ventilation contribute to high levels of indoor air pollution.

While cooking takes place throughout the year, most houses are only heated during the cold season or not at all, and the current analysis therefore focuses on cooking as the main indicator of indoor air pollution due to solid fuel use. Use of intermediate fuels such as kerosene or cleaner fuels such as gas and electricity sharply reduces or eliminates indoor air pollution. Intervention to reduce or eliminate indoor air pollution from solid fuel use provides a large potential for respiratory disease prevention.

The World Health Survey in India collected



**Table 4.10 Percent distribution of households by cooking fuel use by background characteristics in India (pooled), 2003**

Characteristics	Electricity, gas	Kerosene	Solid fuel <sup>1</sup>	No. of Respondents
<b>Residence</b>				
Urban	66.7	7.0	26.3	2728
Rural	14.7	1.0	84.4	7266
<b>Income quintiles</b>				
Q1	0.02	0.4	99.6	2006
Q2	1.4	0.9	97.7	1996
Q3	6.9	4.1	89.0	2004
Q4	27.7	3.0	69.4	1995
Q5	75.8	0.9	23.4	1993
<b>Total (pooled)</b>	<b>23.0</b>	<b>2.0</b>	<b>75.0</b>	<b>9994</b>

Note:

<sup>1</sup> Coal, charcoal, wood, agriculture/crop, animal dung, shrubs/grass and other etc.

information on the use of various cooking fuels such as electricity, gas, kerosene and solid fuel on a traditional stove. Table 4.9 provides data on the use of solid fuel for cooking. Overall, 23 percent of households are using either electricity or gas for cooking. Two percent of households use kerosene, the remaining three fourths (75 percent) of households use solid fuel for cooking. The proportion of households using electricity or gas is highest in Maharashtra (39 Percent) followed by Karnataka (23 percent) and the lowest in Rajasthan (15 percent). The use of kerosene is the highest in Maharashtra (four percent). On the other hand, solid fuel use ranges between 57 to 84 percent in the sampled states with the highest proportion in Rajasthan and the lowest in Maharashtra.

Table 4.10 presents the percent distribution of households by type of cooking fuel used and

selected background characteristics of respondents. The proportion using electricity and gas is about four times higher in urban (67 percent) compared to rural areas (15 percent). About seven percent of urban households and one percent of rural households use kerosene for cooking. Eighty four percent of rural households are using solid fuel compared to 26 percent of urban households.

As economic status improves, the proportion of households using cooking fuels such as electricity or gas increases compared to those using kerosene or solid fuel. The proportion using electricity and gas steadily increases from less than one percent in the lowest income quintile to 76 percent in the highest income quintiles. All households in the lowest income quintile use solid fuel compared to 23 percent in the highest income quintile.

## Morbidity Prevalence

### INTRODUCTION

Delivery of health services to individuals in need is a critical pathway through which health service provision can contribute to social objectives, such as improving population's health and reducing health inequalities. The term coverage has been used in different contexts, to mean the availability and the degree of protection by insurance, the ratio of health resources over population e.g. physicians, health workers, health centres etc (Hogarth, 1975). Information on effective coverage of critical health intervention is becoming a cornerstone in the assessment of health services provision. Information on health system performance assessment will provide a stronger basis for identifying the contribution of health services to major health system goals such as population health (WHO, 2003a). Also it was found that sex and age of the individual show important associations with morbidity (Shariff, 1995).

Given this context, the coverage chapter summarizes the information on overall health system coverage for a selected set of health interventions as measured by the World Health Survey in India. The purpose is to determine the number of individuals who are in need of certain

health interventions and how many of these persons actually receive appropriate interventions with reference to major communicable and non-communicable diseases, coverage for anti natal care, oral health and vision.

Health coverage is defined as the probability of receiving a health intervention conditional on the presence of the health care need. This definition is based on three main premises: a) presence of health care need is a pre condition for receiving services; b) coverage is defined at the individual level; and c) coverage refers to the anticipation of a certain outcome of the interaction between the individual and the health system when health care need emerges. Access is defined as the extent of availability of services whenever and wherever patients need them. Utilization is referred to as the variation in the quality of health care services and procedures used. Effectiveness refers to the extent to which the intervention delivers the intended outcome in response to needs.

Thus, coverage is considered as a comprehensive intermediate goal, which accommodates the concepts of access, utilization and effectiveness (Shengelra, O. Adams, C. Murray, M. Thieren, P. Berckmans and Y. Kwahkam, 2003).

The World Health Survey gathered evidence on a comprehensive range of communicable and non-communicable diseases. In this chapter, the results are presented in terms of *need* and *coverage* of morbidity. *Need* refers to the percent of population diagnosed with a morbidity and *coverage* refers to percent of population treated for the morbidity. While the reference period for the episode of malaria is last one year, the treatment received has no reference period.

## 5.1 COMMUNICABLE DISEASE

Environmental and social factors impose severe constraints on two of the communicable diseases, malaria and tuberculosis that pose a special threat. India accounts for a third of global tuberculosis cases.

According to the available estimates about 2.2 million people are added each year to the existing load of 15 million active TB cases. Of these new cases, about 800,000 are infectious and about 450,000 die (WHO, 2003a). India has been identified as a hotspot for multi drug resistant (MDR) tuberculosis, which is both difficult and expensive to treat.

The resurgence of malaria and tuberculosis indicates the difficulty to control or treat along with the exponential rate of development of HIV/AIDS. It shows a new sense of urgency for disease control. The Government of India is seeking to reduce the burden of the most significant endemic diseases through projects to control the spread of AIDS, leprosy, cataract blindness, malaria and tuberculosis.

The revised approach focuses on improved diagnostic methods and cures that reduce the risk of infection, administration of short-course

treatment to prevent development of drug resistance, a rigorous system of patient registration and follow-up, and decentralised service delivery. The Indian Ministry of Health and Family Welfare first tested this revised approach through pilot projects in 15 rural and urban sites, curing more than 15,000 patients over a period of 16 months, with a very successful 80 percent cure rate. Given the above background, the evidence from the World Health Survey on coverage of communicable diseases is presented below.

### 5.1.1. TUBERCULOSIS AND HIV/AIDS

Tuberculosis and HIV/AIDS are the two most important communicable diseases in India. Tuberculosis, which is resurgent worldwide, is an infectious disease that affects the lungs and other body tissues. Tuberculosis of the lungs, the most commonly known form is characterized by coughing up mucus and sputum, fever, weight loss and chest pain. The overall prevalence of tuberculosis in India is 544 per 100,000 population (National Family Health Survey, II). This is 16 percent higher than the prevalence recorded in NFHS-I (467 per 100,000) indicating that tuberculosis may be on the rise in India. The prevalence of tuberculosis is much higher in rural areas (600 per 100,000 population) than in urban areas (390 per 100,000 population). The prevalence rate is also much higher for males (624 per 100,000 population) than females (460 per 100,000). The probable reasons for the higher prevalence of tuberculosis among males than females are that men are more likely to come in contact with people who suffer from tuberculosis and they smoke more than women (National Family Health Survey, II: 198).

HIV is an illness caused by the Human Immune Deficiency Syndrome Virus, which weakens the

immune system and leads to death through secondary infections such as tuberculosis or pneumonia. The virus is generally transmitted through sexual contact, through the placenta of HIV infected mothers to their unborn children, or through contact with contaminated needles (injections) or blood. HIV/AIDS has torn apart families and caused untold sufferings in the most heavily burdened regions. In hard hit areas, including some of the poorest parts of the world, HIV has reversed the gain in life expectancy registered in the last three decades of the 20<sup>th</sup> century. HIV/AIDS causes almost three million global deaths in 2002 (WHR, 2003). HIV and AIDS prevalence in India have been on the rise for more than a decade and is considered to have reached an alarming proportion in recent years (National Family Health Survey, 1998-99: 230).

Table 5.1 presents the proportion of respondents screened for tuberculosis, the proportion receiving voluntary counselling and testing for HIV/AIDS and the percent of condom use in the six states and

India. Respondents of all ages (18+) were screened for tuberculosis and information on HIV/AIDS test was collected for females in the reproductive ages who had given birth in the last five years. Also, information was collected on the use of condoms for both the sexes in ages 18-49.

About two percent of the respondents have been screened for tuberculosis. The highest proportion of respondents screened for tuberculosis is from Rajasthan (four percent) followed by West Bengal and Maharashtra with three percent each and less than one percent of respondents in Assam.

Table 5.2 presents the proportion of respondents screened for tuberculosis, HIV/AIDS and condom use by their background characteristics. The proportion of respondents screened for tuberculosis is three percent among males compared to two percent among females. This is consistent with the finding of higher TB prevalence among males than females in NFHS(1998-99)

About six percent of insured and two percent of uninsured respondents have been screened for

**Table 5.1 Coverage for communicable diseases and sexual health in states and India, 2003**

States	Percentage of respondents screened for tuberculosis <sup>1</sup>	No. of respondents	Percentage of women who had voluntary counseling and testing for HIV/AIDS <sup>2</sup>	No. of women	Percentage of adults in ages 18-49 using condoms <sup>3</sup>	No. of Respondents
Assam	0.4	1046	0.9	413	10.3	798
Karnataka	1.1	1431	2.9	570	1.7	1055
Maharashtra	2.7	1972	4.6	784	5.1	1454
Rajasthan	3.7	1816	0.2	697	8.5	1370
Uttar Pradesh	2.0	2054	0.9	736	9.6	1516
West Bengal	2.9	1675	0.2	661	6.3	1222
<b>India (pooled)</b>	<b>2.3</b>	<b>9994</b>	<b>1.9</b>	<b>3861</b>	<b>6.3</b>	<b>7415</b>

Note:

<sup>1</sup> Reference period for TB screening is last one year

<sup>2</sup> HIV/AIDS counseling corresponds to all females of age 18 to 49 who were pregnant in last 5 years and reported for ANC care.

<sup>3</sup> Condom use corresponds to last sex for both males and females of age 18 to 49

tuberculosis. The proportion screened for tuberculosis is three percent in the lowest income quintile and less than two percent in the highest income quintile.

About two percent of female respondents in ages 18-49 have reported having received voluntary counselling and testing for HIV/AIDS. Maharashtra has the highest proportion (five percent) of respondents who received voluntary counselling and testing for HIV/AIDS followed by Karnataka (three percent). Voluntary counselling and testing for HIV/AIDS is less than one percent in the rest of the states. Four percent of respondents in the highest income quintile have

reported HIV/AIDS testing compared to one percent in the lowest income quintile.

In India, six percent of respondents in ages 18-49 have reported that they are using condoms. The highest proportion of respondents using condoms is in Assam and Uttar Pradesh with about 10 percent each and Karnataka shows the lowest two percent of respondents using condoms.

About seven percent of males and six percent of females reported using condoms. The use of condoms is higher in urban areas (10 percent) compared to rural areas (six percent). About 13 percent of insured respondents are using condoms

**Table 5.2 Coverage for communicable diseases and sexual health by selected background characteristics in India (pooled), 2003**

Characteristics	Percentage of respondents screened for tuberculosis <sup>1</sup>	No. of respondents	Percentage of women who had voluntary counseling and testing for HIV/AIDS <sup>2</sup>	No. of women	Percentage of adults in ages 18-49 using condoms <sup>3</sup>	No. of Respondents
<b>Sex</b>						
Male	2.7	4849	NA	NA	6.6	3554
Female	1.9	5145	1.9	3861	6.0	3861
<b>Residence</b>						
Urban	1.7	2728	4.4	1106	10.0	2054
Rural	2.4	7266	1.5	2755	5.6	5361
<b>Insurance status</b>						
Insured	5.7	368	1.3	123	13.8	258
Uninsured	2.2	9626	2.0	3738	6.1	7157
<b>Income quintiles</b>						
Q1	2.9	2006	1.3	834	3.0	1535
Q2	2.7	1996	0.7	793	4.7	1501
Q3	2.5	2004	1.8	793	5.6	1501
Q4	2.0	1995	2.2	752	6.2	1502
Q5	1.7	1993	4.1	689	12.3	1376
<b>Total</b>	<b>2.3</b>	<b>9994</b>	<b>1.9</b>	<b>3861</b>	<b>6.3</b>	<b>7415</b>

Note:

<sup>1</sup> Reference period for TB screening is last one year

<sup>2</sup> HIV/AIDS counseling corresponds to all females of age 18 to 49 who were pregnant in last 5 years

<sup>3</sup> Condom use corresponds to last sex for both males and females of age 18 to 49

NA - Not Applicable

compared to six percent among the uninsured. Use of condoms is three times higher among the respondents in the highest income quintile (12 percent) compared to respondents in the lowest income quintile (three percent).

### 5.1.2 MALARIA AND DIARRHOEA

Table 5.3 presents the percent of children with a reported episode of malaria and its treatment in the last one year in India. Also, information on the prevalence of diarrhoea is collected. The information on both the illness is collected from the respondents who have children less than five years of age. About six percent of children had an episode of malaria in India during the five years prior to the survey. Of them, 93 percent of children were treated. Rajasthan, the state with highest prevalence of TB also has the highest prevalence of malaria followed by Maharashtra (six percent). The lowest (less than one percent) prevalence of malaria is reported in Karnataka. All the children with an episode of malaria were treated in Assam and Karnataka while it is 94 percent in Rajasthan. In Uttar Pradesh 89 percent of children were treated

among those children with an episode of malaria.

Table 5.4 presents the prevalence of malaria and its treatment among the respondents by their background characteristics. A greater proportion of male and rural children have had an episode of malaria. The prevalence of malaria is about three times higher among the uninsured compared to the insured. Prevalence of malaria declines with increasing income quintiles.

Ninety four percent of male children and 91 percent female children with malaria received treatment. Significant urban rural difference is observed in terms of treatment of malaria is concerned. Sixty five percent of insured and 93 percent of uninsured received treatment for malaria. The proportion treated for malaria declines slightly with increasing income.

The reported prevalence of diarrhoea is 30 percent in the last one year for child under 5 years in India with the highest prevalence in Rajasthan and the lowest in Assam. The prevalence of diarrhoea is higher in rural (31 percent) compared to urban areas (23 percent). Prevalence of diarrhoea is 19

**Table 5.3 Coverage for malaria and diarrhoea for children under five years<sup>1</sup> in states and India, 2003**

States	Percentage with an episode of malaria	Percentage treated for malaria <sup>3</sup>	Percentage with an episode of diarrhoea	No. of children under 5 years
Assam	3.1	100.0	8.5	340
Karnataka	0.6	100.0	13.8	368
Maharashtra	6.1	92.0	33.2	690
Rajasthan	13.7	94.0	40.4	819
Uttar Pradesh	4.3	89.4	36.4	902
West Bengal	2.3	96.2	19.3	527
<b>India (pooled)</b>	<b>5.6</b>	<b>92.9</b>	<b>29.8</b>	<b>3646</b>

Note:

<sup>1</sup> Reference period for malaria and diarrhoea episode and treatment is last one year

<sup>2</sup> Child illness corresponds children under 5 year in respondents families

<sup>3</sup> Percent treated for malaria is based on number of cases reported with an episode of malaria. Treatment for diarrhoea is not available



**Table 5.4 Coverage for malaria and diarrhoea for children under five years<sup>1</sup> by selected background characteristics in India (pooled), 2003**

Characteristics	Percentage with episode of malaria	Percentage treated for malaria <sup>2</sup>	Percentage with episode of diarrhoea	Total
<b>Sex</b>				
Male	6.3	94.1	29.1	1731
Female	4.8	91.1	30.6	1915
<b>Residence</b>				
Urban	3.8	77.6	22.8	791
Rural	5.8	94.2	30.8	2855
<b>Insurance status</b>				
Insured	2.1	64.6	19.3	124
Uninsured	5.7	93.2	30.2	3522
<b>Income quintiles</b>				
Q1	8.2	96.1	35.3	831
Q2	5.5	91.9	29.6	795
Q3	5.6	90.3	33.2	754
Q4	4.5	91.2	26.4	657
Q5	4.3	92.2	25.0	609
<b>Total (pooled)</b>	<b>5.6</b>	<b>92.9</b>	<b>29.8</b>	<b>3646</b>

Note:

<sup>1</sup> Reference period for malaria episode and treatment is last one year. Child illness corresponds children under 5 year in respondents families

<sup>2</sup> Treatment for malaria is calculated with respect to episode of malaria. Treatment for diarrhoea is not available

percent among the insured compared to 30 percent among the uninsured. The proportion of children reported with an episode of diarrhoea also declines with increasing income.

## 5.2 MATERNAL AND REPRODUCTIVE HEALTH

Improving maternal and reproductive health has been a major thrust of the 1994 International Conference on Population and Development Conference in Cairo. All the countries of the developing world initiated programmes to promote reproductive health status of women.

The Government of India took certain steps to strengthen maternal and child health in the first (1951-55), second (1956-60) and fifth (1974-78) five year plans. The fifth five year plan (1974-78)

was a landmark for maternal, child health and nutritional services with the introduction of the minimum needs programme and its integration with family planning services. Several programmes have been implemented for better maternal and child health. With regard to maternal and reproductive health, the government programmes seek to integrate maternal health, child health, and fertility regulation interventions with reproductive health programmes for both men and women (MOHFW, 1997; 1998). The coverage with respect to maternal and child health care are presented in the following sections.

### 5.2.1 SCREENING OF WOMEN FOR CANCER

Cancer of the cervix is the second most common cancer among women worldwide, with about 500,000 new cases diagnosed and 250,000 deaths



each year (WHO, 2004). Almost 80 percent of the cases occur in developing countries; in many developing regions cervical cancer is the most common cancer in women. The only available treatments for the disease are surgery and radiotherapy, and these are not accessible to the most affected women in developing countries. The primary approach to control cervical cancer is therefore through prevention (WHO, 2004).

Cervical cancer takes many years to develop, and changes can be detected in the cervix some time before the appearance of cancer. In principle, screening of women for these changes can allow treatment of these with early signs of developing disease, preventing the development of cancer. Screening programmes have been in operation in most developed countries for a number of years. While in some of these countries there have been significant reductions in the incidence of invasive cancer, overall the impact has often been less than expected. In middle-income countries, the success of screening programmes has generally been even more limited.

Given this background, the World Health Survey collected information on the screening of two major

types of cancers cervical and breast cancer. Female respondents in the ages 18-69 were asked if they were screened for cervical cancer and females in ages 40-69 were asked if they were screened for breast cancer.

Over all, 16 percent of women in ages 18-69 had undergone cervical cancer screening and four percent of women in ages 40-69 have had breast cancer screening. Maharashtra shows the highest coverage of cervical cancer (31 percent) screening and breast cancer screening (nine percent). The lowest proportion of women who reported cervical cancer screening is in Assam and Uttar Pradesh (seven percent). On the other hand, the lowest proportion of breast cancer screening cases was reported from West Bengal and Rajasthan (one percent).

In urban areas, 25 percent of women reported having had cervical cancer screening and nine percent of women had breast cancer screening. Compared to this, fifteen percent and four percent of women in rural areas have had cervical and breast cancer screening.

Among insured respondents, 11 percent of women had been screened for cervical cancer and among the uninsured, 17 percent of women had been

**Table 5.5 Percentage of women covered for cancer screening in states and India, 2003**

States	Cervical cancer screening <sup>1</sup>	No. of women	Breast cancer screening <sup>2</sup>	No. of women
Assam	7.9	506	5.2	176
Karnataka	12.4	747	5.4	286
Maharashtra	31.2	1028	9.1	428
Rajasthan	13.5	893	1.4	345
Uttar Pradesh	7.7	917	1.5	361
West Bengal	13.0	820	1.3	293
<b>India (pooled)</b>	<b>16.4</b>	<b>4911</b>	<b>4.4</b>	<b>1889</b>

Note:

<sup>1</sup> Cervical cancer screening corresponds to all females of age 18 – 69

<sup>2</sup> Breast cancer screening corresponds to all females justify of age 40 – 69

**Table 5.6 Percentage of women covered for cancer screening by selected background characteristics in India (pooled), 2003**

Characteristics	Cervical cancer screening <sup>1</sup>	No. of women	Breast cancer screening <sup>2</sup>	No. of women
<b>Sex</b>				
Male	NA	NA	NA	NA
Female	16.4	4911	4.4	1889
<b>Residence</b>				
Urban	24.8	1378	9.2	535
Rural	14.8	3533	3.5	1354
<b>Insurance status</b>				
Insured	10.8	164	4.5	761
Uninsured	16.6	4747	1.6	813
<b>Income quintiles</b>				
Q1	11.4	1035	1.1	357
Q2	12.1	981	1.9	361
Q3	19.3	1012	7.4	375
Q4	18.2	977	5.0	399
Q5	20.8	886	5.7	397
<b>Total (pooled)</b>	<b>16.4</b>	<b>4911</b>	<b>4.4</b>	<b>1889</b>

Note:

<sup>1</sup> Cervical cancer screening corresponds to all females of age 18 – 69

<sup>2</sup> Breast cancer screening corresponds to all females of age 40 – 69

NA - Not Applicable

screened. Among the uninsured two percent have been scanned for breast cancer. The proportion of women screened for cervical and breast cancer increases with income.

### 5.2.2 MATERNAL AND CHILD HEALTH

Questions were asked to women in the ages 18-49 about maternal health care services availed for births during the five years prior to the survey. Tables 5.7 and 5.8 present the percent of women who received antenatal care (three times pregnancy and blood pressure treatment or blood sample test) and delivery care (delivered in hospital and attended by specialist such as gynaecologist, obstetrician). Of the total 1452 women who gave birth in the last five years, 48 percent had received full antenatal care and 34 percent had received care at the time of delivery. Amongst the states, full antenatal coverage (66 percent) and care for delivery (46 percent) are highest in Maharashtra.

Antenatal coverage is lowest in Uttar Pradesh (27 percent), whereas care for delivery is lowest (10 percent) in Assam.

About two thirds of the women (72 percent) received antenatal care in urban areas compared to 44 percent in rural areas. Only 30 percent of rural women received care at the time of delivery compared to 65 percent of urban women. Sixty five percent of insured women received antenatal care compared to 48 percent among the uninsured. Sixty-two percent of insured women and 34 percent of uninsured women received delivery care.

The proportion of women receiving care at the time of delivery is about three times and antenatal care is more than two times higher in the highest income quintile compared to the lowest income quintile.

Mother's education shows strong positive relation with antenatal and delivery care. About 85 percent of

Table 5.7 Coverage for antenatal care and care for delivery<sup>1</sup> in states and India, 2003

States	Percentage of women who received		No. of Women
	Antenatal care <sup>2</sup>	Delivery care <sup>3</sup>	
Assam	35.1	10.2	145
Karnataka	56.5	44.5	161
Maharashtra	65.7	46.1	284
Rajasthan	37.3	25.1	315
Uttar Pradesh	27.2	22.5	349
West Bengal	60.3	41.1	198
<b>India (pooled)</b>	<b>47.9</b>	<b>34.3</b>	<b>1452</b>

Note:

<sup>1</sup> Reference period for antenatal and delivery care is last five years

<sup>2</sup> Antenatal care corresponds to pregnancies given birth in last five years for women in ages 18 to 49 and ANC= [3 times pregnancy check and blood pressure measurement or testing of blood sample or complications in pregnancy]

<sup>3</sup> Care of delivery refers to hospital or maternity house and other type of health facility (including specialists such as gynecologist, obstetrician, surgeon, etc)

Table 5.8 Coverage for antenatal care and care for delivery<sup>1</sup> by selected background characteristics in India (pooled), 2003

Characteristics	Percentage of women who received		No. of Women
	Antenatal care <sup>2</sup>	Delivery care <sup>3</sup>	
<b>Sex</b>			
Male	NA	NA	NA
Female	47.9	34.3	1452
<b>Residence</b>			
Urban	71.8	64.5	351
Rural	44.2	29.5	1101
<b>Insurance status</b>			
Insured	65.0	61.5	351
Uninsured	47.6	33.8	417
<b>Income quintiles</b>			
Q1	34.8	23.1	396
Q2	39.2	19.1	320
Q3	46.6	29.9	300
Q4	57.6	48.8	242
Q5	72.5	63.6	194
<b>Mother's education</b>			
No formal schooling	29.6	18.8	719
At most primary	62.1	45.2	361
Secondary school completed	53.2	33.5	160
High school and above	84.5	65.2	212
<b>Total (pooled)</b>	<b>47.9</b>	<b>34.3</b>	<b>1452</b>

Note:

<sup>1</sup> Reference period for antenatal and delivery care is last five years

<sup>2</sup> Antenatal care corresponds to pregnancies given birth in last five years for women in ages 18 to 49 and ANC= [3 times pregnancy check and Blood pressure measurement or testing of blood sample or complications in pregnancy]

<sup>3</sup> Delivery care refers to hospital or maternity house and other type of health facility (including specialists such as gynecologist, obstetrician, surgeon, etc)

NA - Not Applicable

mothers with high school or higher level of schooling received antenatal care compared to just 30 percent of women with no formal schooling. Twenty percent of women with no formal schooling received care at the time of delivery compared to 65 percent of women with high school or higher education.

### 5.2.3 COVERAGE FOR CHILD HEALTH CARE

The coverage of three doses of DPT and measles immunization corresponds to children less than 5 years in the household. Tables 5.9 and 5.10 present the coverage of three doses of DPT and measles immunisation in India. Overall, 43 percent of children received DPT immunization and 32 percent of children received measles immunisation. Among the states, Karnataka has the highest coverage for DPT3 (59 percent) and measles immunisation (55 percent) followed by Maharashtra with 50 and 45 percent respectively. The reported coverage of DPT3 immunisation is the lowest 24 percent in West Bengal.

Also, Assam (16 percent) and West Bengal (17 percent) have shown the lowest coverage of measles immunisation. About 40 percent of female

children received three doses of DPT compared to 46 percent of male children, indicating a gender gap unfavourable to female children. Coverage of measles immunisation does not vary much between sexes. A higher proportion of urban children received both DPT3 and measles immunisation than their rural counterparts.

Among the insured, 49 percent of children received DPT3 and 38 percent received measles immunisation. Compared to this, 43 percent of children received DPT3 and 32 percent of children received measles immunisation among the uninsured. The proportion of children receiving both DPT3 and measles immunisation increases with mothers education. The information on child immunisation was collected only from respondents who could show the immunization card.

### 5.3 NON-COMMUNICABLE DISEASES

The burden of non-communicable diseases has seen a 10 percent increase from estimated levels in 1990 (WHO, 2003). Non-communicable diseases account for nearly half of the global burden of disease in all ages.

Table 5.9 Coverage for child health in states and India, 2003

States	Percentage of children covered by		No. of children under 5 years
	DPT 3 Immunization	Measles Immunization	
Assam	26.1	16.4	340
Karnataka	59.2	53.7	368
Maharashtra	49.8	45.4	690
Rajasthan	47.9	31.6	819
Uttar Pradesh	40.2	22.2	902
West Bengal	23.5	16.6	527
<b>India (pooled)</b>	<b>43.2</b>	<b>32.2</b>	<b>3646</b>

Note:

<sup>1</sup> DPT 3 and measles immunization corresponds to children under 5 years in the household and considers only cases for which card was shown.

The burden from non-communicable diseases in developed countries remains stable at over 80 percent in adults aged 15 years and over, the proportion in middle-income countries has already exceeded 70 percent.

Almost 50 percent of the adult disease burden in the high mortality regions of the world is now attributable to non-communicable diseases. Population ageing and changes in the distribution of risk factors have accelerated the incidence of non-communicable disease in many developing countries.

### 5.3.1 ANGINA, ARTHRITIS, ASTHMA, DIABETES, DEPRESSION AND PSYCHOSIS

The World Health Survey gathered data on need and coverage of non-communicable diseases such as angina, arthritis, asthma, diabetes, depression and psychosis in India. The need refers to population diagnosed with morbidity and coverage refers to population treated for the morbidity. The reference period in the analysis for non-communicable diseases is one year prior to the survey.

Table 5.10 Coverage for child health by selected background characteristics in India (pooled), 2003

Characteristics	Percentage of children covered by		No. of children under 5 years
	DPT 3 Immunization <sup>1</sup>	Measles Immunization <sup>1</sup>	
<b>Sex</b>			
Male	45.8	33.2	1731
Female	40.4	31.1	1915
<b>Residence</b>			
Urban	51.7	43.1	791
Rural	42.0	30.7	2855
<b>Insurance status</b>			
Insured	49.1	37.5	1243
Uninsured	43.0	32.0	522
<b>Income quintiles</b>			
Q1	30.9	24.3	831
Q2	34.8	23.8	795
Q3	43.2	31.7	754
Q4	53.5	37.4	657
Q5	52.4	43.3	609
<b>Mother's education</b>			
No formal schooling	34.9	25.3	1547
At most primary	41.1	32.4	970
Secondary school completed	48.1	30.7	468
High school and above	58.2	45.4	661
<b>Relationship of respondent to child</b>			
Parent	44.8	35.6	2360
Grand parent	41.1	29.1	790
Other/Not related	42.3	27.9	496
<b>Total (pooled)</b>	<b>43.2</b>	<b>32.2</b>	<b>3646</b>

Note:

<sup>1</sup> DPT 3 and measles immunization corresponds to children under 5 years in the household and considers only cases for which card was shown.

Table 5.11 presents the diagnosed and treated cases of angina, arthritis and asthma, and table 5.12 corresponds to the diagnosed and treated cases of diabetes, depression and psychosis in the states and India. The highest prevalence in terms of diagnosed cases of angina, diabetes and depression are reported in Maharashtra.

The reported prevalence of asthma (seven percent) and psychosis (four percent) are highest in Rajasthan. Except psychosis, the reported prevalence of all the above non-communicable diseases is the lowest in Assam.

Of the diagnosed cases, the proportion treated for arthritis, diabetes and psychosis are highest in Karnataka and those treated for depression and angina are higher in Assam. The proportion treated for angina, arthritis and depression are the lowest in Uttar Pradesh and those treated for asthma and diabetes are highest in Maharashtra.

Tables 5.13 and table 5.14 presents the percent of respondents who were diagnosed and treated for major non-communicable diseases in India by

background characteristics. A greater proportion of females have been diagnosed and treated for arthritis. There is no significant gender difference within diagnosed cases for major non-communicable diseases except angina. However, the percentage of treatment for angina and asthma are higher among males, whereas treatment for depression, psychosis and arthritis is higher for females. The reported percentages of angina, diabetes and depression are higher in urban than rural India. A higher percentage was of urban than rural respondents have been treated for psychosis, angina, arthritis and asthma.

The proportion of respondents diagnosed with arthritis, asthma and diabetes is higher among the insured compared to uninsured respondents. Prevalence of depression is highest among the uninsured respondents. However, a higher percent of insured respondents have been treated for all the non-communicable diseases except psychosis.

The proportions diagnosed with depression, psychosis, angina, arthritis and asthma and are inversely related to income and that of diabetes is

**Table 5.11 Need and coverage of non-communicable diseases<sup>1</sup> (angina, arthritis and asthma) in states and India, 2003**

States	Need (percentage diagnosed)				Covered (percentage treated)		
	Angina	Arthritis	Asthma	No. of Respondents	Angina	Arthritis	Asthma
Assam	9.1	12.1	4.6	1046	88.6	70.9	77.4
Karnataka	7.1	26.6	6.6	1431	78.6	72.8	74.1
Maharashtra	18.5	27.1	5.3	1972	65.4	61.1	57.0
Rajasthan	6.6	9.4	7.0	1816	68.9	56.4	78.7
Uttar Pradesh	3.2	12.3	4.8	2054	62.7	45.6	71.0
West Bengal	5.9	35.3	6.6	1675	71.0	58.2	78.1
<b>India (pooled)</b>	<b>8.8</b>	<b>22.1</b>	<b>5.9</b>	<b>9994</b>	<b>69.3</b>	<b>60.9</b>	<b>71.6</b>

Note:

Need refers to percent of diagnosed cases and covered refers to percent of treated cases. Percent covered (treated) is based on total number of diagnosed cases.

<sup>1</sup> Number of treated cases based on ever-treated cases.

Table 5.12 Need and coverage of non-communicable diseases<sup>1</sup> (diabetes, depression and psychosis) in states and India, 2003

States	Need (percentage diagnosed)			No. of Respondents	Covered (percentage treated)		
	Diabetes	Depression	Psychosis		Diabetes	Depression	Psychosis
Assam	1.1	3.2	1.0	1046	81.1	32.3	39.1
Karnataka	2.6	9.2	0.7	1431	96.1	13.0	85.2
Maharashtra	4.3	27.3	2.2	1972	71.3	9.6	48.7
Rajasthan	1.4	7.3	3.6	1816	80.3	29.7	36.2
Uttar Pradesh	1.4	7.4	2.7	2054	83.8	8.2	45.5
West Bengal	3.9	11.7	1.8	1675	78.5	17.8	66.5
<b>India (pooled)</b>	<b>2.7</b>	<b>13.0</b>	<b>2.1</b>	<b>9994</b>	<b>79.7</b>	<b>13.0</b>	<b>49.3</b>

Note:

Need refers to percent of diagnosed cases and covered refers to percent of treated cases. Percent covered (treated) is based on total number of diagnosed cases.

<sup>1</sup> Number of treated cases based on ever-treated cases.

Table 5.13 Need and coverage of non-communicable diseases<sup>1</sup> (angina, arthritis and asthma) by selected background characteristics in India (pooled), 2003

Characteristics	Need (percentage diagnosed)			No. of Respondents	Covered (percentage treated)		
	Angina	Arthritis	Asthma		Angina	Arthritis	Asthma
<b>Sex</b>							
Male	8.5	18.5	5.9	4849	70.6	58.06	73.1
Female	9.1	25.8	5.8	5145	68.0	3.1	69.9
<b>Residence</b>							
Urban	10.3	22.9	5.7	2728	73.5	63.0	78.4
Rural	8.5	21.9	5.9	7266	68.3	60.5	70.3
<b>Insurance status</b>							
Insured	7.7	24.8	7.1	368	88.7	76.5	87.2
Uninsured	8.8	22.0	5.8	9626	68.7	60.3	70.9
<b>Income quintiles</b>							
Q1	10.9	27.3	7.0	2006	62.6	51.7	60.7
Q2	8.3	24.4	7.1	1996	71.0	59.4	69.0
Q3	8.2	21.4	5.3	2004	66.9	60.6	68.1
Q4	9.6	20.4	5.6	1995	67.7	64.8	80.8
Q5	7.3	18.2	4.8	1993	80.8	69.8	80.4
<b>Total (pooled)</b>	<b>8.8</b>	<b>22.1</b>	<b>5.9</b>	<b>9994</b>	<b>69.3</b>	<b>60.9</b>	<b>71.6</b>

Note:

Need refers to percent of diagnosed cases and covered refers to percent of treated cases. Percent covered (treated) is based on total number of diagnosed cases.

<sup>1</sup> Number of treated cases based on ever-treated cases.

positively related to income. But, the diagnosed cases of depression are high in the higher income quintile (Q4) compared to lowest income quintile.

As expected, the proportion of respondents treated for all the non-communicable diseases are highest in higher income quintiles.



Table 5.14 Need and coverage of non-communicable diseases<sup>1</sup> (diabetes, depression and psychosis) by selected background characteristics in India (pooled), 2003

Characteristics	Need (percentage diagnosed)				Covered (percentage treated)		
	Diabetes	Depression	Psychosis	No. of Respondents	Diabetes	Depression	Psychosis
<b>Sex</b>							
Male	3.1	12.7	1.7	4849	80.1	11.8	46.1
Female	2.3	13.9	2.5	5145	79.2	14.1	51.5
<b>Residence</b>							
Urban	4.7	16.8	1.6	2728	79.8	12.8	61.7
Rural	2.3	12.3	2.2	7266	79.7	13.1	47.5
<b>Insurance status</b>							
Insured	6.8	9.1	2.4	3689	84.4	39.1	-
Uninsured	2.5	13.1	2.1	626	79.3	12.4	50.1
<b>Income quintiles</b>							
Q1	0.8	13.6	2.9	2006	91.2	6.1	47.3
Q2	1.6	13.7	2.3	1996	54.5	10.0	40.0
Q3	2.4	12.2	2.3	2004	85.3	16.3	62.8
Q4	3.5	14.2	1.8	1995	76.9	13.5	43.2
Q5	5.0	11.5	1.6	1993	85.6	19.1	52.9
<b>Total (pooled)</b>	<b>2.7</b>	<b>13.0</b>	<b>2.1</b>	<b>9994</b>	<b>79.7</b>	<b>13.0</b>	<b>49.3</b>

Note:

Need refers to percent of diagnosed cases and covered refers to percent of treated cases. Percent covered (treated) is based on total number of diagnosed cases.

<sup>1</sup> Number of treated cases based on ever-treated cases.

### 5.3.2 COVERAGE FOR VISION CARE

Cataract is a disease in which the lenses of the eyes become cloudy and opaque, causing partial or total blindness. If the cataracts become too thick, the eye lenses can usually be removed with laser surgery and replaced with clear, plastic lenses. The coverage module of the World Health survey asked the persons above ages 60 if they had cataracts in their eyes and if they had any access to appropriate medical treatment during the one year prior to the survey.

Questions were asked to the respondents to

determine whether the respondents were diagnosed by a physician or other health professionals in the last five years as having cataracts in one or both the eyes, and if they had the cataracts removed.

Table 5.15 presents the overall coverage of population diagnosed with cataracts and the extent of surgery for cataracts in six states and India. About 18 percent of the respondents aged 60 and above are diagnosed with cataract. Among them, 52 percent of respondents had cataract surgery. The highest proportion of respondents diagnosed

Table 5.15 Coverage for vision<sup>1</sup> in states and India, 2003

States	Percentage diagnosed with cataracts <sup>2</sup>	Percentage covered by surgery for cataracts <sup>3</sup>	No. of Respondents
Assam	18.8	67.2	123
Karnataka	11.6	57.0	190
Maharashtra	23.6	54.0	292
Rajasthan	15.7	45.2	226
Uttar Pradesh	14.5	38.8	266
West Bengal	21.2	55.5	248
<b>India (pooled)</b>	<b>17.8</b>	<b>52.1</b>	<b>1345</b>

Note:

<sup>1</sup> Reference period for vision care is last five years

<sup>2</sup> Cataracts corresponds to both sexes of age 60+

<sup>3</sup> Percentage covered by surgery is based on total number of diagnosed cases as in previous table

with cataract is in Maharashtra (24 percent) followed by West Bengal (21 percent) with the lowest in Karnataka (12 percent). Of those diagnosed with cataract, the highest 67 percent of respondents have undergone cataract surgery in Assam followed by 57 percent in Karnataka. The lowest 39 percent of respondents who received surgery for cataract is in Uttar Pradesh.

Table 5.16 presents coverage for vision according to the background characteristics of the respondents. A higher proportion of females (20 percent) are diagnosed for cataract compared to males (16 percent). Correspondingly, the coverage of surgery for cataract is higher for females (61 percent) compared to males (43 percent).

The proportion of respondents diagnosed with cataract is 31 percent in urban areas compared to 15 percent in rural areas. There is not much variation between the insured and uninsured respondents in terms of cataract diagnosis. Among the insured, 66 percent had cataract surgery

compared to 52 percent among the uninsured. Both the proportions diagnosed and treated for cataract are higher in the higher income quintiles compared to the lower income quintiles.

### 5.3.3 COVERAGE FOR ORAL HEALTH AND INJURIES

Oral health problems are prevalent at all ages, whereas injuries due to accidents are major concern among young adults. Overall, injuries accounted for over 14 percent of the adult disease burden in the world in 2002. In America, Eastern Europe and the Eastern Mediterranean region, more than 30 percent of the entire disease burden among males aged 15-44 years is attributable to injuries (WHO, 2003).

The burden of road traffic injuries is increasing, especially in the developing countries of Sub-Saharan Africa and South-East Asia. The problem greatly affects males. Road traffic injuries, violence and self-inflicted injuries are among the top 10 leading causes of disease burden among men in

**Table 5.16 Coverage for vision<sup>1</sup> by selected background characteristics in India (pooled), 2003**

Characteristics	Percentage diagnosed with cataracts <sup>2</sup>	Percentage covered by surgery for cataracts <sup>3</sup>	No. of Respondents
<b>Sex</b>			
Male	16.3	42.8	694
Female	19.5	60.6	651
<b>Residence</b>			
Urban	31.2	57.5	379
Rural	15.0	49.7	966
<b>Insurance status</b>			
Insured	17.3	65.9	541
Uninsured	17.9	51.5	291
<b>Income quintiles</b>			
Q1	12.4	44.7	229
Q2	10.8	47.0	260
Q3	20.6	36.4	285
Q4	19.0	68.4	248
Q5	23.0	58.1	323
<b>Total (pooled)</b>	<b>17.8</b>	<b>52.1</b>	<b>1345</b>

*Note:*

<sup>1</sup> Reference period for vision care is last five years

<sup>2</sup> Cataracts corresponds to both sexes of age 60+

<sup>3</sup> Percentage covered by surgery is based on total number of diagnosed cases as in previous table

the ages 15-44. Globally, road traffic injuries are the third leading cause of death in that age and sex group, preceded only by HIV/AIDS and unipolar depression.

Besides this, the hidden epidemic of air pollution from road transport causes respiratory and heart diseases, and climatic change receives relatively little national and international attention compared to the focus on major communicable and non-communicable diseases (WHO, 2003).

Changing food habits and lifestyles play a crucial role in the destruction of teeth, a major non-communicable disease. The World Health Survey in India collected information on the coverage of oral health problems. Tables 5.17 and 5.18 present the prevalence levels of oral health problems and its treatment, type of care received at the time of

accidents and other bodily injuries during the 12 months prior to the survey in the six states and India. The other bodily injuries are those injuries caused not because of road accidents.

Overall, 28 percent of respondents had oral health problems in India. West Bengal (42 percent) has the highest proportion of respondents with oral health problems. In all the states except West Bengal, the proportion of respondents reporting oral health problems ranges between 21 to 28 percent. The proportion of respondents who reported oral health problems in West Bengal is almost twice higher compared to Assam (21 percent). However, a higher proportion of respondents in Karnataka (18 percent) and Maharashtra (17 percent) have received treatment for oral health problems.

Prevalence of oral health problems is higher among females (30 percent) compared to males (25 percent). Prevalence of oral health problems does not systematically vary by residence or insurance

status. However, a higher proportion of urban and higher income quintile respondents received treatment for oral health problems.

About three percent of respondents received

**Table 5.17 Coverage for oral health and injuries<sup>1</sup> in states and India, 2003**

States	Percentage of respondents				No. of Respondents
	Diagnosed with oral health problem	Treated for oral health problem <sup>2</sup>	Covered by emergency care for road traffic accidents	Covered by emergency care for other injuries	
Assam	21.3	25.6	1.5	1.2	1046
Karnataka	25.1	71.9	2.5	2.3	1431
Maharashtra	28.4	57.9	2.6	2.1	1972
Rajasthan	24.0	41.1	3.7	2.7	1816
Uttar Pradesh	24.8	49.1	3.5	2.8	2054
West Bengal	42.2	38.3	4.5	2.7	1675
<b>India (pooled)</b>	<b>28.3</b>	<b>50.5</b>	<b>3.2</b>	<b>2.4</b>	<b>9994</b>

Note:

<sup>1</sup> Reference period for oral health and injuries is last one year

<sup>2</sup> Treatment for oral health is calculated with respect to episode of oral health problem.

**Table 5.18 Coverage for oral health and injuries<sup>1</sup> by selected background characteristics in India (pooled), 2003**

Characteristics	Percentage of respondents				No. of Respondents
	Diagnosed with oral health problem	Treated for oral health problem <sup>2</sup>	Covered by emergency care for road traffic accidents	Covered by emergency care for other injuries	
<b>Sex</b>					
Male	26.5	52.1	4.8	3.5	4849
Female	30.2	49.0	1.5	1.2	5145
<b>Residence</b>					
Urban	29.5	60.2	2.9	2.5	2728
Rural	28.1	48.5	3.2	2.3	7266
<b>Insurance status</b>					
Insured	27.8	49.5	3.5	2.9	368
Uninsured	28.3	50.5	3.2	2.4	9626
<b>Income quintiles</b>					
Q1	30.1	34.6	3.7	2.2	2006
Q2	30.3	46.1	3.6	2.8	1996
Q3	28.9	47.4	2.9	2.2	2004
Q4	27.0	54.7	2.2	1.6	1995
Q5	26.0	69.7	4.0	3.5	1993
<b>Total (pooled)</b>	<b>28.3</b>	<b>50.5</b>	<b>3.2</b>	<b>2.4</b>	<b>9994</b>

Note:

<sup>1</sup> Reference period for oral health and injuries is last one year

<sup>2</sup> Treatment for oral health is calculated with respect to episode of oral health problem.

emergency care for road traffic accidents in India. The highest proportion of respondents who received emergency care for accidents is in West Bengal (five percent) followed by four percent each in Uttar Pradesh and Rajasthan. Only one percent of respondents in Assam have received emergency care for road traffic accidents.

In India, two percent of respondents have received emergency care for other injuries with three

percent each in West Bengal, Uttar Pradesh and Rajasthan. Emergency care for other injuries is lowest in Assam (one percent). About five percent of males compared to one percent of females respondents received emergency care for road traffic accidents. However, the proportion receiving emergency care for other injuries shows no variation by sex or residence. The care received for road accidents and other injuries does not show much variation by income quintiles.

## Mortality

### INTRODUCTION

Child survival continues to be a major focus of the international health agenda for developing countries. About 90 percent of global deaths under age 15 occur before the age of five (Lee, 2003).

Also, the effort to understand the magnitude of challenges in adult health in a developing country like India is still in its early stages. Even at present, there remains a perception that adult health is of great concern only in wealthy countries, where premature mortality among children has been substantially reduced. The high burden of disease and injury suffered by adults in developing countries indicates that urgent action is required from the public health community. The evidence base on adult mortality especially on cause specific differentials is very limited.

Given this background the WHS gathered data on child mortality using birth history and adult mortality data based on sibling survivorship. This chapter examines level and differentials in 1) child mortality 2) adult mortality for ages 15-59.

### 6.1 CHILD MORTALITY

The number of child deaths in India had fallen from approximately 3.5 million in 1990 to 2.3 million by the year 2002. This impressive decline is the cumulative result of a reduction in overall child mortality rates of about 30 percent, and a decline in total fertility rates of around 10 percent.

The World Health Survey in India asked all ever married respondents (women) age 18-49 to

**Table 6.1 Probability of dying<sup>1</sup> per 1000 live births in the last 10 years in states and India, 2003.**

States	Neonatal deaths (0-28 days)	Post neonatal deaths (1-11 months)	Child deaths (12-47 months)	Child deaths (Under 5 years)
Maharashtra	38	12	10	62
Rajasthan	53	32	20	106
West Bengal	40	21	21	87
<b>India (three states pooled)</b>	<b>44</b>	<b>22</b>	<b>17</b>	<b>85</b>

<sup>1</sup> *Unadjusted univariate life table estimates*



provide a complete history of their births including, for each live birth, the sex, month and year of birth, survival status and age at death. Age at death was recorded in days for children dying in the first two months of life, in months for children dying before 59 months and in years for children dying in later stages of life. Child mortality analysis is restricted to three states namely Maharashtra, West Bengal, and Rajasthan (table 6.1). Separate child mortality estimates are not provided for the other three states because of insufficient number of cases.

Birth history was collected from all ever-married women in the age group 18-49. Child mortality is calculated by four categories; neonatal (0-28 days), post-neonatal (1-11 months) and child mortality (12-59 months) and under five (0-47 months) mortality.

Table 6.2 presents the probability of dying per 1000 live births by selected socio-demographic status variables. The level of neonatal mortality is lower for the women who have given birth in ages 25-34 compared to ages 18-24 and 35-49. The probability of neonatal death is higher among

**Table 6.2 Probability of dying<sup>1</sup> per 1000 live births in the last 10 years by selected sociodemographic characteristics in India (three states pooled), 2003.**

Covariates	Neonatal deaths (0-28 days)	Post neonatal deaths (1-11 months)	Child deaths (12-47 months)	Child deaths Under 5 years
<b>Age of the mother at birth (in years)</b>				
18-24	38	16	2	56
25-34	35	15	9	59
35-49	52	28	25	108
<b>Women's education</b>				
No formal education	54	28	21	106
Less than primary	42	22	13	77
Primary school completed	26	12	12	52
Secondary and above	21	9	6	36
<b>Employment status</b>				
Govt. Employee	30	15	30	75
Non govt. employee	47	25	31	109
Self employee	52	23	15	91
Unpaid worker	43	22	16	82
<b>Sex of the child</b>				
Female	35	23	20	80
Male	54	22	14	91
<b>Residence</b>				
Rural	48	23	17	90
Urban	35	20	16	73
<b>Total (pooled)</b>	<b>44</b>	<b>22</b>	<b>17</b>	<b>85</b>

<sup>1</sup> Unadjusted univariate life table estimates

mothers in the ages 35-49 (52 per 1000) compared to those mothers in the ages 18-24 (38 per 1000). Probability of post neonatal death is higher among the mothers in ages 35-49 (28 per 1000) while child mortality is highest (25 per 1000) compared to other ages.

The probability of dying declines sharply with increasing education of mothers. Under five mortality is 106 deaths per 1000 live births for illiterate women compared to a low of 36 per 1000 live births for women who had at least completed secondary school and above. Among the women with no formal education, the neonatal death is 54 compared to women with secondary school and above (21 per 1000 live births). Also, post neonatal mortality declines sharply for women with secondary school education or more compared to illiterates.

Probability of under five child mortality higher among mothers who are working in non-governmental organisations. Neonatal mortality is higher among self-employed women and lower among women working in the government sector. Mothers who are working in non-government sectors experienced higher child deaths.

Probability of dying in infancy is relatively higher for males compared to females, while child mortality is higher for girls than boys. Under-five mortality is higher in rural areas compared to urban areas.

## 6.2 ADULT MORTALITY

There have been impressive gains in the health status of adults worldwide in the past few decades. The risk of death between ages 15-59 has declined substantially from a global average of 354 per 1000 in 1955 to 207 per 1000 in 2002. The

recent slowdown in the rate of decline is a clear warning that continued reductions in adult mortality, particularly in developing countries, will not be easily achieved.

Adult mortality remains poorly measured in India. Registration of deaths is often incomplete, and even when coverage is adequate, information regarding age is inaccurate. Considerable ingenuity has been shown in the development of methods to adjust for omissions of incompletely registered deaths and of methods to convert indirect indicators of survivorship into standard life table measures. However, wide differences of opinion remain about how well these methods perform, and about the overall levels of adult mortality in many developing countries like India.

Uncertainty about these levels is substantially greater than that concerning levels of child mortality or fertility, for both of which both direct and indirect methods exist that, have been shown to perform well. In particular, there is no equivalent in adult mortality measurement of birth history approach to data collection concerning fertility and adult mortality.

In addition to this, very little scientifically based information is available on cause specific mortality rates in India. Information on adult mortality is not sufficiently disaggregated to differentiate between important population subgroups. Yet such information is needed for targeting of scarce health resources, especially as high adult mortality tends to be clustered in particular geographical locations and segments of population.

Given this context, the World Health Organisation as a part of the adult mortality module collected sibling histories in the six states. This module collected data from adult respondents

aged (18+) years about their brothers and sisters. The information obtained includes the date of birth of each sibling, their sex and if they have died their date of death. Thus, the sibling histories include all the information needed to calculate age specific death rates directly for the period preceding collection of data (Rutenberg and Sullivan, 1991).

The World Health Survey in India also used a verbal autopsy module to assess the cause of death. Verbal autopsy is a method of finding out the cause of death based on interviews. In recent years, verbal autopsies have been used more widely to provide information on cause of death in areas where civil registration and death certification systems are weak, and where most people die at home without having had any contact with the health system. This type of interview is often the only way to find the cause of death.

Verbal autopsy has been used for a variety of purposes, all of which require arriving at a diagnosis for the cause of death; 1) to provide data on mortality by cause, 2) to evaluate health interventions aimed at reducing mortality from specific cause of deaths when these interventions are being introduced into limited geographic area on a trial basis 3) to identify ways to reduce unnecessary deaths. For example, asking about steps taken by family and by the health services during illness preceding death can make it possible to identify problems relating both to health seeking behaviour and health service provision and 4) to facilitate research into factors associated with mortality from specific cause of death.

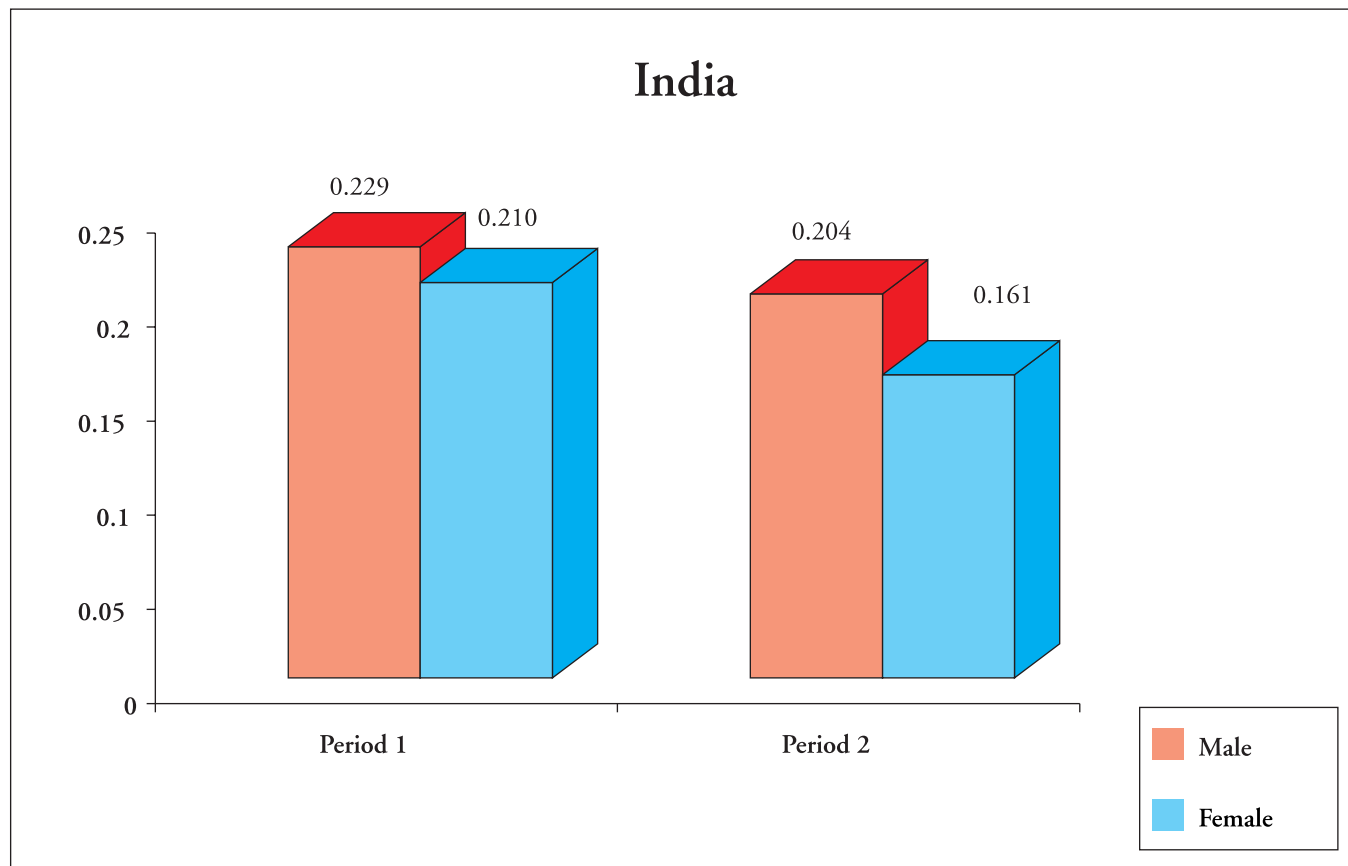
The availability of sibling survivorship data permits the calculation of estimates of adult mortality using the standard life table method. This also allows the

indirect estimation of adult mortality from the proportion of surviving brothers (to estimate male mortality) or sisters (to estimate female mortality) by age of respondent. Application of the sibling method requires that information on sibling survival be available for each respondent aged 18 years and over. As with all indirect methods, the sibling method estimates average mortality over an extended period in the past. If mortality trends have been reasonably regular over that period, it will be possible to arrive at an approximate reference rate for each estimate. The method also assumes that the age pattern of mortality is similar to those of model life table, which is required for estimation. It also assumes that correlation between the mortality experienced by siblings is not strong and most respondents have some siblings.

### **6.3 ESTIMATION OF ADULT MORTALITY**

The direct approach to estimating adult and maternal mortality maximizes the use of available data, using information on the age of surviving siblings, the age at death of siblings who died and the number of years ago the sibling died. This allows the data to be aggregated to determine the number of person years of exposure to mortality risk and the number of sibling deaths occurring in defined calendar periods. Rates of adult mortality are obtained by dividing all adult deaths in a calendar period by person years of exposure to death in those periods. The procedure calculates rates in each of the five year age periods first and then aggregates the estimates for the whole 15-59-age range, weighting the age specific estimates using the observed age structure of the adult population.

Figure 6.1 Adult mortality rates in ages 15-59 by sex in India (Assam, Karnataka and Maharashtra combined)



Note: Period 1: 1974-1988; Period 2: 1989-2003

#### 6.4 LEVEL AND TRENDS OF ADULT MORTALITY

Figure 6.1 presents the adult mortality rates combined for three states of Assam, Karnataka and Maharashtra for ages 15-59 for two periods 1) 15 years prior to survey (1974-1988) and 2) 15 years preceding the survey (1989-2003). The data for Rajasthan, Uttar Pradesh and West Bengal are not used. The results show that mortality rates have declined from period 1 to period 2. Adult mortality has declined from 0.229 to 0.204 for

males and from 0.210 to 0.161 for females.

#### 6.5 CAUSES OF DEATH

An emerging trend of epidemiological transition is that the burden of non-communicable diseases is increasing, accounting for nearly half the global burden of disease (all ages), a 10 percent increase from estimated levels in 1990. Almost 50 percent of the adult disease burden in the high mortality regions of the world, where India lies, is attributable to non-communicable diseases.

**Table 6.3 Percent distribution of adult deaths (15-59 years) by major causes in India, 2003**

Causes of death	Female	Male
Maternal	10.6	-
Injury	8.8	14
Paralysis	4.30	3.1
TB	4.5	8.1
Chest pain	9.6	14.6
Diarrhoea	15.2	16.4
White Patches	1.5	2.5
Cause Known	54.5	60.5
Cause unknown	45.5	39.5
<b>Total deaths</b>	<b>954</b>	<b>1000</b>

Population ageing and changes in the distribution of risk factors have accelerated the incidence of non-communicable diseases in many developing countries (WHO, 2002).

In the sibling survival module of the WHS, respondents (adult population 18+) were asked a series of questions about each of their siblings (brothers/sisters), who had died, in order to attempt to assess the cause of death. Questions about specific symptoms such as chest pain, paralysis, cough, pregnancy, tuberculosis, diarrhoea, white patches in the mouth are asked, which can be used to estimate cause specific mortality rates

of siblings. Table 6.2 shows the percentage distribution of adult deaths by major causes.

The result show that cause known for death for females is 55 percent compared to 61 percent for males. Diarrhoea, injury and chest pain contribute a major share to adult mortality. Death due to injury is nine percent for females compared to 14 percent for males. Ten percent of the deaths among females occur due to chest pain compared to 15 percent among males. Eleven percent of female deaths are due to maternal causes, which is an exclusive burden for females.

# Health State Valuation

## INTRODUCTION

“Health is a complete physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO, 1947). This definition has drawn the attention to the state of health rather than categories of disease or mortality and further to the fact that physical, mental and social structures need to be considered in the conceptualization of health and ill health. However, this definition was not sufficient to develop operational indicators of physical, mental or social health. A decade later, a World Health Organization study group distinguished between the conceptual and potential working definitions of health and highlighted the normative nature of operational measures (WHO, 2003a).

The operational definition of health is distinct from diagnostic categories and it may be expressed as a degree of conformity to the accepted standards for different demographic or social groups, such as those established for different ages, sexes, communities and regions, with normal limits of variation. These norms may vary for individuals as well as by gender and for households, communities or different occupational, social or economic

categories or the population as a whole. In a nutshell, health refers to psychological and physical functions that are essentially and primarily, attributes of individuals.

## 7.1 HEALTH STATE VALUATION

The World Health Survey collected information on nine major domains of health in six states of India. Overall health ratings consider physical and mental health. The other domains of health rated in the survey are: mobility, self-care, pain and discomfort, cognition, interpersonal activities, vision, sleep and energy and affect. Each health state domain has two questions and the rating was obtained for 30 days prior to the survey. The reported difficulties are classified on a five-point scale as none (no difficulty), mild, moderate, severe and extreme.

## 7.2 GENERAL HEALTH RATING

Respondents were asked to rate their health on the day of the survey as very good, good, moderate, bad and very bad. Table 7.1 presents the health rating of the respondents amongst the six states and the pooled figures for India.



**Table 7.1 Respondents rating of health in general today in states and India, 2003**

States	Percent distribution					No. of Respondents
	Very good	Good	Moderate	Bad	Very bad	
Assam	24.7	49.9	16.0	7.8	1.5	1046
Karnataka	42.9	39.8	11.2	4.8	1.3	1431
Maharashtra	11.1	39.0	36.0	11.1	2.8	1972
Rajasthan	21.7	33.2	24.6	15.5	5.0	1816
Uttar Pradesh	25.9	30.6	24.6	17.0	2.0	2054
West Bengal	5.9	27.9	39.4	20.5	6.4	1675
<b>India (pooled)</b>	<b>21.5</b>	<b>35.1</b>	<b>26.9</b>	<b>13.3</b>	<b>3.2</b>	<b>9994</b>

*Note: All percent distributions are weighted*

Overall in India, the highest proportion of 35 percent respondents rated themselves to be in good health followed by 27 percent in moderate health. Twenty two percent of respondents rated themselves to be in very good health, 13 percent in bad health and about three percent in a very bad health state. The highest 43 percentage of respondents in Karnataka rated themselves to be in very good health and 40 percent in good health. West Bengal has the lowest proportion of respondents rating themselves to be in very good and good health. About 50 percent respondents in Assam have rated themselves to be in a good health compared to 28 percent in West Bengal. Conversely, the highest proportion of respondents in West Bengal rated themselves to be in moderate, bad and very bad health. Karnataka has the lowest proportion of respondents who rated themselves to be in moderate, bad and very bad health.

Table 7.2 presents the percentage distribution of respondents' rating of their general health status by their background characteristics. A higher percentage of male respondents rated themselves to be in very good or good health status whereas more female respondents rated themselves in a moderate or bad health state. About three percent each of male and female respondents reported that

they are in a very bad health state. A greater proportion of urban respondents (28 percent) rated themselves to be in very good health compared to rural respondents (20 percent). However the proportion of respondents who rated themselves to be in good, moderate and bad health is higher in rural areas and no significant rural-urban differences are reported in the proportion of respondents with very bad health state.

The proportion of respondents who rated themselves to be in very good and good health declines with increasing age. Respondents reported to be in very good health in the ages 18-29 (30 percent) is about four times higher than the respondents in the ages 80 and above (seven percent).

Similarly, respondents who rated themselves to be in good health in the ages 18-29 (40 percent) are about three times higher than those in the ages 80 and above (14 percent). The highest 41 percent of respondents in the ages 70-79 and the lowest 21 percent of respondents in the ages 18-29 rated themselves to be in moderate health. The proportion of respondents who reported bad and very bad health steadily increases with age. The proportion of respondents who rated themselves to be bad and very bad health state is about five times

Table 7.2 Respondents rating of health in general today by selected background characteristics in India (pooled), 2003

Characteristics	Percent distribution					No. of Respondents
	Very good	Good	Moderate	Bad	Very bad	
<b>Sex</b>						
Male	24.9	35.5	26.3	10.2	3.1	4849
Female	18.0	34.7	27.6	16.3	3.4	5145
<b>Residence</b>						
Urban	28.3	34.0	24.3	9.9	3.5	2728
Rural	20.2	35.3	27.4	13.9	3.2	7266
<b>Age group</b>						
18-29	30.2	39.6	21.3	6.6	2.3	3152
30-44	21.7	39.8	26.1	9.8	2.6	3450
45-59	15.1	30.1	31.1	20.7	3.0	2047
60-69	9.7	23.9	35.5	23.7	7.2	866
70-79	5.6	18.7	40.5	29.5	5.7	376
80+	7.4	13.5	31.2	34.2	13.7	103
<b>Education in years</b>						
0	18.6	33.2	27.3	17.1	3.8	4734
1-5	15.3	33.3	31.8	14.6	5.0	1632
6-10	23.8	40.2	25.1	8.9	2.0	2377
11+	37.1	35.3	22.4	4.4	0.8	1251
<b>Income quintiles</b>						
Q1	12.6	34.7	30.8	17.3	4.6	2006
Q2	20.3	33.6	26.4	16.2	3.5	1996
Q3	21.1	32.8	29.6	13.2	3.3	2004
Q4	21.5	37.9	26.3	11.7	2.6	1995
Q5	30.5	36.0	22.2	9.0	2.3	1993
<b>Total (pooled)</b>	<b>21.5</b>	<b>35.1</b>	<b>26.9</b>	<b>13.3</b>	<b>3.2</b>	<b>9994</b>

Note: All percent distributions are weighted

higher in the ages 80 and above compared to those in the younger ages 18-29.

The percentage of respondents who rated themselves to be in very good health is about twice higher among those with 11 years or more schooling (37 percent) compared to illiterates (19 percent). On the other hand, the percentage of respondents who rated themselves to be in moderate health is highest among the respondents with 1-5 years of schooling. The proportion declines at higher levels of schooling. Respondents who reported to be in bad and very bad health

state are 21 percent among the illiterates compared to five percent among those with 11 years or higher level of schooling.

The percentage of respondents who rated themselves to be in very good health is positively associated with income, whereas those who are reported to be in a good health state indicate very little variation between income quintiles. The proportion of respondents who reported to be in bad health is twice higher (17 percent) at the lowest income quintile compared to the highest income quintile (nine percent). Those reporting

moderate and very bad health state declines substantially at the higher income quintiles compared to those at lower income quintiles. Overall, respondents' valuation of good health increases with income quintiles.

#### *Difficulties with work/household activities*

The World Health Survey in India collected information about the day-to-day activities that include work or household activities. By difficulty it means the way activities are usually performed. Table 7.3 shows the percentage distribution of respondents rating their difficulty with work or household activities in India and states. Half of the respondents in the country do not have any difficulty with work or household activities. Twenty percent and 16 percent of respondents reported mild and moderate difficulty respectively. Eleven percent reported severe and five percent reported extreme difficulty with work or household activities. Karnataka has the highest 63 percent of respondents who reported no difficulty with work or household activities. Compared to this, only 32 percent respondents in West Bengal reported that

they do not have any difficulties with work or household activities.

The proportion of respondents with mild difficulties associated with work or household activities range between 14 to 24 percent among the states with the highest in Rajasthan and the lowest in Maharashtra. The highest percentage of respondents with moderate difficulty with work or household activities is reported in Maharashtra and West Bengal. Those reported with severe and extreme difficulties associated with work or household activities are also highest in Maharashtra and West Bengal with the lowest in Karnataka and Assam.

Table 7.4 presents the percentage distribution of respondents with rating of their difficulty with 'work or household activities' by selected background characteristics in India. A higher percentage of male compared to female, urban compared to rural, younger compared to elderly respondents have reported no difficulty in work or household activities. Responding no difficulty in

**Table 7.3 Difficulty with 'work or household activities' in last 30 days in states and India, 2003**

States	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
Assam	61.1	19.7	10.9	5.7	2.7	1046
Karnataka	62.6	23.2	8.6	4.2	1.5	1431
Maharashtra	42.3	14.2	23.7	15.1	4.7	1972
Rajasthan	48.6	24.3	9.0	12.2	5.9	1816
Uttar Pradesh	53.0	19.4	11.7	10.6	5.4	2054
West Bengal	32.4	22.2	23.9	15.2	6.4	1675
<b>India (pooled)</b>	<b>48.5</b>	<b>20.1</b>	<b>15.6</b>	<b>11.2</b>	<b>4.6</b>	<b>9994</b>

*Note: All percent distributions are weighted*

Table 7.4 Difficulty with 'work or household activities' in last 30 days by selected background characteristics in India (pooled), 2003

Characteristics	Percent distribution					No. of respondents
	None	Mild	Moderate	Severe	Extreme	
<b>Sex</b>						
Male	54.0	18.3	14.6	8.4	4.7	4849
Female	42.6	21.9	16.6	14.3	4.6	5145
<b>Residence</b>						
Urban	57.8	16.9	11.9	9.1	4.3	2728
Rural	46.7	20.7	16.3	11.7	4.6	7266
<b>Age group</b>						
18-29	64.0	16.0	11.3	5.8	2.9	3152
30-44	51.5	20.6	15.6	9.5	2.8	3450
45-59	36.7	25.4	17.6	16.1	4.2	2047
60-69	22.2	23.5	24.7	20.0	9.6	866
70-79	17.3	19.4	23.3	23.8	16.2	376
80+	19.3	12.0	15.6	24.3	28.8	103
<b>Education in years</b>						
0	41.3	22.0	17.2	13.6	5.9	4734
1-5	42.9	19.6	18.8	12.5	6.2	1632
6-10	55.0	19.4	14.3	8.8	2.5	2377
11+	72.8	14.1	7.1	4.7	1.3	1251
<b>Income quintiles</b>						
Q1	36.3	22.0	20.3	16.2	5.2	2006
Q2	44.7	20.7	17.0	12.5	5.1	1996
Q3	48.1	19.8	16.9	10.8	4.4	2004
Q4	51.8	19.8	13.6	10.1	4.7	1995
Q5	59.0	18.3	11.3	7.8	3.6	1993
<b>Total (pooled)</b>	<b>48.5</b>	<b>20.1</b>	<b>15.6</b>	<b>11.2</b>	<b>4.6</b>	<b>9994</b>

Note: All percentage distributions are weighted

work or household activities is positively related with their education and household income. About two-thirds of the respondents (73 percent) with 11 years of schooling compared to 41 percent with no formal education reported that they do not have any difficulty with work or household activities. Thirty six percent of the respondents at the lowest income quintile compared to 59 percent at the highest income quintile do not have any difficulty with work or household activities.

A greater proportion of female compared to male respondents and rural compared to urban

respondents have reported mild, moderate, severe and extreme difficulties with work or household activities. Moderate, severe and extreme difficulties associated with work or household activities are more commonly reported among the elderly compared to younger ages. The difficulties associated with work or household activities are about twice high in the lowest compared to highest income quintile. Higher education and income level significantly reduce the proportion of respondents with mild, moderate, severe and extreme difficulties with work or household activities.

### 7.3 MOBILITY

The health state module of the World Health Survey asked two questions on mobility: 1) difficulties in moving around 2) difficulties in engaging in vigorous activities. The first question was asked to know whether respondents generally face any difficulty in moving in and around their house. By difficulty it means increased effort, discomfort or pain, slowness or changes in the way they do a particular activity. Moving around refers to the use of assistive services or personal help in moving around inside the house, from room to room and within rooms and outside the house.

#### *Difficulty in moving around*

In India, 53 percent of the respondents do not have any difficulty in moving around (table 7.5). The proportion of respondents with mild difficulty is 20 percent and moderate difficulty is 14 percent. Those with severe and extreme difficulties are 10 percent and three percent respectively.

Sharp inter state variations are reported in respondents ratings of their difficulties. The highest proportion of respondents with no difficulty in moving around is in Karnataka followed by Assam.

The lowest 37 percent of respondents reporting no difficulty in moving around is reported in Maharashtra followed by West Bengal (45 percent). Conversely, those reporting difficulties of varying degrees are greater in Maharashtra and lesser in Karnataka. The proportion of respondents with mild problems in moving around is highest in Rajasthan and lowest in Assam. Thirty percent of respondents in Maharashtra have reported mild difficulty in moving around compared to four percent in Uttar Pradesh.

Four percent of respondents rated themselves with extreme difficulty in moving around in West Bengal. The lowest one percent of respondents reported extreme difficulty is in Karnataka.

Table 7.6 presents the distribution of respondents' rating of their difficulty in moving around according to their background characteristics. A greater percentage of male and urban respondents reported that they do not have any difficulty in moving around whereas a higher percentage of female respondents have reported mild, moderate, severe and extreme difficulty in moving around. Those with extreme difficulty do not vary much either by sex or by place of residence.

**Table 7.5 Difficulty in 'moving around' in last 30 days in states and India, 2003**

States	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
Assam	66.4	16.9	8.8	5.8	2.1	1046
Karnataka	67.8	20.5	7.1	3.4	1.3	1431
Maharashtra	36.8	18.7	30.4	10.8	3.3	1972
Rajasthan	57.0	24.3	6.4	9.4	2.9	1816
Uttar Pradesh	60.2	18.8	3.8	14.4	2.8	2054
West Bengal	44.6	22.0	17.8	11.6	4.0	1675
<b>India (pooled)</b>	<b>53.2</b>	<b>20.4</b>	<b>13.7</b>	<b>9.9</b>	<b>2.8</b>	<b>9994</b>

*Note: All percent distributions are weighted*

Table 7.6 Difficulty in 'moving around' in last 30 days by selected background characteristics in India (pooled), 2003

Characteristics	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
<b>Sex</b>						
Male	59.8	18.0	11.6	7.9	2.7	4849
Female	46.3	22.8	16.0	12.0	2.9	5145
<b>Residence</b>						
Urban	59.4	17.8	11.5	8.4	2.9	2728
Rural	52.0	20.8	14.2	10.2	2.8	7266
<b>Age group</b>						
18-29	68.0	15.7	9.1	4.6	2.6	3152
30-44	58.0	20.2	13.4	6.9	1.5	3450
45-59	41.3	22.7	19.4	14.1	2.5	2047
60-69	27.8	30.1	16.8	20.5	4.8	866
70-79	14.5	28.7	21.5	28.2	7.1	376
80+	21.1	21.6	16.2	22.4	18.7	103
<b>Education in years</b>						
0	47.5	21.5	15.5	12.2	3.3	4734
1-5	46.1	19.7	18.0	12.1	4.1	1632
6-10	60.2	20.7	11.3	6.2	1.6	2377
11+	72.5	16.0	5.4	4.9	1.2	1251
<b>Income quintiles</b>						
Q1	43.8	23.0	17.3	13.0	2.9	2006
Q2	49.0	22.5	16.1	9.3	3.1	1996
Q3	52.1	21.1	13.0	11.0	2.8	2004
Q4	57.7	18.1	13.1	8.3	2.8	1995
Q5	61.3	17.8	9.8	8.6	2.5	1993
<b>Total (pooled)</b>	<b>53.2</b>	<b>20.4</b>	<b>13.7</b>	<b>9.9</b>	<b>2.8</b>	<b>9994</b>

Note: All percent distributions are weighted

The percentage of respondents with no difficulty in moving around decreases with increasing age and vice versa for those with difficulties. The proportion of respondents with no difficulty in moving around is about three times higher in the ages 18-29 (68 percent) compared to those aged 80 and above (21 percent).

The proportion of respondents who do not have any difficulty in moving around increases with respondents levels of education. The percentage of respondents reporting moderate, severe, and extreme difficulty in moving around is found to decline with higher levels of education.

Self reported mild, moderate and severe difficulties in moving around are greater among the respondents of lower household income quintiles compared to those in higher household income quintiles. The percentage reporting extreme difficulty in moving around does not vary among income quintiles. Sixty one percent of the respondents in the highest household income quintiles reported no difficulty compared to 44 percent at the lowest income quintiles.

#### *Difficulty in vigorous activity*

The difficulty associated with vigorous activity is also assessed. Vigorous activities refer to heavy



lifting, carrying, fast cycling, aerobics or working in the fields and this activity could be recreational or occupational. Table 7.7 shows that 45 percent of respondents do not have any difficulty in doing vigorous labour in India. Sixteen percent of the respondents have mild, 11 percent have moderate, 15 percent have severe and 12 percent have extreme difficulty in doing vigorous activities.

The highest proportion of respondents (66 percent) reported with no difficulty in vigorous labour is in Karnataka and the lowest is in West Bengal (27 percent). Maharashtra and West Bengal have the highest percentage of respondents with severe and extreme difficulties with vigorous activities. Karnataka and Assam in other domains of health have the lowest proportion of respondents with difficulties in moving around.

Table 7.8 presents the percent distribution of the respondents with their rating of difficulty in terms of vigorous activity according to their background characteristics. Fifty two percent of males and 38 percent of females do not have any difficulty in doing vigorous activities. A greater percent of females have reported mild, severe and extreme difficulty with vigorous activities compared to males.

Fifty-four percent of urban and 44 percent of rural

respondents do not have any problems in doing vigorous activities. Conversely, a higher proportion of rural respondents reported mild, moderate, severe difficulties compared to those in urban areas when doing activities that involve vigorous labour. The percentage reporting extreme difficulty does not vary between the sexes.

As age increases, the percent not having any difficulty with vigorous activity decreases and those having severe and extreme difficulty. Conversely, the proportion of respondents having mild and moderate difficulties decreases with age. The proportion of respondents having no difficulty in doing vigorous activities increases with educational status. The percentage of respondents reporting moderate, severe and extreme difficulties declines with increasing levels of education.

The proportion reporting no difficulty with respect to involvement in vigorous activities increases at higher income quintiles. Thirty four percent of respondents reported no difficulty at the lowest income quintile (34 percent) compared to 55 percent at the highest income quintile. Conversely, as income increases, the proportion of respondents reporting mild, moderate, a severe and extreme difficulty declines.

**Table 7.7 Difficulty with 'vigorous activities' in last 30 days in states and India, 2003**

States	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
Assam	62.0	12.7	9.7	9.2	6.5	1046
Karnataka	66.1	20.2	6.7	4.5	2.5	1431
Maharashtra	36.0	11.2	20.4	20.3	12.1	1972
Rajasthan	39.4	21.9	7.7	17.6	13.4	1816
Uttar Pradesh	51.9	16.1	4.3	12.8	15.0	2054
West Bengal	27.1	18.6	16.3	21.9	16.1	1675
<b>India (Pooled)</b>	<b>45.1</b>	<b>16.8</b>	<b>11.3</b>	<b>15.1</b>	<b>11.7</b>	<b>9994</b>

*Note: All percent distributions are weighted*



**Table 7.8 Difficulty with 'vigorous activities' in last 30 days by selected background characteristics in India (pooled), 2003**

Characteristics	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
<b>Sex</b>						
Male	52.5	15.9	11.1	12.1	8.4	4849
Female	37.5	17.7	11.6	18.3	14.9	5145
<b>Residence</b>						
Urban	53.5	13.8	9.5	11.4	11.8	2728
Rural	43.5	17.4	11.7	15.8	11.6	7266
<b>Age group</b>						
18-29	60.6	15.2	7.8	8.6	7.8	3152
30-44	49.2	16.7	12.5	14.3	7.3	3450
45-59	32.0	19.7	14.8	20.1	13.4	2047
60-69	19.9	17.7	13.0	25.0	24.4	866
70-79	12.9	17.5	14.1	29.2	26.3	376
80+	11.1	10.5	4.8	23.2	50.4	103
<b>Education in years</b>						
0	38.6	17.5	11.8	18.0	14.1	4734
1-5	37.6	16.2	12.7	20.7	12.8	1632
6-10	52.7	17.7	11.8	9.6	8.2	2377
11+	67.7	12.9	6.5	6.8	6.1	1251
<b>Income quintiles</b>						
Q1	34.3	18.7	14.6	21.2	11.2	2006
Q2	41.0	19.0	12.2	15.4	12.4	1996
Q3	43.0	18.1	11.9	14.6	12.4	2004
Q4	50.4	15.2	9.3	12.8	12.3	1995
Q5	54.6	13.5	9.5	12.9	9.5	1993
<b>Total (pooled)</b>	<b>45.1</b>	<b>16.8</b>	<b>11.3</b>	<b>15.1</b>	<b>11.7</b>	<b>9994</b>

*Note: All percent distributions are weighted*

#### 7.4 SELF-CARE

This section covers the extent of difficulty of the respondent in 1) self-care and 2) maintaining general appearance. Self-care is taken as an important component to know whether the respondents are physically capable of doing personal work such as washing and dressing. The

question refers to a wide range of activities including washing the dresses and dressing of upper and lower body, getting clothing from storage areas (i.e. closet, dressers) and securing buttons, tying knots etc.

Seventy one percent of the respondents in India do not have any difficulty in self care (table 7.9).

**Table 7.9 Difficulty with 'self care' in last 30 days in states and India, 2003**

States	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
Assam	71.4	13.4	6.0	6.3	3.0	1046
Karnataka	80.8	14.1	2.4	1.8	0.9	1431
Maharashtra	77.1	9.5	9.4	2.4	1.6	1972
Rajasthan	73.1	14.5	4.2	5.1	3.1	1816
Uttar Pradesh	71.8	14.3	4.5	6.1	3.2	2054
West Bengal	49.9	19.1	13.9	10.5	6.6	1675
<b>India (pooled)</b>	<b>71.2</b>	<b>13.9</b>	<b>6.9</b>	<b>5.0</b>	<b>3.0</b>	<b>9994</b>

*Note: All percent distributions are weighted*

Fourteen percent have mild and seven percent have moderate difficulty in self-care. Relatively lesser proportion of respondents has severe (five percent) and extreme (three percent) difficulty in self-care.

Amongst the six states, 80 percent of respondents in Karnataka and 77 percent respondents in Maharashtra do not have any difficulty in self-care. As with many other domains West Bengal has the highest proportion of respondents and Karnataka has the lowest proportion of respondents with

moderate, severe and extreme difficulty in self-care.

Table 7.10 presents the proportion of respondents with self-assessed difficulty in self-care according to their background characteristics. Seventy seven percent of males and 66 percent females do not have any difficulty in taking care of themselves. The percentage of females having mild, moderate, and severe difficulty in self-care is greater compared to males. Seventy five percent of urban and 71 percent of rural respondents do not have any difficulties with self-care. The percentage of

**Table 7.10 Difficulty with 'self care' in last 30 days by selected background characteristics in India (pooled), 2003**

Characteristics	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
<b>Sex</b>						
Male	76.7	11.1	6.0	3.5	2.7	4849
Female	65.5	16.8	7.9	6.6	3.2	5145
<b>Residence</b>						
Urban	74.5	11.1	6.6	4.8	3.0	2728
Rural	70.6	14.3	7.0	5.1	3.0	7266
<b>Age group</b>						
18-29	82.5	8.8	4.0	2.4	2.3	3152
30-44	76.6	12.0	5.6	3.8	2.0	3450
45-59	62.8	18.9	9.0	6.6	2.9	2047
60-69	48.1	24.5	13.2	9.1	5.1	866
70-79	40.7	22.8	14.7	15.4	6.4	376
80+	26.3	14.6	11.1	24.8	23.2	103
<b>Education in years</b>						
0	65.5	16.7	7.9	6.4	3.5	4734
1-5	65.3	15.2	9.4	6.1	4.0	1632
6-10	79.7	10.6	4.9	2.8	2.0	2377
11+	86.0	7.4	3.3	2.0	1.3	1251
<b>Income quintiles</b>						
Q1	64.0	15.2	9.6	7.6	3.6	2006
Q2	67.9	14.7	7.9	6.4	3.1	1996
Q3	71.5	15.0	6.8	3.9	2.8	2004
Q4	76.0	12.0	5.0	4.2	2.8	1995
Q5	74.9	13.0	6.0	3.6	2.5	1993
<b>Total (pooled)</b>	<b>71.2</b>	<b>13.9</b>	<b>6.9</b>	<b>5.0</b>	<b>3.0</b>	<b>9994</b>

respondents reporting moderate, severe and extreme difficulty in self-care does not vary between rural and urban areas.

Expectedly, the percentage of respondents reporting moderate, severe and extreme difficulties in self-care increases with age. Eighty-three percent of respondents in the younger ages of 18-29 do not have any difficulty in self-care compared to 26 percent in the ages 80 and above. Conversely, the proportion of respondents with severe and extreme difficulty increases sharply with the age of the respondents. Forty seven percent of the respondents at ages 80 and above have severe and extreme difficulty in self-care.

Among illiterates, 66 percent do not have any difficulty with self-care compared to 86 percent respondents with more than 11 years of schooling. About 64 percent of respondents at the lowest income quintile do not have any difficulty in self-care compared to 75 percent at the highest income quintile. Similarly, a greater proportion of respondents at the lower income quintile reported that they have mild, moderate, severe and extreme difficulties in self-care. The percentage of

respondents with mild, moderate, severe and extreme difficulty in self-care shows a declining trend with increasing education.

#### *Maintaining general appearance*

For self care assessment, respondents were further asked about the difficulty in taking care of some other personal aspects of daily human life such as combing hair or putting on make-up other than basic washing and dressing.

Table 7.11 presents the percentage distribution of respondents with difficulty in maintaining general appearance in six states and in India. Overall, 74 percent of respondents do not have any difficulty, 14 percent have mild difficulty, six percent have moderate, four percent have severe and three percent have extreme difficulty in maintaining general appearance.

Maharashtra and Rajasthan have the highest proportion (about 80 percent) respondents who do not have any difficulty in maintaining general appearance. The proportion of respondents who do not have any difficulty in maintaining general appearance is lower in West Bengal (58 percent)

**Table 7.11 Difficulty with 'taking care of and maintaining general appearance' in last 30 days in states and India, 2003**

States	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
Assam	76.2	9.0	6.7	4.6	3.6	1046
Karnataka	72.3	19.1	5.5	2.3	0.8	1431
Maharashtra	79.6	9.7	6.8	2.4	1.5	1972
Rajasthan	78.8	11.4	3.5	3.8	2.5	1816
Uttar Pradesh	77.8	11.1	3.3	4.6	3.3	2054
West Bengal	57.8	20.3	12.2	5.2	4.5	1675
<b>India (pooled)</b>	<b>73.9</b>	<b>13.8</b>	<b>6.2</b>	<b>3.6</b>	<b>2.5</b>	<b>9994</b>

*Note: All percent distributions are weighted*

than in the other states. The reported prevalence of difficulty in maintaining appearance is greater in West Bengal than in other states.

The percentage distribution of respondents having difficulty in taking care and maintaining general appearances according to the background characteristics is presented in table 7.12. Seventy-eight percent of males compared to 69 percent of female respondents do not have any difficulty in

taking care and maintaining their appearance. In other domains of health, a greater percentage of females have reported more, mild, moderate, severe and extreme difficulties compared to males in taking care and maintaining their appearance.

A slightly higher proportion of urban respondents have reported mild, moderate, severe and extreme difficulties in maintaining themselves compared to rural respondents. The proportion of respondents

**Table 7.12 Difficulty with 'taking care of and maintaining general appearance' in last 30 days by selected background characteristics in India (pooled), 2003**

Characteristics	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
<b>Sex</b>						
Male	78.3	11.4	5.6	2.4	2.3	4849
Female	69.3	16.3	6.8	4.9	2.7	5145
<b>Residence</b>						
Urban	77.7	12.0	5.1	3.0	2.2	2728
Rural	73.2	14.1	6.4	3.8	2.5	7266
<b>Age group</b>						
18-29	85.2	8.0	3.6	1.4	1.8	3152
30-44	79.8	11.6	5.0	1.8	1.8	3450
45-59	66.7	18.6	7.5	5.1	2.1	2047
60-69	49.4	25.6	10.8	9.5	4.7	866
70-79	37.6	26.3	18.9	10.9	6.3	376
80+	23.8	21.5	14.7	21.8	18.2	103
<b>Education in years</b>						
0	69.3	15.2	7.4	5.1	3.0	4734
1-5	67.4	18.3	7.5	3.6	3.2	1632
6-10	80.7	11.1	4.7	1.8	1.7	2377
11+	88.1	7.1	2.7	1.1	1.0	1251
<b>Income quintiles</b>						
Q1	68.2	13.8	9.4	5.6	3.0	2006
Q2	69.3	14.2	9.3	4.5	2.7	1996
Q3	74.0	16.0	5.2	2.2	2.6	2004
Q4	78.1	12.8	3.7	3.3	2.1	1995
Q5	78.5	12.1	4.5	3.0	1.9	1993
<b>Total (pooled)</b>	<b>73.9</b>	<b>13.8</b>	<b>6.2</b>	<b>3.6</b>	<b>2.5</b>	<b>9994</b>

*Note: All percent distributions are weighted*

with no difficulty is higher among urban compared to rural respondents.

A proportionate decline is observed in the percentage of respondents with no difficulty in self-care and maintaining general appearance, with increasing age of the respondents. The percentage of respondents with no difficulty in taking care of and maintaining general appearance in the ages 18-29 is about three times higher than those respondents in the ages 80 and above. On the other hand, the proportion of respondents with mild, moderate, severe and extreme difficulties in self-care/maintaining general appearance themselves rise with age.

The percentage of respondents having mild, moderate, severe and extreme difficulties shows a declining trend with increasing educational level and in the case of those with no difficulty it rises with education.

A higher percentage of respondents at the highest income quintile (79 percent) compared to lowest income quintile (68 percent) reported that they do not have any difficulty in taking care and maintaining general appearance. Respondents

reporting moderate and severe difficulty are twice higher at the lowest household income quintile compared to highest income quintiles.

## 7.5 PAIN AND DISCOMFORT

The World Health Survey in six states of India assessed the extent of pain and discomfort reported by the respondents. The health state module contains two questions on pain and discomfort: 1) extent of bodily aches or pains in the body of the adult respondents and 2) extent of bodily discomfort. The reference here is to the difficulties that interfere with usual activities either for a short or long period of time.

### *Bodily aches or pains*

Table 7.13 presents the percent of respondents in five major categories of no bodily pain or aches, mild aches or pain, moderate aches or pain, severe aches or pain and extreme aches or pain.

In India, 42 percent of the respondents reported no bodily aches or pains. Twenty three percent of the respondents reported mild pain, 15 percent reported moderate pain and 17 percent reported severe bodily pain and aches. About three percent of respondents have extreme bodily pains. The

**Table 7.13 Difficulty with 'bodily aches or pains' last 30 days in states and India, 2003**

States	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
Assam	55.4	20.7	12.5	9.0	2.4	1046
Karnataka	53.7	27.3	12.0	6.1	1.0	1431
Maharashtra	30.9	11.7	25.2	26.7	5.5	1972
Rajasthan	42.0	30.9	9.3	15.5	2.3	1816
Uttar Pradesh	49.1	27.1	5.3	16.2	2.3	2054
West Bengal	29.2	24.3	20.9	20.6	5.0	1675
<b>India (pooled)</b>	<b>41.5</b>	<b>23.3</b>	<b>14.8</b>	<b>17.2</b>	<b>3.2</b>	<b>9994</b>

*Note: All percent distributions are weighted*

highest percentage of respondents in Assam (55 percent) and Karnataka (54 percent) reported no bodily aches or pain. West Bengal has the lowest proportion of respondents with no bodily aches or pain. More than two thirds of respondents in Maharashtra and West Bengal have reported moderate, severe and extreme aches or pain, which is the highest prevalence amongst the six states.

Table 7.14 shows the proportion of respondents with the reported difficulty of bodily aches or pain

according to their background characteristics in the last 30 days in India. About forty eight percent of males and 35 percent of females do not have any bodily aches or pains. Mild, moderate, severe and extreme pains are more common among females compared to males.

About 48 percent of urban respondents and 40 percent of rural respondents do not have any bodily aches or pain. The percentage of respondents reporting mild and severe bodily pains are

**Table 7.14 Difficulty with ‘bodily aches or pains’ in last 30 days by selected background characteristics in India (pooled), 2003**

Characteristics	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
<b>Sex</b>						
Male	48.0	22.5	13.7	13.3	2.5	4849
Female	34.7	24.1	16.0	21.2	4.0	5145
<b>Residence</b>						
Urban	48.0	20.1	15.7	12.6	3.6	2728
Rural	40.2	23.9	14.7	18.1	3.1	7266
<b>Age group</b>						
18-29	56.3	19.6	11.2	10.4	2.5	3152
30-44	42.7	24.3	14.3	16.2	2.5	3450
45-59	29.2	27.7	17.9	21.2	4.0	2047
60-69	22.7	24.0	19.6	29.4	4.3	866
70-79	14.8	22.6	23.9	32.1	6.6	376
80+	6.6	32.3	14.2	30.8	16.1	103
<b>Education in years</b>						
0	34.1	24.7	16.0	21.3	3.9	4734
1-5	37.9	19.6	16.5	21.1	4.9	1632
6-10	48.2	23.8	13.8	12.1	2.1	2377
11+	63.5	21.0	9.8	4.9	0.8	1251
<b>Income quintiles</b>						
Q1	33.9	22.8	16.4	23.0	3.9	2006
Q2	35.6	24.8	16.6	19.8	3.2	1996
Q3	39.3	24.9	14.3	18.1	3.4	2004
Q4	45.6	23.3	13.5	14.5	3.1	1995
Q5	51.4	20.3	13.6	11.7	3.0	1993
<b>Total (pooled)</b>	<b>41.5</b>	<b>23.3</b>	<b>14.8</b>	<b>17.2</b>	<b>3.2</b>	<b>9994</b>

*Note: All percent distributions are weighted*



greater in rural areas, while moderate and extreme bodily pains are greater in urban areas. The reported prevalence of mild, severe, and extreme bodily pains or aches significantly increases with age of the respondents. Fifty six percent of respondents in the ages 18-29 do not have any bodily aches or pains compared to seven percent in ages 80 and above. The proportion having no bodily pain decreases with age.

The proportion of respondents who reported no bodily pain is 34 percent among illiterates and 64 percent among those with 11 years of education. The reported prevalence of moderate, severe and extreme bodily pains is higher among illiterates compared to educated respondents.

Respondents reporting no bodily aches or pains increases substantially in the highest income quintile (51 percent) compared to the lowest household income quintile (34 percent). Conversely, the proportion of respondents reporting severe bodily pains is two times higher at the lowest income quintile compared to the highest income quintile.

### *Bodily discomfort*

Table 7.15 provides the distribution of respondents with bodily discomforts in six states of India. Overall, 47 percent of respondents did not have any bodily discomfort in India during the last 30 days prior to the survey. About 22 percent had mild, 15 percent have moderate, and 13 percent have severe bodily discomforts. Only three percent have extreme bodily discomfort.

Karnataka has the highest proportion of respondents (60 percent) with no bodily pains followed by Uttar Pradesh (58 percent). On the other hand, West Bengal has the lowest proportion of 34 percent of respondents with no bodily discomfort and correspondingly about two-thirds of respondents in West Bengal have reported difficulties of varying degrees. Maharashtra also follows West Bengal with (the next highest of 65 percent) nearly two thirds of respondents reporting bodily discomfort. Uttar Pradesh has the lowest proportion of respondents with moderate and Karnataka has the lowest percentage of respondents with severe and extreme difficulty.

**Table 7.15 Difficulty in 'bodily discomfort' in last 30 days in states and India, 2003**

States	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
Assam	56.5	18.2	14.3	8.4	2.6	1046
Karnataka	60.4	25.4	8.9	3.8	1.4	1431
Maharashtra	35.1	15.3	24.6	19.9	5.1	1972
Rajasthan	49.3	25.6	9.8	12.7	2.6	1816
Uttar Pradesh	58.1	21.3	6.4	12.0	2.2	2054
West Bengal	31.4	26.1	20.8	17.0	4.8	1675
<b>India (pooled)</b>	<b>47.1</b>	<b>21.9</b>	<b>14.5</b>	<b>13.2</b>	<b>3.3</b>	<b>9994</b>

*Note: All percent distributions are weighted*

Table 7.16 presents the percentage distribution of respondents with bodily discomfort in the last 30 days in India according to their background characteristics. The proportion who does not have any bodily discomfort is 54 percent among males compared to 40 percent among females. Mild bodily discomfort is more among males whereas, a greater prevalence of moderate, severe and extreme bodily discomfort are reported among females. The proportion reporting mild and severe bodily discomfort is higher in rural areas but moderate

and extreme bodily discomforts are reported more in urban areas.

The reported prevalence of mild, moderate, severe and extreme bodily discomfort increases with age and those reporting no bodily pain are five times higher in the ages 18-29 compared to those in the ages 80 and above. The proportion of respondents reporting no bodily discomfort is 69 percent among those who have more than 10 years of education compared to 40 percent among

**Table 7.16 Difficulty in 'bodily discomfort' in last 30 days by selected background characteristics in India (pooled), 2003**

Characteristics	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
<b>Sex</b>						
Male	54.0	20.3	13.2	10.0	2.5	4849
Female	39.9	23.6	15.8	16.5	4.2	5145
<b>Residence</b>						
Urban	52.8	17.7	14.7	11.0	3.8	2728
Rural	46.1	22.7	14.5	13.6	3.1	7266
<b>Age group</b>						
18-29	61.6	18.4	10.3	7.2	2.5	3152
30-44	49.8	21.1	14.7	12.0	2.4	3450
45-59	35.2	25.4	17.6	18.0	3.8	2047
60-69	26.8	26.9	20.0	21.2	5.1	866
70-79	16.4	26.9	21.4	28.9	6.4	376
80+	11.5	33.4	15.4	24.8	14.9	103
<b>Education in years</b>						
0	40.4	23.9	15.6	16.4	3.7	4734
1-5	41.9	20.2	16.7	16.6	4.61	1632
6-10	53.9	21.8	13.3	8.6	2.4	2377
11+	69.0	16.5	9.3	4.3	0.9	1251
<b>Income quintiles</b>						
Q1	37.1	24.3	17.0	18.4	3.2	2006
Q2	41.1	23.5	16.4	15.4	3.6	1996
Q3	45.1	23.3	14.8	13.1	3.7	2004
Q4	52.3	21.0	12.8	11.0	2.9	1995
Q5	57.9	17.9	12.1	9.2	2.9	1993
<b>Total (pooled)</b>	<b>47.1</b>	<b>21.9</b>	<b>14.5</b>	<b>13.2</b>	<b>3.3</b>	<b>9994</b>

*Note: All percent distributions are weighted*

illiterates. Mild, moderate, severe and extreme bodily discomforts are more common among illiterates than those with more than 10 years of education.

A greater proportion of respondents in the highest income quintile (58 percent) reported that they do not have any bodily discomfort compared to those in the lowest income quintile (37 percent). Percentage of respondents reporting mild, moderate, severe bodily discomfort declines at higher income quintiles. Respondents who reported severe bodily pain is twice higher at the lowest income quintile (18 percent) compared to highest income quintile (nine percent).

## 7.6 COGNITION

The cognition section of the health state module assessed the difficulties of the respondents in a) concentrating or remembering things b) difficulties in learning a new task. The difficulties of the respondents in concentrating or remembering things associated with tasks, such as reading, writing, drawing, listening to others, playing musical instrument, assembling a piece of instrument or engaging in any other activity.

Remembering things refers to what a person would usually remember on a daily basis such as running errands, shopping, paying bills or keeping appointments.

### *Concentration and memory*

Table 7.17 presents the percentage distribution of respondents having difficulty in concentrating or remembering things in the last 30 days in states and India. Overall, 55 percent of the respondents in India do not have any difficulty in concentrating or remembering things. About 20 percent have mild, 11 percent have moderate, 10 percent have severe difficulties in concentrating or remembering things. Only three percent of respondents have extreme difficulties in concentration and remembering things. The highest proportion of respondents (73 percent) with no difficulty in concentrating or remembering things is found in Karnataka followed by Uttar Pradesh (63 percent).

Karnataka has the lowest proportion of respondents with moderate, severe and extreme difficulty in concentrating or remembering things. Consistent with the reporting of other

**Table 7.17 Difficulty with ‘concentrating or remembering things’ in last 30 days in states and India, 2003**

States	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
Assam	61.2	20.8	8.2	7.5	2.3	1046
Karnataka	72.5	20.6	5.2	1.0	0.6	1431
Maharashtra	48.1	14.4	18.2	16.1	3.2	1972
Rajasthan	46.6	25.9	10.6	14.4	2.5	1816
Uttar Pradesh	63.2	16.8	7.0	9.9	3.1	2054
West Bengal	41.2	27.3	15.9	10.6	5.1	1675
<b>India (pooled)</b>	<b>55.1</b>	<b>20.2</b>	<b>11.4</b>	<b>10.4</b>	<b>2.9</b>	<b>9994</b>

*Note: All percent distributions are weighted*

domains of health, West Bengal has the lowest proportion of 41 percent respondents with no difficulty in concentrating or remembering things. Maharashtra has the highest proportion of respondents with moderate and severe difficulty.

Table 7.18 presents the percentage distribution of the respondents rating their difficulty with concentrating or remembering things in the last 30 days in India according to their background characteristics. Sixty one percent of males do not have any difficulty in concentrating or

remembering things compared to 49 percent among females. Mild, moderate, severe and extreme difficulties in concentrating or remembering things are more commonly reported by females compared to males.

About 60 percent of urban respondents do not have any difficulty in concentrating or remembering things compared to 54 percent rural respondents. A higher proportion of urban respondents have mild and extreme difficulties, while more rural respondents have moderate and severe difficulties in concentrating or remembering things.

**Table 7.18 Difficulty with ‘concentrating or remembering things’ in last 30 days by selected background in characteristics India (pooled), 2003**

Characteristics	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
<b>Sex</b>						
Male	60.9	19.7	9.4	8.0	2.0	4849
Female	49.0	20.7	13.7	12.8	3.8	5145
<b>Residence</b>						
Urban	60.1	17.9	10.3	8.4	3.2	2728
Rural	54.2	20.7	11.6	10.8	2.7	7266
<b>Age group</b>						
18-29	66.8	17.2	8.1	6.0	1.9	3152
30-44	59.4	18.8	10.4	9.0	2.4	3450
45-59	47.4	23.3	15.2	11.7	2.4	2047
60-69	32.1	27.6	14.8	19.6	5.9	866
70-79	23.0	21.8	20.3	27.9	7.0	376
80+	15.9	28.4	16.3	23.0	16.4	103
<b>Education in years</b>						
0	48.4	21.5	13.3	13.2	3.6	4734
1-5	50.8	19.7	13.8	11.8	3.9	1632
6-10	62.2	21.2	8.6	6.4	1.6	2377
11+	74.6	13.5	6.2	4.5	1.2	1251
<b>Income quintiles</b>						
Q1	47.0	21.7	15.1	12.8	3.4	2006
Q2	49.9	22.6	13.4	11.1	3.0	1996
Q3	53.8	21.9	11.1	10.3	2.9	2004
Q4	61.5	16.9	8.8	9.8	3.0	1995
Q5	61.1	18.5	9.7	8.4	2.3	1993
<b>Total (pooled)</b>	<b>55.1</b>	<b>20.2</b>	<b>11.4</b>	<b>10.4</b>	<b>2.9</b>	<b>9994</b>

*Note: All percent distributions are weighted*

**Table 7.19 Difficulty with ‘learning a new task’ in last 30 days in states and India, 2003**

States	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
Assam	66.2	14.5	8.6	6.6	4.1	1046
Karnataka	74.8	18.5	4.3	1.5	0.9	1431
Maharashtra	58.6	14.2	9.9	10.5	6.8	1972
Rajasthan	51.7	18.1	7.8	11.9	10.5	1816
Uttar Pradesh	60.4	16.3	5.1	7.7	10.5	2054
West Bengal	45.8	24.3	14.9	8.3	6.7	1675
<b>India (pooled)</b>	<b>59.2</b>	<b>17.8</b>	<b>8.3</b>	<b>7.9</b>	<b>6.8</b>	<b>9994</b>

*Note: All percent distributions are weighted*

The proportions of respondents who have difficulties in concentrating increases systematically and sharply with age. Sixty seven percent of respondents in the ages 18-29 do not have any difficulty in concentrating or remembering things compared to just 16 percent in the ages 80 and above. Correspondingly, the proportion of respondents with mild, moderate, severe and extreme difficulties sharply rises with age.

Higher educational level is associated with lower prevalence of difficulty in concentrating or remembering things. The proportion of respondents reporting no difficulty in concentrating or remembering things is 47 percent at the lower income quintile and 61 percent at the higher income quintile. The reported prevalence of moderate, severe and extreme difficulties of concentrating or remembering things declines with increasing household income quintile.

#### *Learning a new task*

Respondents cognition was assessed by asking a second question regarding any difficulty faced in learning a new task such as learning how to get to a new place, learning a new game, recipe, names, routes, skills etc. Table 7.19 presents the percent

distribution of respondents with difficulty in learning a new task in last 30 days in six states and India. In India, 59 percent respondents do not have any problem in learning a new task. Eighteen percent of the respondents have reported mild difficulty and eight percent each have severe and moderate difficulties in learning a new task. About seven percent of respondents reported that they have extreme difficulty in learning a new task.

While 75 percent of respondents in Karnataka reported no difficulty in learning a new task, the lowest proportion is indicated in West Bengal (46 percent). The reported prevalence of extreme difficulties is more than 10 percent in Rajasthan and Uttar Pradesh.

Table 7.20 presents the percent distribution of the respondents having difficulty in learning a new task in last 30 days in India according to their background characteristics. Nearly two-thirds (65 percent) of males reported that they have no difficulty in learning a new task compared to about 53 percent of females. More females have reported mild, moderate, severe and extreme difficulties in learning a new task compared to males.

About 65 percent of urban and 58 percent of rural

Table 7.20 Difficulty with 'learning a new task' in last 30 days by selected background characteristics in India (pooled), 2003

Characteristics	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
<b>Sex</b>						
Male	65.0	16.9	7.2	6.1	4.8	4849
Female	53.1	18.7	9.5	9.7	9.0	5145
<b>Residence</b>						
Urban	64.9	16.0	7.5	6.0	5.6	2728
Rural	58.1	18.1	8.5	8.2	7.1	7266
<b>Age group</b>						
18-29	71.7	14.0	5.5	4.7	4.1	3152
30-44	62.9	18.4	8.4	5.8	4.5	3450
45-59	51.1	21.8	9.9	8.6	8.6	2047
60-69	37.5	19.9	11.3	16.7	14.6	866
70-79	23.2	19.0	18.0	24.0	15.8	376
80+	14.3	28.0	8.5	20.1	29.1	103
<b>Education in years</b>						
0	51.7	18.9	9.7	10.2	9.5	4734
1-5	56.5	17.0	10.1	9.7	6.7	1632
6-10	67.4	17.9	6.6	4.4	3.7	2377
11+	77.2	13.7	3.8	2.8	2.5	1251
<b>Income quintiles</b>						
Q1	50.9	17.2	12.6	10.7	8.6	2006
Q2	51.9	20.3	10.1	9.5	8.2	1996
Q3	57.8	19.9	7.6	8.7	6.0	2004
Q4	65.6	16.2	5.6	6.0	6.6	1995
Q5	67.5	15.2	6.8	5.2	5.3	1993
<b>Total (pooled)</b>	<b>59.2</b>	<b>17.8</b>	<b>8.3</b>	<b>7.9</b>	<b>6.8</b>	<b>9994</b>

Note: All percent distributions are weighted

respondents do not have any difficulties in learning a new task. Correspondingly, the proportion having mild, moderate, severe and extreme difficulties in learning a new task is greater in rural areas compared to urban areas. Age is inversely related with learning a new task. The proportion having no difficulty in learning a new task is 72 percent in the ages 18-29 compared to 14 percent in the ages 80 and above. The strong link between age and extremely high levels of disability prevalence is indicated consistent with other domains.

The proportion of respondents with no difficulty in learning a new task is 52 percent among the illiterates compared to 77 percent among those with 11 years or higher level of education. The reported prevalence of mild, moderate, severe and extreme difficulties are greater among illiterate than educated respondents.

In the lowest income quintile half (51 percent) of the respondents do not have any difficulty in learning a new task compared to 68 percent in the

highest income quintile. The reported prevalence of moderate, severe and extreme difficulty in learning a new task is greater among respondents of lower household income quintile compared to higher income quintiles.

## 7.7 INTERPERSONAL ACTIVITIES

Individual respondents ability to deal with interpersonal relationship was assessed by two questions. Firstly, the extent of active role played by the respondents in maintaining personal relationships and participation in the community activities was ascertained. Participation in the community includes any form of social involvement such as going to town meetings, taking part in leisure or sporting activities in the town, neighbourhood or community. Secondly, an assessment was made to know whether the respondents have any difficulty in dealing with conflicts and tensions in personal relationships, which include partners, relatives or friends.

### *Extent of personal relationships/participation in community*

Table 7.21 presents the distribution of the

respondents with respect to difficulty in interpersonal relationships or participation in the community activities. More than two-thirds of the respondents in India do not have any difficulty in personal relationships or in participating in community level activities. About 15 percent have mild difficulty and six percent have moderate difficulty in participating. Five percent of respondents have severe and four percent have extreme difficulty in maintaining personal relationships or community activities.

More than three-fourths of the respondents in Karnataka and Assam reported no difficulty with personal relationships or participation in community activities. West Bengal has only about half of the respondents with no difficulty, and correspondingly the highest proportion of respondents with mild, severe and extreme difficulty in personal relationships or participation in the community activities. Maharashtra has the next highest proportion of respondents with difficulty in personal relationships or participation in the community activities.

Table 7.22 presents the distribution of the

**Table 7.21 Difficulty with 'interpersonal relationships or participation in the community' in last 30 days in states and India, 2003**

States	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
Assam	78.6	10.3	5.0	3.2	2.9	1046
Karnataka	75.0	17.9	3.1	2.4	1.7	1431
Maharashtra	71.1	10.5	10.4	6.2	1.8	1972
Rajasthan	73.5	15.7	2.9	4.5	3.4	1816
Uttar Pradesh	72.6	14.5	2.8	4.0	6.1	2054
West Bengal	54.3	21.4	10.4	7.9	6.0	1675
<b>India (pooled)</b>	<b>70.0</b>	<b>15.3</b>	<b>6.1</b>	<b>4.9</b>	<b>3.7</b>	<b>9994</b>

*Note: All percent distributions are weighted*



Table 7.22 Difficulty with 'interpersonal relationships or participation in the community' in last 30 days by selected background characteristics in India (pooled), 2003

Characteristics	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
<b>Sex</b>						
Male	74.9	13.6	4.7	3.9	2.9	4849
Female	64.8	17.1	7.5	6.1	4.5	5145
<b>Residence</b>						
Urban	73.6	14.1	4.6	4.6	3.1	2728
Rural	69.3	15.6	6.3	5.0	3.8	7266
<b>Age group</b>						
18-29	79.2	11.3	4.5	1.8	3.2	3152
30-44	73.6	14.4	5.7	3.7	2.6	3450
45-59	63.4	19.2	6.2	7.6	3.6	2047
60-69	53.8	21.8	8.9	8.8	6.7	866
70-79	42.7	24.4	11.8	14.7	6.4	376
80+	35.6	11.5	18.2	19.4	15.3	103
<b>Education in years</b>						
0	63.4	18.6	7.2	6.0	4.8	4734
1-5	68.8	13.0	8.2	6.1	3.9	1632
6-10	77.8	12.9	3.8	3.3	2.2	2377
11+	83.6	9.9	3.0	2.1	1.4	1251
<b>Income quintiles</b>						
Q1	61.8	18.5	7.4	8.0	4.3	2006
Q2	63.8	18.9	7.4	4.7	5.2	1996
Q3	70.1	16.5	5.3	4.5	3.6	2004
Q4	74.7	12.2	5.9	4.0	3.2	1995
Q5	77.6	11.4	4.6	4.1	2.3	1993
<b>Total (pooled)</b>	<b>70.0</b>	<b>15.3</b>	<b>6.1</b>	<b>4.9</b>	<b>3.7</b>	<b>9994</b>

Note: All percent distributions are weighted

respondents with difficulty in interpersonal relationships or participation in the community activities in India according to their background characteristics. Seventy five percent of males and 66 percent of females have no difficulty in involving themselves in personal or community level activities. Correspondingly, a higher proportion of females have mild, moderate, severe and extreme difficulty in personal relationships and community activities compared to males. About 74 percent of urban and 69 percent of rural respondents do not have any difficulty in

community activities. A higher proportion of respondents in rural areas have mild, moderate, extreme difficulties with activities in personal relationships compared to urban respondents.

Seventy nine percent of respondents in the ages 18-29 do not have any difficulty in interpersonal relationships compared to 36 percent in the ages 80 and above. Conversely, this implies that almost two-thirds of the respondents in ages 80 and above have difficulties in interpersonal relationships. The reported prevalence of moderate, severe and

extreme difficulty in maintaining interpersonal relationship sharply increases with the age of the respondents. Among illiterates, 63 percent of respondents do not have any difficulty in personal relationships compared to 84 percent among those with more than 11 years of schooling. The proportion reporting moderate, severe and extreme difficulties decreases with an increase in the educational status of the respondents.

The percentage of respondents with no difficulty with personal relationship is positively associated with increasing income quintile and those with difficulties are inversely associated with rising household income quintiles. Respondents reporting severe and extreme difficulty in developing personal relationships or participation in the community activities are twice higher in the lowest income quintile compared to respondents of highest income quintile.

#### *Conflicts and tension*

An assessment was made to know how well a person relates to others and how far they are able to deal with conflict situations, such as strong disagreements or arguments. Table 7.23 presents the distribution of the respondents having difficulty

in dealing with conflicts and tensions in 30 days prior to the survey.

Overall, two-thirds of the respondents (67 percent) do not have any difficulty in dealing with situations involving conflicts and tensions. The proportion having mild difficulty in dealing with conflicts is 16 percent, moderate difficulty is six percent, severe difficulty is seven percent and extreme difficulty is five percent. The proportion of respondents with no difficulty in dealing with conflicts and tension ranges from 88 percent in Assam to 49 percent in West Bengal. The reported prevalence of those with mild and moderate difficulty in dealing with conflicts and tension is highest in West Bengal, which is consistent with other domains.

Table 7.24 presents the percentage distribution of respondents having difficulty in dealing with conflicts and tension according to their background characteristics. The sex wise classification shows that 72 percent of males and 61 percent of females do not have any difficulty in dealing with conflicts and tensions. Correspondingly, the prevalence of mild, moderate, severe and extreme difficulties in dealing with

**Table 7.23 Difficulty in 'dealing with conflicts and tensions' in last 30 days in states and India, 2003**

States	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
Assam	88.3	5.0	1.8	1.8	3.0	1046
Karnataka	74.4	19.0	3.1	1.4	2.2	1431
Maharashtra	67.2	11.2	8.3	9.9	3.4	1972
Rajasthan	69.0	13.7	3.7	7.7	5.9	1816
Uttar Pradesh	66.5	16.6	3.3	6.4	7.3	2054
West Bengal	49.2	24.1	10.9	9.6	6.3	1675
<b>India (pooled)</b>	<b>66.5</b>	<b>16.1</b>	<b>5.7</b>	<b>6.8</b>	<b>4.9</b>	<b>9994</b>

*Note: All percent distributions are weighted*

Table 7.24 Difficulty in 'dealing with conflicts and tensions' in last 30 days by selected background characteristics in India (pooled), 2003

Characteristics	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
<b>Sex</b>						
Male	72.3	14.0	5.0	5.0	3.7	4849
Female	60.5	18.3	6.6	8.8	5.8	5145
<b>Residence</b>						
Urban	69.8	14.9	4.9	6.1	4.3	2728
Rural	65.9	16.3	5.9	7.0	4.9	7266
<b>Age group</b>						
18-29	74.7	11.9	5.3	3.8	4.3	3152
30-44	70.9	15.0	4.8	5.7	3.4	3450
45-59	59.7	20.9	5.1	9.3	5.0	2047
60-69	49.6	24.2	7.6	11.1	7.5	866
70-79	45.1	18.4	11.8	17.2	7.5	376
80+	33.5	10.8	19.2	12.1	24.4	103
<b>Education in years</b>						
0	60.7	18.7	6.5	8.1	6.0	4734
1-5	63.7	15.8	5.7	9.8	5.0	1632
6-10	73.8	13.6	5.2	4.2	3.2	2377
11+	80.4	10.0	3.7	2.9	3.0	1251
<b>Income quintiles</b>						
Q1	60.5	16.4	8.3	10.1	4.7	2006
Q2	59.9	20.0	6.7	7.3	6.1	1996
Q3	67.5	17.1	4.8	5.6	5.0	2004
Q4	69.7	14.3	5.5	6.3	4.2	1995
Q5	73.6	12.9	3.9	5.5	4.1	1993
<b>Total (pooled)</b>	<b>66.5</b>	<b>16.1</b>	<b>5.7</b>	<b>6.8</b>	<b>4.9</b>	<b>9994</b>

Note: All percent distributions are weighted

conflicts and tension is greater among females compared to males.

Seventy percent of urban and 66 percent of rural respondents had no difficulty in dealing with conflicts and tensions. The reported prevalence of mild, moderate, severe and extreme difficulties in dealing with conflicts and tension is higher among rural compared to urban respondents.

Seventy four percent of the respondents in the ages 18-29 have no difficulty in dealing with conflict and tensions compared to 34 percent in the ages 80 and

above. The percentage of respondents having difficulties of moderate, severe and extreme conflict and tension rises sharply with age.

The proportion of respondents having no difficulty increases at higher levels of education. Sixty one percent of illiterates compared to 80 percent of respondents with more than 10 years of education have no difficulty in dealing with conflicts or tensions. Those having mild, moderate, severe and extreme difficulties in dealing with conflicts and tensions also decline at higher levels of education.

More than three fourths of the respondents in the highest income quintile (74 percent) and 61 percent of respondents at the lowest income quintiles have reported that they have no difficulty in dealing with conflicts and tensions. Those reporting mild, moderate and severe difficulties are significantly higher in the lower income quintiles compared to higher income quintiles.

## 7.8 VISION

Respondents were asked two questions to assess their difficulties with vision. The difficulty in vision was assessed first by asking a question on whether the respondents had any problems in seeing and recognizing a person across the road. The purpose is to understand the over all difficulties with vision. Secondly, a question was asked to know the extent of difficulty in seeing and recognizing an object at arms length or in reading. Both the questions take into account the use of assistive devices such as glasses/contact lenses that the person may be using.

### *Seeing/recognizing a person across the road*

Table 7.25 shows that 57 percent of respondents do not have any difficulty in seeing or recognizing

a person across the road. About 23 percent of the respondents reported mild difficulties, four percent have moderate, and six percent have severe difficulties in seeing or recognizing a person across the road. Eleven percent of respondents have reported extreme difficulty in seeing and recognizing a person across the road. As in other domains of health, Karnataka has the highest proportion of respondents with no difficulty in seeing and recognizing a person across the road. Contrastingly, Assam which reported better health in other domains has the lowest proportion of respondents having no difficulty in seeing and recognizing a person across the road. Twenty one percent of respondents in Assam have extreme difficulty, the highest proportion of respondents with difficulty in seeing and recognizing a person across the road. Nearly half the respondents in Assam have reported difficulties with vision.

Table 7.26 presents the percentage distribution of respondents having difficulty in seeing and recognizing a person across the road according to their background characteristics. About 62 percent of males and 51 percent females have no difficulty in seeing or recognizing a person across the road.

**Table 7.25 Difficulty with 'seeing and recognizing a person across the road (20m)' in last 30 days in states and India, 2003**

States	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
Assam	59.0	9.7	5.4	5.5	20.5	1046
Karnataka	77.1	15.8	3.8	1.9	1.5	1431
Maharashtra	73.2	14.9	4.6	4.5	2.8	1972
Rajasthan	72.7	12.5	3.1	8.5	3.2	1816
Uttar Pradesh	70.7	9.6	1.8	6.8	11.2	2054
West Bengal	61.7	15.1	9.0	8.2	6.1	1675
<b>India (pooled)</b>	<b>56.8</b>	<b>22.5</b>	<b>4.4</b>	<b>5.8</b>	<b>10.5</b>	<b>9994</b>

Table 7.26 Difficulty with 'seeing and recognizing a person across the road (20m)' in last 30 days by selected characteristics background in India (pooled), 2003

Characteristics	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
<b>Sex</b>						
Male	62.2	19.9	3.7	4.6	9.6	4849
Female	51.2	25.2	5.1	7.0	11.5	5145
<b>Residence</b>						
Urban	56.4	23.6	4.5	5.7	9.8	2728
Rural	56.9	22.3	4.4	5.8	10.6	7266
<b>Age group</b>						
18-29	69.8	24.8	1.1	1.3	3.0	3152
30-44	61.3	24.7	3.0	3.0	8.0	3450
45-59	47.5	17.8	7.7	8.3	18.7	2047
60-69	31.0	19.0	10.0	16.5	23.5	866
70-79	21.9	20.1	14.0	22.8	21.2	376
80+	35.2	18.8	4.4	23.7	17.9	103
<b>Education in years</b>						
0	51.1	24.5	5.2	6.9	12.3	4734
1-5	49.9	25.7	5.0	7.9	11.5	1632
6-10	66.2	18.7	3.4	3.4	8.3	2377
11+	71.3	17.8	1.9	2.8	6.2	1251
<b>Income quintiles</b>						
Q1	52.9	23.6	5.1	8.1	10.3	2006
Q2	55.8	20.7	5.9	6.5	11.1	1996
Q3	57.8	22.6	2.9	5.3	11.4	2004
Q4	57.4	25.1	3.7	3.7	10.1	1995
Q5	59.4	20.4	4.6	6.0	9.6	1993
<b>Total (pooled)</b>	<b>56.8</b>	<b>22.5</b>	<b>4.4</b>	<b>5.8</b>	<b>10.5</b>	<b>9994</b>

Note: All percent distributions are weighted

Mild, moderate, severe and extreme difficulties in vision are higher among females compared to males.

The proportion of respondents with different forms of difficulty in seeing and recognizing a person across the road shows very little rural-urban differences. About 70 percent of the respondents in the ages 18-29 do not have any difficulty in seeing and recognizing a person compared to 35 percent in the ages 80 and above. The proportion of respondents who reported severe and extreme difficulties increases with age. More than two-

thirds of the respondents in elderly ages of 60 and above have reported difficulties with vision. The proportion of respondents with no difficulty in seeing and recognizing a person is higher among the educated compared to illiterates. Almost half of those with no schooling have reported difficulties with vision compared to 71 percent of those with more than 10 years of education.

About half the respondents in the lowest income quintile (53 percent) do not have any difficulty associated with seeing and recognizing a person across the road. In the highest income quintile this

proportion is 59 percent. Those respondents reporting mild, severe difficulties are lower in the highest income quintile compared to lowest income quintile.

### *Seeing objects at arm's length*

An assessment was made to know how much difficulty the respondents have in seeing an object at arm's length or in reading. It takes into account the use of assistive devices such as glasses/contact lenses the person may be using. The information was collected based on his/her vision under normal light.

Table 7.27 shows that 58 percent of the respondents do not have any difficulty in seeing an object at arm's length or in reading. The proportion of respondents having mild difficulty is 22 percent, moderate difficulty four percent and severe difficulty four percent. Eleven percent of the respondents have extreme difficulty in seeing an object at arm's length.

The proportion of respondents with no difficulty in seeing an object at arm's length is 79 percent in

Rajasthan and West Bengal has the lowest of 60 percent. A very high percentage of respondents have reported severe and extreme difficulties in Assam (26 percent) and Uttar Pradesh (17 percent). This prevalence is 3-4 times higher than the prevalence in Karnataka and Maharashtra.

Table 7.28 presents the percent distribution of the respondents with seeing an object at arms length or in reading according to their background characteristics. Sixty two percent of males and 55 percent of females do not have any difficulty in seeing an object at arm's length. A greater proportion of females compared to males have reported mild, moderate, severe and extreme difficulties in seeing an object at arm's length.

About 59 percent of rural and 57 percent of urban respondents do not have any difficulty in seeing or reading an object at arm's length. Mild, moderate and severe difficulties are more common among urban respondents, whereas a greater proportion of rural respondents reported extreme difficulty in seeing an object at arm's length.

**Table 7.27 Difficulty in 'seeing an object at arm's length or in reading' in last 30 days in states and India, 2003**

States	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
Assam	60.4	10.4	3.7	4.7	20.9	1046
Karnataka	76.7	15.1	4.8	2.3	1.1	1431
Maharashtra	74.6	14.4	3.6	3.2	4.2	1972
Rajasthan	78.7	11.0	2.2	5.5	2.6	1816
Uttar Pradesh	71.1	10.3	2.1	5.7	10.9	2054
West Bengal	65.8	16.6	8.2	5.5	4.0	1675
<b>India (pooled)</b>	<b>58.4</b>	<b>22.3</b>	<b>4.1</b>	<b>4.4</b>	<b>10.8</b>	<b>9994</b>

*Note: All percent distributions are weighted*

Table 7.28 Difficulty with 'seeing an object at arm's length or in reading' in last 30 days by selected background characteristics in India (pooled), 2003

Characteristics	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
<b>Sex</b>						
Male	61.9	20.0	3.8	4.0	10.3	4849
Female	54.6	24.7	4.4	4.8	11.5	5145
<b>Residence</b>						
Urban	57.2	23.0	4.7	5.3	9.8	2728
Rural	58.6	22.2	3.9	4.2	11.1	7266
<b>Age group</b>						
18-29	70.7	24.6	1.1	0.3	3.3	3152
30-44	61.8	24.6	2.8	2.6	8.2	3450
45-59	48.8	17.8	7.7	6.7	19.0	2047
60-69	37.8	18.1	6.2	13.2	24.7	866
70-79	26.2	21.0	15.5	16.6	20.7	376
80+	32.1	13.8	4.0	23.2	26.9	103
<b>Education in years</b>						
0	54.6	24.3	4.4	5.0	11.7	4734
1-5	52.9	25.2	4.0	5.8	12.1	1632
6-10	64.4	18.6	4.2	2.7	10.1	2377
11+	69.3	17.6	2.5	2.9	7.7	1251
<b>Income quintiles</b>						
Q1	57.4	23.6	3.8	4.4	10.8	2006
Q2	58.3	20.1	5.1	4.9	11.6	1996
Q3	59.4	22.3	3.5	3.8	11.0	2004
Q4	56.9	24.9	4.2	3.6	10.4	1995
Q5	59.8	20.5	3.7	5.3	10.7	1993
<b>Total (pooled)</b>	<b>58.4</b>	<b>22.3</b>	<b>4.1</b>	<b>4.4</b>	<b>10.8</b>	<b>9994</b>

Note: All percent distributions are weighted

The percent of respondents reporting no difficulty in seeing an object at arms length declines sharply with age. The proportion of respondents reporting no difficulty in seeing an object at arms length at ages 18-29 is twice higher compared to those with ages 80 and above. The percentage of respondents having severe and extreme difficulties with vision is more than a third in the ages 60-79 and nearly half in the ages 80 and above.

The proportion of persons with no difficulty in

seeing or reading an object at arm's length increases with the level of education. About 55 percent of respondents among illiterates do not have any difficulty with seeing compared to 69 percent respondents who have more than more than 11 years of schooling. The proportion of respondents having mild, moderate, a severe and extreme difficulty in seeing is lower among the educated compared to illiterate respondents. There is no systematic variation among respondents at different income quintiles reporting different difficulties



Table 7.29 Difficulty with 'sleeping' in last 30 days in states and India, 2003

States	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
Assam	62.5	20.9	10.5	3.6	2.5	1046
Karnataka	79.7	13.9	4.0	1.6	0.8	1431
Maharashtra	64.7	9.2	13.3	10.5	2.5	1972
Rajasthan	56.2	24.7	6.2	10.4	2.5	1816
Uttar Pradesh	76.5	12.6	3.6	5.6	1.7	2054
West Bengal	44.9	19.1	19.5	12.3	4.3	1675
<b>India (pooled)</b>	<b>65.3</b>	<b>15.3</b>	<b>9.3</b>	<b>7.8</b>	<b>2.3</b>	<b>9994</b>

Note: All percent distributions are weighted

associated with seeing an object at arm's length or in reading.

## 7.9 SLEEP AND ENERGY

Information was collected in the health state module to know how much difficulty the respondents have with sleeping such as inability to fall asleep, interrupted sleep or waking up too early in the morning than a person would usually wake up. Also, an assessment was made to know whether the respondents are feeling tired or having less energy.

### *Difficulties with sleep*

Table 7.29 shows that about 65 percent of respondents in India do not have any difficulty associated with sleeping. Overall, about 15 percent of respondents have reported moderate difficulty, nine percent have severe difficulty, eight percent have mild difficulty and two percent have extreme difficulty associated with sleeping.

Karnataka has the highest proportion of 80 percent of respondents having no difficulty in sleeping followed by 77 percent of respondents in

Uttar Pradesh. On the other hand, West Bengal has the lowest proportion of 45 percent respondents with no difficulty in sleeping. Those reporting severe and extreme difficulty are highest in West Bengal and lowest in Karnataka.

Table 7.30 presents the proportion of respondents having problems with sleeping in last 30 days in India according to their background characteristics. Those who do not have any difficulties in sleeping is 71 percent for males compared to 60 percent for females. The self reported mild, moderate, severe and extreme difficulties are greater among females than males.

A greater proportion of urban respondents (71 percent) do not have any difficulty associated with sleep compared to rural respondents (64 percent). The percent of respondents who reported no difficulty in sleeping increases with educational level. The respondents having no difficulty in ages 18-29 are twice compared to those respondents who are in the ages 80 and above.

About two-thirds of the respondents in ages 70 and above have difficulties with sleep. The proportion

Table 7.30 Difficulty with 'sleeping' in last 30 days, by selected background characteristics in India (pooled), 2003

Characteristics	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
<b>Sex</b>						
Male	70.5	14.0	8.2	5.5	1.8	4849
Female	60.0	16.6	10.5	10.2	2.7	5145
<b>Residence</b>						
Urban	71.1	12.4	7.7	6.2	2.6	2728
Rural	64.2	15.8	9.6	8.1	2.3	7266
<b>Age group</b>						
18-29	79.3	10.7	5.3	2.9	1.8	3152
30-44	68.1	15.0	8.8	6.2	1.9	3450
45-59	54.5	20.1	12.0	11.0	2.4	2047
60-69	43.8	19.4	16.3	16.4	4.1	866
70-79	34.1	23.1	17.9	20.2	4.7	376
80+	35.2	19.8	14.9	27.5	2.6	103
<b>Education in years</b>						
0	60.5	16.6	10.2	10.1	2.6	4734
1-5	60.6	15.3	11.3	9.3	3.5	1632
6-10	70.2	15.1	8.3	4.6	1.8	2377
11+	82.0	10.0	5.1	2.3	0.6	1251
<b>Income quintiles</b>						
Q1	56.4	16.8	11.9	12.8	2.1	2006
Q2	60.7	16.7	10.6	9.3	2.7	1996
Q3	64.0	17.2	9.1	7.3	2.4	2004
Q4	72.2	12.6	7.7	5.3	2.2	1995
Q5	71.0	13.5	8.0	5.3	2.2	1993
<b>Total (pooled)</b>	<b>65.3</b>	<b>15.3</b>	<b>9.3</b>	<b>7.8</b>	<b>2.3</b>	<b>9994</b>

Note: All percent distributions are weighted

of respondents reported mild, moderate, severe and extreme difficulty with sleeping increases with age. The percent of respondents who reported no difficulty in sleeping steadily decreases with age. Sixty one percent of illiterates compared to 82 percent of educated (11 years of schooling or more) respondents do not have any difficulty in sleeping. Moderate, severe and extreme difficulties with sleep decline with increasing levels of education.

The proportion of respondents with no problems of sleeping increases in the higher income quintiles compared to lower income quintiles. The percentage reporting mild, moderate and severe difficulties of sleep also declines substantially among respondents in the higher income quintiles. The proportion of respondents reporting extreme difficulties of sleep remains almost the same across the household income quintiles.

### *Feeling rested and refreshed*

An assessment was made to know whether the respondents have failed to complete tasks because of the lack of energy to carry on activities. Table 7.31 shows that about 62 percent of the respondents do not have the feeling of being rested. The proportion having mild difficulty is 18 percent, moderate difficulty is 10 percent, severe difficulty is seven percent and extreme difficulty is just two percent.

Karnataka has the highest of 77 percent respondents with no in feeling of rested and refreshed in the last 30 days among the states in India. On the other hand, West Bengal has the lowest proportion of 45 percent of respondents with no difficulty of feeling rested or refreshed. The lowest proportion of respondents with mild, severe, and extreme feeling of being rested and refreshed is in Karnataka. The proportion of respondents reporting mild, severe, and extreme feeling of being rested and refreshed is very high in West Bengal. Those reporting severe and extreme difficulty with feeling rested are more than 10 percent in West Bengal.

Table 7.32 presents the percentage distribution of respondents rating of difficulty with feeling rested

and refreshed according their background characteristics. A higher proportion of males (67 percent) compared to females (57 percent) feel that they have not rested and refreshed. A greater proportion of females have mild, moderate, severe and extreme difficulties compared to males. The percentage of population not feeling rested or refreshed is higher in urban areas (66 percent) compared to rural areas (61 percent). A higher proportion of rural respondents have mild, moderate and severe difficulties.

The percent of respondents who reported no difficulty in feeling rested declines with increasing age. The proportion do not have difficulty in feeling of being rested and refreshed is twice higher in the ages 18-29 (75 percent) compared to respondents in ages 80 and above (32 percent). The proportion of respondents with mild, moderate, severe difficulty in feeling rested and refreshed increases sharply at higher ages. More than two-thirds of the respondents in ages 60 and above have difficulty in feeling rested and refreshed. More than a third of those in ages 80 and above have severe difficulty in feeling rested and refreshed.

**Table 7.31 Difficulty with 'feeling rested and refreshed' in last 30 days in states and India, 2003**

States	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
Assam	52.6	27.3	12.4	5.4	2.3	1046
Karnataka	77.3	16.9	3.1	1.4	1.4	1431
Maharashtra	58.5	13.4	16.1	9.7	2.3	1972
Rajasthan	55.6	24.9	8.3	8.4	2.8	1816
Uttar Pradesh	71.2	15.0	6.0	6.2	1.6	2054
West Bengal	45.0	23.1	17.6	10.3	4.0	1675
<b>India (pooled)</b>	<b>61.8</b>	<b>18.3</b>	<b>10.4</b>	<b>7.1</b>	<b>2.4</b>	<b>9994</b>

*Note: All percent distributions are weighted*

**Table 7.32 Difficulty with 'feeling rested and refreshed' in last 30 days, by selected background characteristics in India (pooled), 2003**

Characteristics	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
<b>Sex</b>						
Male	66.7	17.1	9.0	5.4	1.8	4849
Female	56.6	19.7	11.9	8.9	2.9	5145
<b>Residence</b>						
Urban	66.4	16.9	8.8	5.6	2.3	2728
Rural	60.9	18.6	10.8	7.4	2.3	7266
<b>Age group</b>						
18-29	74.8	12.8	7.1	3.2	2.1	3152
30-44	66.2	17.0	9.6	5.6	1.6	3450
45-59	52.2	23.0	12.5	9.8	2.5	2047
60-69	37.1	28.6	16.6	13.7	4.0	866
70-79	29.2	29.4	19.4	17.2	4.8	376
80+	31.5	21.1	15.7	30.3	1.4	103
<b>Education in years</b>						
0	55.5	20.7	12.1	8.9	2.8	4734
1-5	58.7	18.7	11.2	7.8	3.6	1632
6-10	69.0	15.7	9.0	5.0	1.3	2377
11+	77.8	13.2	5.0	3.0	1.0	1251
<b>Income quintiles</b>						
Q1	53.1	20.4	13.6	10.8	2.1	2006
Q2	55.9	21.1	10.9	8.7	3.4	1996
Q3	60.0	19.4	11.8	6.3	2.5	2004
Q4	69.1	16.3	7.6	5.2	1.8	1995
Q5	68.5	15.1	9.1	5.6	1.7	1993
<b>Total (pooled)</b>	<b>61.8</b>	<b>18.3</b>	<b>10.4</b>	<b>7.1</b>	<b>2.4</b>	<b>9994</b>

*Note: All percent distributions are weighted*

The proportion reporting no difficulty in feeling rested and refreshed increases with levels of education. Fifty-six percent of respondents among illiterates reported that they have no difficulty in feeling rested and refreshed compared to 78 percent of those with 11 and above years of schooling. The proportion of respondents reporting mild, moderate, severe, and extreme difficulty in feeling rested and refreshed declines at higher levels of education.

In the highest income quintile 69 percent of respondents reported that they do not have any difficulty of feeling rested and refreshed compared to 53 percent at the lowest income quintile. The reported prevalence of mild, moderate, severe and extreme difficulty in feeling rested and refreshed is inversely related with income quintiles. More than 10 percent of the respondents in the lower income quintile have severe and extreme difficulties in feeling rested and refreshed.

### 7.10 AFFECT (MENTAL HEALTH)

In the health state module, a question was asked to know to what extent the respondents had felt sad, low or depressed. The purpose of this question was to assess how these have interfered with a person's life, such as not been able to do certain activities because of feeling distressed. Everybody worries but it becomes a problem when a person worries more than usual with things that he would normally worry about.

Sadness is often characterized by feeling tearful, tired and hopeless and loss of interest. So a question was asked to know about the extent of worry or anxiety among the respondents.

#### *Feeling sad/depression*

Table 7.33 shows that 52 percent of respondents do not have any problems of feeling sad, low or depressed in the last 30 days. The proportion of respondents being sad or depressed is 23 percent in mild, 12 percent in moderate, and 10 percent in severe and three percent in extreme level of depression.

Karnataka has the highest proportion of respondents (71 percent) with no feeling of sad/depression followed by respondents in Uttar

Pradesh (61 percent). On the other hand, in West Bengal almost 63 percent of respondents are feeling sad/depressed. Maharashtra has the highest proportion of respondents feeling moderate and severe sad/depression. Fifteen percent of respondents in Maharashtra and 13 percent in Rajasthan have severe forms of sadness or depression.

Table 7.34 presents the distribution of respondents feeling sad/depressed according to their background characteristics. About 57 percent of males and 48 percent of females do not have any sad feeling or depression. However, a higher proportion of females have reported mild, moderate, severe and extreme feelings of depression.

The proportion who reported no problem of sadness or depression is relatively lesser in rural areas compared to urban areas. A higher proportion of rural respondents have mild, moderate and severe and extreme problems of depression compared to urban areas.

The proportion of respondents who do not have any feeling of sadness or depression declines with age. However, the percentage with moderate, severe and extreme sadness or depression increases with age. Nearly a third of the respondents in ages

**Table 7.33 'Feeling sad, low or depressed' in last 30 days in states and India, 2003**

States	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
Assam	48.8	29.5	9.9	8.4	3.4	1046
Karnataka	71.0	21.1	4.7	1.2	2.1	1431
Maharashtra	44.9	17.6	19.7	14.8	3.0	1972
Rajasthan	49.1	25.6	9.8	13.0	2.5	1816
Uttar Pradesh	61.0	23.2	5.9	8.3	1.7	2054
West Bengal	36.9	28.9	17.8	12.3	4.1	1675
<b>India (pooled)</b>	<b>52.6</b>	<b>23.0</b>	<b>11.7</b>	<b>9.9</b>	<b>2.8</b>	<b>9994</b>

*Note: All percent distributions are weighted*

Table 7.34 'Feeling sad, low or depressed' in last 30 days by selected background characteristics in India (pooled), 2003

Characteristics	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
<b>Sex</b>						
Male	56.7	21.9	10.7	8.6	2.1	4849
Female	48.4	24.2	12.8	11.3	3.3	5145
<b>Residence</b>						
Urban	59.2	19.0	10.3	8.7	2.8	2728
Rural	51.4	23.8	12.0	10.1	2.7	7266
<b>Age group</b>						
18-29	65.3	17.8	8.5	5.6	2.8	3152
30-44	53.4	23.5	11.7	9.3	2.1	3450
45-59	43.8	27.5	13.9	12.3	2.5	2047
60-69	34.3	28.2	17.4	16.4	3.7	866
70-79	28.5	30.1	16.5	20.5	4.4	376
80+	26.5	28.7	10.8	28.7	5.3	103
<b>Education in years</b>						
0	47.6	25.2	12.1	12.1	3.0	4734
1-5	46.6	25.9	12.7	11.4	3.4	1632
6-10	60.1	19.3	12.1	6.6	1.9	2377
11+	66.9	17.7	8.1	5.2	2.1	1251
<b>Income quintiles</b>						
Q1	44.4	21.5	16.3	15.4	2.4	2006
Q2	44.7	26.7	13.8	11.6	3.2	1996
Q3	48.9	27.4	11.2	9.5	3.0	2004
Q4	58.9	20.8	9.3	8.4	2.6	1995
Q5	64.4	18.6	9.1	5.7	2.2	1993
<b>Total (pooled)</b>	<b>52.6</b>	<b>23.0</b>	<b>11.7</b>	<b>9.9</b>	<b>2.8</b>	<b>9994</b>

Note: All percent distributions are weighted

70+ have reported severe feelings of sadness or depression. Another one third of those in ages 70 and above have reported mild difficulties. The proportion of respondents who reported no sad feeling or depression increases at higher levels of education. Those reporting problems of mild, moderate, severe and extreme sadness or depression declines at higher levels of education.

In the highest income quintile 64 percent respondents reported that they do not have any difficulty of feeling sad or depressed compared to 44 percent in the lowest income quintile. The proportion of respondents with severe sadness or

depression is twice higher in the lower household income quintiles than those in higher income quintiles.

#### *Worry/anxiety*

More serious negative emotions such as feeling distressed, on edge, keyed up and tense were assessed based on a question on worry and anxiety. Table 7.35 shows the percent distribution of respondents with worry or anxiety. In India, 53 percent of the respondents do not have any worry or anxiety. About twenty three percent of the respondents reported mild, 12 percent have moderate, 10 percent respondents have severe and



Table 7.35 'Worry or anxiety' in last 30 days in states and India, 2003

States	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
Assam	46.6	28.3	13.1	8.8	3.2	1046
Karnataka	77.6	15.6	3.6	1.5	1.7	1431
Maharashtra	44.0	15.3	20.2	16.6	3.9	1972
Rajasthan	50.3	25.9	9.1	12.5	2.2	1816
Uttar Pradesh	60.0	22.1	6.4	9.5	2.0	2054
West Bengal	30.7	30.0	17.3	17.6	4.4	1675
<b>India (pooled)</b>	<b>52.5</b>	<b>21.4</b>	<b>11.7</b>	<b>11.5</b>	<b>2.9</b>	<b>9994</b>

Note: All percent distributions are weighted

three percent respondents have extreme worry/ anxiety. Amongst the states, Karnataka has the highest proportion of 78 percent of respondents with no feeling of worry or anxiety followed by 60 percent in Uttar Pradesh. Nearly two-thirds of respondents in West Bengal have reported mild, severe and extreme difficulty of worry or anxiety. Eighteen percent of respondents reported severe of worry or anxiety is more than 20 percent in West Bengal.

Table 7.36 presents the percentage distribution of respondents reporting worry or anxiety in India according to their background characteristics. Fifty six percent of males do not have any worry or anxiety compared to 49 percent of females. Mild, moderate, severe and extreme worry and anxiety is more commonly reported by females.

A higher proportion of urban respondents (57 percent) than rural respondents (52 percent) have less worry or anxiety. The prevalence of mild, moderate and severe worry or anxiety is more in rural areas compared to urban areas. On the other hand, extreme worry or anxiety is more in rural areas.

The proportion of respondents with no worry or anxiety declines with increasing age. Nearly three-

fourths of respondents in ages 70+ have various forms of worry or anxiety. The prevalence of mild, moderate, severe and extreme anxiety or worry decreases with levels of education and the proportion of population with no worry or anxiety rises with the education of the respondents. Forty two percent of the respondents in the lower income quintile and 63 percent of respondents in the higher-income quintile do not have any worry or anxiety. This shows that economic status influences worries. Respondents in the higher income quintiles have reported very low levels of mild, moderate difficulties of worry or anxiety.

Almost consistently in all the domains of health state valuation, the proportion of respondents with no difficulties is highest in Karnataka followed by Assam. Those reporting difficulties are higher in West Bengal followed by Maharashtra with Uttar Pradesh and Rajasthan reporting the lower and higher extremes. Between Rajasthan and Uttar Pradesh, respondents in the latter states valued better health than former states, although former states is ahead of Uttar Pradesh in various health outcome indicators.

A very strong association is reported between age and reported health state disability. The prevalence



Table 7.36 'Worry or anxiety' in last 30 days by selected background characteristics in India (pooled), 2003

Characteristics	Percent distribution					No. of Respondents
	None	Mild	Moderate	Severe	Extreme	
<b>Sex</b>						
Male	56.1	20.8	10.4	10.4	2.3	4849
Female	48.7	22.2	13.1	12.6	3.4	5145
<b>Residence</b>						
Urban	57.1	18.8	10.7	9.9	3.5	2728
Rural	51.6	21.9	11.9	11.8	2.8	7266
<b>Age group</b>						
18-29	65.2	17.5	8.7	6.0	2.6	3152
30-44	53.1	21.1	12.5	11.1	2.1	3450
45-59	43.9	24.6	13.5	14.9	3.1	2047
60-69	34.5	26.5	15.8	19.1	4.1	866
70-79	26.2	30.2	15.0	23.9	4.7	376
80+	27.5	28.3	12.1	26.8	5.3	103
<b>Education in years</b>						
0	48.1	23.3	11.8	13.6	3.2	4734
1-5	45.2	23.7	13.6	13.5	4.0	1632
6-10	58.9	18.2	12.1	8.9	1.9	2377
11+	67.9	17.2	8.0	5.3	1.6	1251
<b>Income quintiles</b>						
Q1	42.0	22.0	13.8	19.3	2.9	2006
Q2	45.9	22.4	14.4	13.4	3.9	1996
Q3	49.1	25.9	11.1	11.2	2.7	2004
Q4	59.6	18.6	10.6	8.5	2.7	1995
Q5	63.4	18.5	9.1	6.7	2.3	1993
<b>Total (pooled)</b>	<b>52.5</b>	<b>21.4</b>	<b>11.7</b>	<b>11.5</b>	<b>2.9</b>	<b>9994</b>

Note: All percent distributions are weighted

of reported difficulty does not indicate a consistent pattern with the advance of health transition and social development of the states. Assam, although a less developed state has lower perceived difficulties of health along with Karnataka. Maharashtra, though a comparatively developed state, has higher prevalence of difficulties along with West Bengal.

Between 8-20 percent of respondents have reported severe to extreme difficulties in various

domains of health. The prevalence of severe to extreme difficulties increases to 30 percent more among elderly population of 70 years and above. The reported prevalence of severe to extreme difficulties is nearly higher (10-20 percent) for illiterates and poor household income quintiles (Q1) compared to educated and richer household income quintile (Q5). The reported prevalence of severe and extreme difficulties is about a third higher among females than males.

## Health System Responsiveness

### INTRODUCTION

The World Health Organisation recognised the importance of addressing health needs as well as the other factors affecting the well-being of the individuals. A major component of health system is its responsiveness. Donabedian's (1980) study of health care reflected the sentiment of WHO constitution by defining the quality of medical care in a broader framework on responsiveness, which aims at measuring health outcomes by focussing on aspects of intrinsic worth to people. The framework seeks to promote descriptions of the patients experience as a systematic complement to the existing portfolio of information used to access and improve accountability and efficiency. The responsiveness of the health system helps the member states to identify what needs improvement.

Health system responsiveness by definition now covers a wider domain and varies from context to context. For example, the quality of health care system and its response to patients need may improve utilization patterns and thereby directly affect health outcomes. On the other hand, being responsive to citizens by providing them with timely information (e.g. about disease outbreaks) may contribute the public's trust in the health care

system and their willingness to pay taxes to fund it (Valentine, Ortiz, Tandon A, 2003). However, institutions in the health sector, whether private or public, aim to improve the health status of the population. The response of these institutions towards the requirement of health needs can be defined as health system responsiveness. It is the people's experience of their interactions with the health system on a set of domains that are important to them. When individuals interact with the health system it influences their well-being. One pathway to achieve well-being is through improvements in health, but well-being is also influenced by other aspects of people's interactions with the health system.

The World Health Organization considers certain selected aspects related to the way individuals are treated by health system responsiveness, and the use of individual's self report, adjusted for references in expectations as the primary indicator of responsiveness (De Silva, 2000).

The responsiveness section of the World Health Survey focused especially on the vignette-linked questions for cross population comparability, which illustrates differences when making comparisons of

measurements derived from self-reports (Murray, Kawabata and Valentine, 2001).

The self-assessed experience of a respondents recorded with different self-reports in a population could vary due to differences in background characteristics of the population. The linkage to vignettes for these particular questions means that individual's response can be made comparable across both sub groups within countries and across countries. The questions in each domain are linked to five vignettes to adjust or anchor the self-reports. The model requires that the questions asked to the respondents about their own personal experiences, as well as about the persons experience in the vignette hypothetical stories of third person experience, be identically phrased. The self-reports of the respondents' personal experiences with the health system are then adjusted with their response of vignettes experiences.

Based on this model, the World Health Survey in India collected data on self-assessed need of respondents for health care services for different time periods according to their background characteristics on a broader framework of health system responsiveness. The respondents were asked to assess their need for health care for in-patient and out-patient treatment. Responsiveness of health system is further assessed on seven major domains that address peoples concern when seeking in-patient and out-patient health care. These seven domains include autonomy, choice, communication, confidentiality, dignity, quality and prompt attention.

## **8.1 SELF ASSESSED NEED FOR HEALTHCARE**

The responsiveness of health system is measured by the ability of health system in a country to meet the health requirement of its population.

Respondents who assessed the need for self health care are first classified as those who needed health care inclusive of both in-patient and out-patient services during the 1) past 12 months 2) 1-5 years 3) more than 5 years and those 4) those who did not need health care.

The self-assessed need for health for the respondents themselves and for their children less than 12 years of age is presented for six states and India. The information on need for child health care was also collected from the respondents. Forty eight percent of respondents and 14 percent of their children in India needed health care in the one year prior to the survey.

The proportion of respondents who needed health care during the last one year ranges from 24 to 63 percent for the respondents themselves and 11 to 23 percent for their children. Maharashtra has the highest proportion of respondents (63 percent) reporting a self assessed need for health care and Assam has the lowest proportion of 24 percent. Rajasthan has the highest (23 percent) and Karnataka has the lowest proportion (11 percent) of children needing health care in the last one year.

Fourteen percent of respondents and three percent of their children needed health care during the last 1-5 years. Karnataka has the highest and Uttar Pradesh the lowest proportion of respondents needing health care in the last 1-5 years. The need for child care ranges between less than one percent in West Bengal and seven percent in Assam. Three percent of respondents and less than one percent of their children needed health care during the period preceding five years.

Respondents not needing health care comprises of the need of both the respondents and the children

in their household. Overall 18 percent of respondents in India did not assess a need for any health care. Large inter-state variations are indicated for respondents not needing health care among the states, ranging from six percent in Karnataka to 42 percent in Uttar Pradesh (table 8.1). The extent of self-assessed need for health care across the states may implicitly indicate the levels and utilisation of health care services. As a confirmation of this, Maharashtra and Karnataka

have the highest and Uttar Pradesh the lowest percent of respondents needing health care. This is consistent with the pattern of greater availability and utilisation of health care services in Karnataka and Maharashtra and the extremely poor availability and utilisation of health care services in Uttar Pradesh.

Table 8.2 presents the percentage distribution of respondents needing health care in India by selected background characteristics. Marked

**Table 8.1 Percent distribution of respondents needing health care<sup>1</sup> in states and India, 2003**

States	Last 12 months		1–5 years		More than 5 years		Never needed	No. of respondents
	Self	Child	Self	Child	Self	Child		
Assam	24.4	13.4	18.1	6.5	6.1	1.0	30.6	1046
Karnataka	60.0	11.2	19.2	0.9	2.2	0.1	6.5	1431
Maharashtra	63.0	13.8	13.0	1.3	1.5	0.1	7.4	1972
Rajasthan	45.1	23.0	13.3	3.5	3.0	0.5	11.7	1816
Uttar Pradesh	28.4	10.5	12.5	3.0	3.2	0.6	41.9	2054
West Bengal	59.2	13.0	16.1	1.3	2.9	0.1	7.5	1675
<b>India (pooled)</b>	<b>47.5</b>	<b>14.2</b>	<b>14.9</b>	<b>2.5</b>	<b>3.0</b>	<b>0.4</b>	<b>17.6</b>	<b>9994</b>

Note:

<sup>1</sup> Questions were asked to the respondent about the need for health care for himself and their children less than 12 years of age

**Table 8.2 Percent distribution of respondents needing health care<sup>1</sup> by selected background characteristics in India (pooled), 2003**

Characteristics	Last 12 months		1–5 years		More than 5 years		Never needed	No. of respondents
	Self	Child	Self	Child	Self	Child		
<b>Sex</b>								
Male	44.1	13.4	16.3	2.9	3.2	0.3	19.7	4849
Female	50.7	15.0	13.5	2.2	2.7	0.4	15.5	5145
<b>Residence</b>								
Urban	54.6	13.2	15.0	1.7	3.1	0.4	12.1	2728
Rural	44.9	14.6	14.8	2.8	2.9	0.3	19.6	7266
<b>Age group</b>								
18-29	44.1	16.7	16.4	1.3	2.3	0.2	19.2	3152
30-44	43.6	20.9	12.1	4.8	2.8	0.7	15.2	3450
45-59	51.6	7.1	16.0	1.9	4.0	0.2	19.2	2047
60-69	60.6	2.4	17.0	0.9	3.5	0.3	15.2	866
70+	57.4	1.9	15.4	0.4	3.5	-	21.3	479
<b>Total (pooled)</b>	<b>47.5</b>	<b>14.2</b>	<b>14.9</b>	<b>2.5</b>	<b>3.0</b>	<b>0.4</b>	<b>17.6</b>	<b>9994</b>

Note:

<sup>1</sup> This question was asked about the need for health care for the respondents or his/her child less than 12 years

- No cases reported

differences are reported between the sexes for respondents who need health care services for themselves in the last 12 months. Fifty one percent of females compared to 44 percent of male respondents needed health care in the last 12 months. However, variation by sex of the child who needed health care is lesser. The percentage of respondents who reported a need for health care services increases with age.

During the last 1-5 years, a higher proportion of male respondents and male children needed health care services compared to female respondents and female children. The percent of respondents needing health care during 1-5 years did not vary much between rural and urban and by age groups. The reported need for health care during the period beyond five years preceding the date of survey indicates very small rural-urban, gender and age differences. In sum, the results suggest that the need for health care is better reflected for the recall

period of last one year, but the recall for the longer period is useful to make an assessment of those never needing health care.

#### *Self assessed need for different types of health care services*

Table 8.3 presents the percent distribution of respondents with self-assessed need for health care by type of services in the 12 months prior to the survey in six states and India. Overall, 6208 respondents reported a self-assessed need for health care either in-patient or out-patient in the last 12 months.

The self assessed need for health care is further assessed by the type of services needed such as preventive care, child care, dental care and care for injuries, chronic diseases and other diseases. The need for preventive care considers the need for care in immunization, antenatal check ups and family planning. The self-assessed need for chronic

**Table 8.3 Percent distribution of respondents with self-assessed need for care in the previous 12 months<sup>1</sup> in states and India, 2003**

States	Preventive <sup>2</sup>	Childbirth <sup>3</sup>	Dental <sup>4</sup>	Injury <sup>5</sup>	Chronic <sup>6</sup>	Other <sup>7</sup>	No. of Respondents
Assam	6.1	1.4	2.0	4.5	55.2	30.9	395
Karnataka	3.5	0.9	3.6	6.1	61.7	24.2	1018
Maharashtra	2.2	0.5	3.9	4.0	43.8	45.7	1521
Rajasthan	1.8	0.9	2.4	5.4	58.3	31.3	1246
Uttar Pradesh	1.3	0.7	2.9	7.5	50.3	37.3	820
West Bengal	1.3	1.1	3.0	13.8	48.4	32.4	1208
<b>India (pooled)</b>	<b>2.2</b>	<b>0.8</b>	<b>3.2</b>	<b>7.0</b>	<b>51.6</b>	<b>35.3</b>	<b>6208</b>

Note:

<sup>1</sup> Data on responsiveness is based only on those respondents who needed health care in last 12 months both in-patient and out-patient.

<sup>2</sup> Preventive: Immunization + antenatal consultation + family planning

<sup>3</sup> Childbirth: Childbirth

<sup>4</sup> Dental: Acute

<sup>5</sup> Injury: Bodily injury + minor surgery

<sup>6</sup> Chronic: High fever + severe diarrhoea, or cough + arthritis + asthma + heart disease

<sup>7</sup> Other: Other diseases

<sup>8</sup> Percentages are weighted and numbers are unweighted

diseases includes high fever, severe diarrhoea, cough, arthritis, asthma and heart diseases.

Overall, two percent of respondents had a need for preventive care, one percent for childbirth care, three percent for dental care, seven percent for injuries, 52 percent for chronic diseases and 35 percent for other diseases.

Respondents with self-assessed need for preventive care are highest in Assam (six percent) followed by Karnataka (four percent). Uttar Pradesh and West Bengal have the lowest self-assessed with one percent each. Of the total need, the need for care for childbirth is less than one percent in most states.

Comparatively, the need for dental care is the highest with four percent each in Maharashtra and Karnataka whereas need for injury care is highest in West Bengal (five percent). In Karnataka, of those who needed health care, 62 percent of respondents reported a need for health care for chronic diseases, which is the highest. Maharashtra has the lowest of 44 percent respondents who needed care for chronic diseases.

Table 8.4 presents the distribution of respondents with self-assessed need for health care in the 12 months prior to the survey in India by background characteristics such as age, sex and residence. The reported need for preventive care

**Table 8.4 Percent distribution of respondents with self-assessed need for care in the previous 12 months<sup>1</sup> by selected background characteristics in India (pooled), 2003**

Characteristics	Preventive <sup>2</sup>	Childbirth <sup>3</sup>	Dental <sup>4</sup>	Injury <sup>5</sup>	Chronic <sup>6</sup>	Other <sup>7</sup>	No. of Respondents
<b>Sex</b>							
Male	0.6	NA	4.0	9.9	52.7	32.6	2805
Female	3.7	1.3	2.5	4.3	50.5	37.7	3403
<b>Residence</b>							
Urban	1.9	0.7	5.7	6.1	48.1	37.7	1850
Rural	2.2	0.8	2.7	7.2	52.3	34.8	4358
<b>Age group</b>							
18-29	4.1	1.6	2.0	8.5	52.4	31.4	1923
30-44	2.1	0.5	3.6	6.8	51.6	35.5	2246
45-59	0.2	0.5	4.9	5.4	51.1	37.9	1206
60-69	0.6	-	3.3	5.0	52.4	38.7	548
70+	-	-	2.1	8.4	45.6	43.9	285
<b>Total (pooled)</b>	<b>2.2</b>	<b>0.8</b>	<b>3.2</b>	<b>7.0</b>	<b>51.6</b>	<b>35.3</b>	<b>6208</b>

Note:

<sup>1</sup> Data on responsiveness is based only on those respondents who needed health care in last 12 months both in-patient and out-patient.

<sup>2</sup> Preventive: Immunization + antenatal consultation + family planning

<sup>3</sup> Childbirth: Childbirth

<sup>4</sup> Dental: Acute

<sup>5</sup> Injury: Bodily injury + minor surgery

<sup>6</sup> Chronic: High fever + severe diarrhoea, or cough + arthritis + asthma + heart disease

<sup>7</sup> Other: Other diseases

<sup>8</sup> Percentages are weighted and numbers are unweighted

- No cases reported

NA - Not Applicable

**Table 8.5 Percent distribution of respondents with self-assessed need for in-patient care in the previous five years prior to the survey in states and India, 2003**

States	Child health	Maternal health	Non- communicable & chronic diseases <sup>1</sup>	Acute diseases <sup>2</sup>	No. of Respondents
Assam	3.0	1.8	0.5	94.7	410
Karnataka	2.0	1.6	3.2	93.3	886
Maharashtra	14.8	4.4	0.9	79.9	998
Rajasthan	4.3	2.1	2.9	90.7	929
Uttar Pradesh	7.9	2.3	2.2	87.7	714
West Bengal	9.0	4.9	1.4	84.7	834
<b>India (pooled)</b>	<b>7.6</b>	<b>3.0</b>	<b>2.0</b>	<b>87.3</b>	<b>4771</b>

Note:

<sup>1</sup> Non-communicable and chronic diseases refer to angina, arthritis, asthma, diabetes, depression, psychosis etc.

<sup>2</sup> Acute diseases refer to high fever, severe diarrhoea, cough, dental care, injury, minor surgery etc.

**Table 8.6 Percent distribution of respondents with self-assessed need for in-patient care in the previous five years by selected background characteristics in India (pooled), 2003**

Characteristics	Child health	Maternal health	Non- communicable & chronic diseases <sup>1</sup>	Acute diseases <sup>2</sup>	No. of Respondents
<b>Sex</b>					
Male	10.1	NA	2.4	87.6	2280
Female	5.1	6.2	1.6	87.1	2491
<b>Residence</b>					
Urban	7.2	5.0	2.8	85.0	1351
Rural	7.7	2.7	1.9	87.8	3420
<b>Age group</b>					
18-29	6.0	6.3	1.1	86.6	1581
30-44	14.6	1.7	1.2	82.5	1788
45-59	4.2	0.2	3.5	92.1	898
60-69	0.9	1.4	4.1	93.6	357
70+	-	-	5.7	94.3	147
<b>Total (pooled)</b>	<b>7.6</b>	<b>3.0</b>	<b>2.0</b>	<b>87.3</b>	<b>4771</b>

Note:

<sup>1</sup> Non-communicable and chronic diseases refer to angina, arthritis, asthma, diabetes, depression, psychosis etc.

<sup>2</sup> Acute diseases refer to high fever, severe diarrhoea, cough, dental care, injury, minor surgery etc.

NA - Not Applicable

- No cases reported

causing from maternal and child care and other diseases is relatively higher for females compared to males. Need for care for chronic diseases are higher in rural areas, injuries and that of dental

in urban areas. As expected, the proportion requiring care for preventive, childbirth and chronic diseases declines with age while the need for care for other diseases increases with age.



## 8.2 SELF ASSESSED NEED FOR IN-PATIENT CARE

The World Health Survey gathered data on the self-assessed need for in-patient care among the respondents in six states. In-patients are those who stayed in the hospital for an overnight. The need for in-patient care is presented by type of services such as child health, maternal health, and non-communicable, chronic and acute diseases.

Table 8.7 presents the percentage distribution of respondents needing in-patient care in the preceding five-years prior to the survey. A total of 4771 respondents have sought in-patient care in the last five years. Among those who needed in-patient care, eight percent have reported need for in-patient treatment for child health, three percent for in-patient care for treatment of maternal health care and two percent for treatment of non-communicable and chronic diseases.

Among the respondents seeking in-patient care, 87 percent needed care for acute diseases such as high

fever, severe diarrhoea, cough, dental problems, injury, minor surgeries, communicable and other diseases. In all the states except in Maharashtra, almost 90 percent of in-patient care is for acute diseases. In Maharashtra, 80 percent have sought in-patient care for acute diseases while almost 20 percent needed in-patient care for maternal and child health. Comparatively, Karnataka and Assam have the lowest percent of respondents seeking in-patient care for maternal and child health. This is in relation to other health care services and therefore does not imply a lower coverage of maternal and child health.

Table 8.8 shows the percent distribution of respondents with self assessed need for in-patient care in last five years by selected background characteristics. The proportion seeking in-patient care indicates very little differences between the sexes and between rural and urban areas. However, a greater proportion of urban respondents (five percent) have assessed the need for maternal health care compared to rural respondents (three percent).

**Table 8.7 Percent distribution of respondents with self-assessed need for out-patient care in the previous five years<sup>1</sup> in states and India, 2003**

States	Child health	Maternal health	Non- communicable & chronic diseases <sup>1</sup>	Acute diseases <sup>2</sup>	No. of Respondents
Assam	15.3	7.9	9.1	67.7	522
Karnataka	5.1	3.1	18.4	73.3	1046
Maharashtra	14.4	5.0	10.6	70.0	1108
Rajasthan	10.1	4.1	9.5	76.4	1126
Uttar Pradesh	14.3	3.2	8.1	74.5	867
West Bengal	8.2	3.0	11.6	77.1	1068
<b>India (pooled)</b>	<b>10.4</b>	<b>3.9</b>	<b>11.9</b>	<b>73.8</b>	<b>5737</b>

Note:

<sup>1</sup> Data is based on out-patient respondent only

<sup>2</sup> Non-communicable diseases refer to angina, arthritis, asthma, diabetes, depression, psychosis etc.

<sup>3</sup> Acute diseases refer to high fever, severe diarrhoea, cough, dental care, injury, minor surgery etc.

**Table 8.8 Percent distribution of respondents with self-assessed need for out-patient care in the previous five years<sup>1</sup> by selected background characteristics in India (pooled), 2003**

Characteristics	Child health	Maternal health	Non- communicable & chronic diseases <sup>2</sup>	Acute diseases <sup>3</sup>	No. of Respondents
<b>Sex</b>					
Male	12.1	NA	10.0	77.9	2763
Female	8.6	7.9	14.0	69.5	2974
<b>Residence</b>					
Urban	8.7	4.4	11.1	75.8	1595
Rural	10.8	3.8	12.1	73.4	4142
<b>Age group</b>					
18-29	9.8	7.6	3.9	78.7	1859
30-44	18.3	2.8	7.5	71.3	2100
45-59	5.3	0.6	23.6	70.5	1086
60-69	2.4	0.6	29.8	67.2	463
70+	1.9	-	21.3	76.8	229
<b>Total (pooled)</b>	<b>10.4</b>	<b>3.9</b>	<b>11.9</b>	<b>73.8</b>	<b>5737</b>

Note:

<sup>1</sup> Data is based on out-patient respondent only

<sup>2</sup> Non-communicable and chronic diseases refer to angina, arthritis, asthma, diabetes, depression, psychosis etc.

<sup>3</sup> Acute diseases refer to high fever, severe diarrhoea, cough, dental care, injury, minor surgery etc.

NA - Not Applicable

- No cases reported

A higher proportion of aged respondents sought in-patient care for both acute and chronic diseases. In ages 70 and above, of those who sought in-patient care, 94 percent needed care for acute diseases, and the rest for chronic diseases.

### 8.3 SELF ASSESSED NEED FOR OUT-PATIENT CARE

The World Health Survey assessed the need for out-patient care among the respondents and children in their families. Out-patients are those who did not stay in the hospital overnight or required other types of treatment that have taken a longer time. Out-patient care is assessed by type of services such as child health, maternal health, non-communicable, chronic and acute diseases. The need for out-patient child health care is assessed for children less than 12 years of age in the respondents families. Maternal health need is assessed only for women who require antenatal

consultation. Non-communicable and chronic diseases refer to angina, arthritis, asthma, diabetes, depression and psychosis. The category of acute diseases refers to high fever, severe diarrhoea, cough, dental care, injury, minor surgery, communicable diseases and others.

Table 8.5 presents the percent distribution of respondents with self-assessed need for out-patient care in the five years prior to the survey. Of the total 9994 respondents, 5737 respondents reported a need for out-patient health care in the five years preceding the survey. About 10 percent of respondents have sought treatment for child health, four percent for maternal health and 12 percent for non-communicable and chronic diseases. About 74 percent of the respondents have sought out-patient treatment for acute diseases. Acute diseases refer to high fever, severe diarrhoea, cough, dental care, injury, minor surgery, communicable diseases and others.

Of those who needed health care, the highest of 15 percent in Assam need out-patient treatment for child health. Maharashtra and Uttar Pradesh each have 14 percent respondents seeking out-patient treatment for child health. Karnataka has the lowest of five percent of respondents reporting a need for out-patient care in child health. Assam has a relatively higher proportion of respondents who have sought maternal care. The reported need for care for non-communicable and chronic diseases is highest in Karnataka (18 percent) while the lowest (eight percent) is reported in Uttar Pradesh. Out-patient treatment for acute diseases ranges from 77 percent in West Bengal to 68 percent in Assam.

Table 8.6 presents the percent distribution of the respondents with self assessed need for out-patient care in the last five years by selected background characteristics in India. Out-patient treatment seeking for acute diseases is higher for males than females. This arises mainly from the gap contributed by maternal health care. The need for maternal care declines with the age of the women.

Ten percent of males need out-patient care for non-communicable and chronic diseases compared to 14 percent female respondents. This indicates a higher burden of non-communicable and chronic diseases for females (with more of them surviving at older ages). The self-assessed need for care for communicable diseases does not vary much between rural and urban areas. The need for out-patient care for non-communicable and chronic diseases increases with the age of the respondents, as elderly persons suffer a higher burden of such diseases. The proportion needing care for non-communicable and chronic diseases is about six times higher for respondents of ages 70 and above

compared to those in ages 18-29. A greater proportion of male and urban respondents need out-patient care for acute diseases.

#### 8.4 HEALTH SYSTEM RESPONSIVENESS

The World Health Organization has identified the following seven major domains of health system responsiveness that addresses the concerns of people seeking health care.

- 1) *Autonomy* of the health system is rated on the basis of respondents experience of being involved in decision making about health care, treatment and information about other types of treatment or test.

- 2) *Choice* involves the freedom of the respondents in choosing the health care provider.

As a pre-requisite, the respondents also need to have access to information about the choice of health care provider.

- 3) *Communication* involves two-way interaction between the health care provider and the patient. It involves the rating of the experience of the respondents about how clearly health care providers explained the things and the availability of time to interact with the health care provider.

- 4) *Confidentiality* covers consultation carried out in a manner that it safeguards the individual's privacy, privileged communication and the confidentiality of medical treatment.

- 5) *Dignity* covers respect and care in treatment. It also includes privacy during physical examinations.

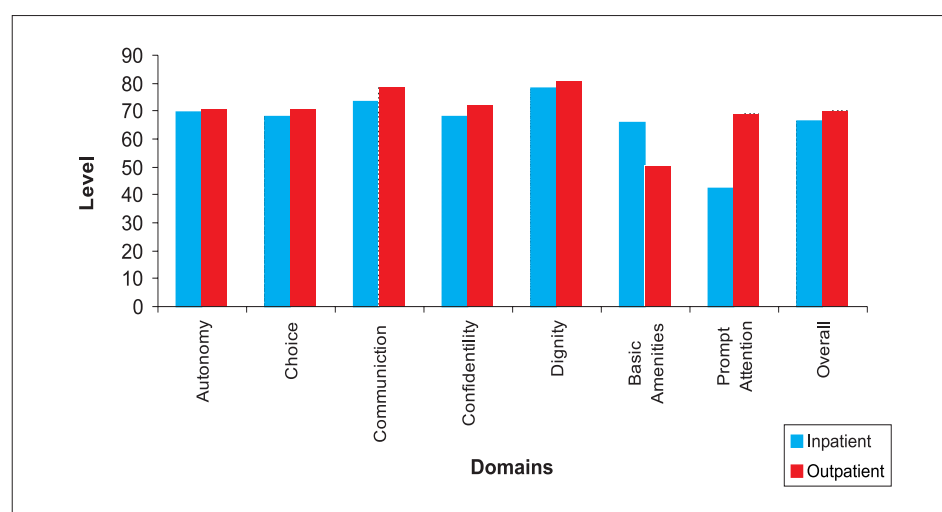
- 6) *Quality* of basic amenities such as clean surroundings, proper ventilation, adequate furniture and provision of healthy and appropriate water and food.
- 7) *Prompt attention* refers to short waiting times for treatment, test, consultation and short waiting lists for non-emergency surgery. The health system must be able to provide geographically accessible health care facilities to the population. Besides this, the responsiveness also covers access to support from family and community members, opportunity of the patients to be visited by friends, relatives and the freedom to carry out religious practices (Valentine, De Silva and Kawabata, 2003).

Based on the above criteria, the World Health Survey assessed the self-reported ratings of responsiveness for in-patient health services received in the last five years in Maharashtra. The responses take an ordinal ranking (bad-1, good-2,

moderate-3, good-4, very good-5) and provide the scale cardinal properties so that the differences between one and two and two and three, for example have the same meaning.

This step is essential to say whether the differences between “Very good” (labelled five) and good (labelled four) are the same as the difference between “good” and “moderate” (labelled three). Secondly, the responses on each domain are rescaled from zero to 100, by setting all the responses equal to and better than the experience described in the best vignette to 100, and all responses described as equal to or worse than the experience in worst vignette, to zero. The mean scores of responsiveness on various domains are generated from the distribution of responses. The mean scores of respondents’ satisfaction are presented first for in-patient and out-patient services combined and then separately for in-patient and out-patient care.

**Figure 8.1 Mean scores of respondents ratings on various domains of responsiveness for in-patient and out-patient care in India, 2003**



*Note:*

*The responsiveness mean scores describe the respondents perceived satisfaction in relation to their experience with the health system. The five point ordinal ranking scale is rescaled into normalised mean scores from 0 to 100.*

The responsiveness scores describe the respondents perceived satisfaction in relation to their experience with the health system. The self-reported respondents' satisfaction is also adjusted to respondents' responses of vignettes experiences. Figure 8.1 shows the respondents comparative ratings (normalised mean scores of 0-100) of responsiveness for in-patient and out-patient care in India in the last five years. The overall mean score for in-patient treatment is 66 compared to 70 for out-patient treatment. The gap in mean scores ratings of responsiveness between in patient and out-patient care is highest for the domain of prompt attention. The mean score of responsiveness for prompt attention is 42 for in-patient compared to 69 for out-patient treatment. Overall for in-patient care, respondents' expectation of health system responsiveness is much lower for basic amenities than all other domains of responsiveness. For out-patient care, mean scores indicate lower expectation of respondents for prompt attention. Both for in patient and out-

patient care, respondents expectation of health system responsiveness is high with a mean score of more than 70, both for dignity of treatment and communication.

## 8.5 RESPONSIVENESS FOR IN-PATIENT TREATMENT

Table 8.9 presents the respondents assessment of responsiveness on seven major domains for in-patient services in the last 12 months by background characteristics. The overall mean score of 67, which implies that the health system is expected to perform satisfactorily, but not to the extent of 90-100 percent which would rate that the expectation of health system responsiveness as excellent.

The mean score responsiveness rating is 70 for autonomy, 68 for choice, 73 for communication, 68 for confidentiality and 66 for basic amenities. Amongst the states, the mean score of responsiveness is consistently higher for the domains of dignity

**Table 8.9 Mean scores of respondents ratings<sup>1</sup> on various domains of responsiveness for in-patient services used in previous 12 months<sup>2</sup> in states and India, 2003**

States	Autonomy	Choice	Communication	Confidentiality	Dignity	Basic amenities	Prompt Attention	Overall Level <sup>3</sup>	No. of Respondents
Assam	76.7	58.8	74.1	76.6	83.5	42.6	45.6	65.4	85
Karnataka	78.9	78.8	84.0	88.2	85.1	80.5	69.3	80.7	282
Maharashtra	75.2	71.4	77.7	69.0	81.3	74.7	43.6	70.4	614
Rajasthan	72.2	69.7	73.8	63.6	78.8	60.8	25.7	63.5	562
Uttar Pradesh	65.1	68.9	65.7	62.7	68.4	64.3	34.6	61.4	373
West Bengal	51.5	49.0	59.4	54.8	72.9	41.9	36.7	52.3	394
<b>India (pooled)</b>	<b>69.9</b>	<b>68.0</b>	<b>73.2</b>	<b>68.1</b>	<b>78.3</b>	<b>65.7</b>	<b>42.1</b>	<b>66.5</b>	<b>2310</b>

Note:

<sup>1</sup> Rating for each domain was measured on a five-point scale. This was transformed into normalised mean scores on a range of 0-100, with 100 representing the highest level of responsiveness.

<sup>2</sup> Analysis is based on in-patient respondents.

<sup>3</sup> Ratings for overall responsiveness is based on pooled scores on various domains of responsiveness. This varies in the range of 0- 100. The responsiveness scores describe the respondents perceived satisfaction in relation to their experience with the health system.

followed by communication, autonomy, confidentiality, and choice. Responsiveness for prompt attention is valued very low in all the states. Dignity is viewed as highly important with a mean score of 78 while prompt attention with a score of 42 is of low priority for in-patient care. Respondents in Karnataka have the highest overall mean score (81) as well the highest mean score in all the domains of in-patient services which suggests an

experience of higher expectation of health system performance compared to the rest of the states. Maharashtra has second highest overall mean score of 70. The next highest mean scores are indicated for autonomy, choice and basic amenities.

Respondent's rating of responsiveness in West Bengal has the lowest overall mean score of 52. The mean score for West Bengal is also the lowest

**Table 8.10 Mean scores of respondents ratings<sup>1</sup> on various domains of responsiveness for in-patient services used in previous 12 months<sup>2</sup>, by selected background characteristics in India (pooled), 2003**

Characteristics	Autonomy	Choice	Communication	Confidentiality	Dignity	Basic amenities	Prompt Attention	Overall Level <sup>3</sup>	No. of Respondents
<b>Sex</b>									
Male	71.8	69.2	73.1	67.9	80.8	65.2	41.1	67.0	1039
Female	68.3	67.0	73.2	68.3	76.0	66.1	42.9	66.0	1271
<b>Residence</b>									
Urban	80.4	77.4	80.0	74.6	82.7	74.7	57.6	75.3	720
Rural	67.6	65.9	71.7	66.7	77.3	63.7	38.7	64.5	1590
<b>Education</b>									
Illiterate	63.8	63.4	65.7	64.7	73.9	59.3	36.4	61.0	877
Up to Secondary	70.7	67.6	74.2	68.1	79.0	65.5	42.1	66.7	983
High school and above	80.1	78.0	85.3	74.6	85.3	78.5	53.1	76.4	450
<b>Insurance status</b>									
Insured	70.7	73.1	82.5	66.6	85.9	63.4	43.7	69.4	118
Uninsured	69.9	67.8	72.8	68.2	78.0	65.8	42.0	66.4	2192
<b>General health</b>									
Better	63.9	62.4	64.1	64.8	73.2	63.8	34.9	61.0	487
Worse	71.5	69.5	75.5	68.9	79.6	66.2	43.9	67.9	1823
<b>Major health conditions</b>									
Children	62.2	62.6	71.8	60.0	78.3	64.0	38.3	62.5	750
Maternal	75.2	73.6	74.9	68.3	77.3	63.1	51.9	69.2	462
Chronic	78.6	83.2	78.2	81.1	80.4	78.7	44.4	74.9	242
Acute	68.3	66.8	71.3	67.7	76.6	63.2	45.7	65.7	856
<b>Governance</b>									
Government	60.3	58.0	63.6	57.6	69.8	47.8	35.6	56.1	1127
Private	79.4	77.9	82.7	78.4	86.5	83.5	48.4	76.7	1183
<b>Total (pooled)</b>	<b>69.9</b>	<b>68.0</b>	<b>73.2</b>	<b>68.1</b>	<b>78.3</b>	<b>65.7</b>	<b>42.1</b>	<b>66.5</b>	<b>2310</b>

Note:

<sup>1</sup> Rating for each domain was measured on a five-point scales. This was transformed into normalised mean score on a range of 0-100, with 100 representing the highest level of responsiveness.

<sup>2</sup> Analysis is based on in-patient respondents.

<sup>3</sup> Ratings for overall responsiveness is based on pooled scores on domains of responsiveness. This varies in the range of 0-100, with 100 represent the highest level of responsiveness. The responsiveness scores describe the respondents perceived satisfaction in relation to their experience with the health system.



amongst the states for autonomy, choice, communication confidentiality and basic amenities. Uttar Pradesh has the next lowest mean score values. In these states, the respondents experience suggests a lower expectation of health system responsiveness.

Table 8.10 presents the ratings of responsiveness by mean score on various domains for in-patient services used in the last 12 months by selected background characteristics. The mean score of responsiveness differed very little between the sexes. The mean score of responsiveness for in-patient services is comparatively higher (75) meaning better expectation of health system performance for urban respondents than in rural areas (65). The respondents rating of responsiveness shows a consistent increase with their levels of education. Among the uninsured, the mean score of responsiveness is 69 compared to 66 among the insured. Mean scores of responsiveness for in-patient services is relatively higher among those with worse health condition (68) compared to those with a better health (61).

The highest mean score of rating responsiveness is shown for chronic diseases (75) whereas the lowest rating is for child treatment (63). The mean scores for private health care is high (77) compared to government health services (56), indicating a relatively poor experience and expectation of health system performance of public health services.

Males have reported highest mean score of responsiveness for autonomy, choice of services and dignity, whereas females have reported higher mean score for confidentiality, basic amenities and prompts attention. Urban compared to rural respondents have higher expectation of health system performance for all the domains of in-patient services.

The mean score for prompt attention is very low among illiterates (36) compared to those with high school and higher education (53). Insured respondents have rated higher responsiveness for autonomy, choice in treatment, communication with medical personnel, dignity and prompt attention. Uninsured respondents have indicated higher responsiveness for confidentiality in treatment. Choice of treatment, communication, confidentiality, dignity and availability of basic amenities were rated higher by those respondents with worse health.

Responsiveness ratings by those with better health are higher for autonomy. Relatively higher responsiveness is indicated for the domain of dignity in the case of treatment for child health, maternal care and for chronic and acute diseases. The lowest rating is for prompt attention for all categories of treatments except maternal care. For childcare, the mean score of responsiveness is 78 for dignity compared to 38 for prompt attention. For maternal care, the mean score of responsiveness for dignity is 77 compared to 52 for prompt attention.

The mean score for dignity is 77 compared to 46 for prompt attention for acute diseases. Private sector hospitals have been rated with higher responsiveness compared to government health services. Prompt attention is rated poorly in all domains and worse in public hospitals.

## 8.6 RESPONSIVENESS FOR OUT-PATIENT TREATMENT

Table 8.11 presents the respondents assessment of responsiveness on seven major domains in the last 12 months. The overall mean score rating of 70 for out-patient services indicates a good expectation of responsiveness by the respondents.



**Table 8.11 Mean scores of respondents ratings<sup>1</sup> on various domains of responsiveness for out-patient services used in previous 12 months<sup>2</sup> in states and India, 2003**

States	Autonomy	Choice	Communication	Confidentiality	Dignity	Basic amenities	Prompt Attention	Overall Level <sup>3</sup>	No. of Respondents
Assam	66.8	73.1	78.2	76.5	70.2	62.1	62.6	69.9	324
Karnataka	73.8	74.7	77.0	79.6	76.7	69.1	71.9	74.7	999
Maharashtra	73.3	72.8	82.6	71.4	86.7	47.0	77.1	73.0	1295
Rajasthan	71.9	71.3	83.9	69.9	88.0	33.4	65.9	69.2	869
Uttar Pradesh	69.7	68.6	75.0	66.7	75.3	41.2	60.9	65.3	710
West Bengal	61.6	63.5	75.5	67.9	78.9	49.3	61.1	65.4	981
<b>India (pooled)</b>	<b>70.5</b>	<b>70.8</b>	<b>79.0</b>	<b>72.1</b>	<b>81.1</b>	<b>50.4</b>	<b>69.2</b>	<b>70.4</b>	<b>5178</b>

Note:

<sup>1</sup> Rating for each domain was measure on a five-point scale. This was transformed into normalised mean scores taking a range of 0-100, with 100 representing the highest level of responsiveness.

<sup>2</sup> Analysis is based on out-patient respondents.

<sup>3</sup> Ratings for overall responsiveness is based on pooled scores on domains of responsiveness. This varies in the range of 0– 100.

For out-patient care the mean score rating of responsiveness is 71 for autonomy and choice, 79 for communication, 72 for confidentiality and 69 for prompt attention. The highest mean score of 81 is for dignity and the lowest 50 for basic amenities. For in-patient care, the worst rating is for prompt attention.

Amongst the states, Karnataka has the highest responsiveness mean score of 74 for out-patient services followed by Maharashtra with 73. Uttar Pradesh and West Bengal have the lowest mean score of 65. Of the various domains, Karnataka has the highest mean score for autonomy, choice, confidentiality and basic amenities while Rajasthan shows high mean scores for communication and dignity. Uttar Pradesh has the lowest mean scores for communication, confidentiality, basic amenities and prompt attention. The responsiveness mean scores for autonomy and choice are the lowest in West Bengal, and Assam has the lowest responsiveness mean score for dignity.

Table 8.12 presents the mean scores of respondents rating on various domains of responsiveness for out-patient services received in the last 12 months by selected background characteristics. The overall mean score of responsiveness ratings do not differ between the sexes. The mean scores are higher for urban respondents (82) compared to 68 for rural respondents, which suggest a higher expectation and a better experience of health system performance in urban areas. Mean score responsiveness ratings shows increasing trends with the levels of education of the respondents. Insured respondents have rated a sharply higher mean score of responsiveness of 83 compared to 69 by uninsured respondents. The mean scores indicate very little differences between respondents in better health compared to those with worse health.

Those treated for chronic diseases have rated a higher expectation of health system performance. Respondents mean score of 87 and those who received maternal and child health expressed lower

Table 8.12 Mean scores of respondents ratings<sup>1</sup> on various domains of responsiveness for out-patient services used in previous 12 months<sup>2</sup> by selected background characteristics in India (pooled), 2003

Characteristics	Autonomy	Choice	Communi- cation	Confiden- tiality	Dignity	Basic Amenities	Prompt Attention	Overall Level <sup>3</sup>	No. of Respondents
<b>Sex</b>									
Male	70.9	70.5	79.4	70.1	83.0	49.3	68.3	70.2	2443
Female	70.2	71.1	78.6	74.0	79.2	51.4	70.0	70.6	2735
<b>Residence</b>									
Urban	81.9	82.0	87.4	82.2	86.6	68.4	82.1	81.5	1482
Rural	68.3	68.6	77.3	70.0	80.0	46.8	66.6	68.2	3696
<b>Education</b>									
Illiterate	62.7	65.7	72.5	66.7	75.5	46.2	63.2	64.6	2024
Upto secondary	71.7	70.8	81.4	72.6	83.7	50.9	71.4	71.8	2122
High school and above	81.8	79.5	85.5	80.0	85.7	56.4	75.1	77.7	1032
<b>Insurance status</b>									
Insured	84.2	83.6	88.2	86.3	91.9	69.1	80.5	83.4	188
Uninsured	70.1	70.4	70.5	71.6	80.7	49.7	68.8	68.8	4990
<b>General health</b>									
Better	67.8	71.3	77.7	76.3	79.8	39.3	69.6	68.8	818
Worse	71.1	70.7	79.3	71.2	81.3	52.5	69.1	70.7	4360
<b>Major health conditions</b>									
Children	59.1	56.3	75.1	57.5	81.3	45.8	67.9	63.3	127
Maternal	68.6	36.3	78.4	59.2	80.1	46.7	77.2	63.8	36
Chronic	70.0	100.0	100.0	70.0	100.0	100.0	70.0	87.1	5
Acute	70.7	71.1	79.3	73.1	80.8	52.0	70.0	71.0	5010
<b>Governance</b>									
Government	61.2	73.0	83.8	49.5	80.4	41.1	53.8	63.3	79
Private	77.8	64.4	85.8	73.2	90.5	51.8	83.8	75.3	4100
<b>Total (pooled)</b>	<b>70.5</b>	<b>70.8</b>	<b>79.0</b>	<b>72.1</b>	<b>81.1</b>	<b>50.4</b>	<b>69.2</b>	<b>70.4</b>	<b>5178</b>

Note:

<sup>1</sup> Rating for each domain was measure on a five-point scale. These ratings were transformed into mean scores on a range of 0-100, with 100 representing the highest level of respondents' responsiveness expectations.

<sup>2</sup> Analysis is based on out-patient respondents.

<sup>3</sup> Ratings for overall responsiveness are based on pooled scores at all domains of responsiveness. This varies in the range of 0-100.

satisfaction. Respondents using private health care also rated a greater mean score of 75 compared to 63 for government health services. Males reported better responsiveness for communication and dignity whereas female respondents have reported higher responsiveness for confidentiality, basic amenities and prompt attention. Respondents from urban areas have reported higher responsiveness for all the domains of in-patient services.

Irrespective of the level of education, the highest mean score was rated for dignity and the lowest for basic amenities. However, the mean score for dignity is 76 among illiterates and 86 among those with high school education. On the other hand, mean score of responsiveness is rated at 46 for basic amenities among illiterates compared to 57 among those with high school and above education. Insured respondents reported higher mean score

of health system responsiveness for all the domains compared to those who are uninsured.

For out-patient treatment of childcare, the mean score of responsiveness is 81 for dignity compared to 46 for basic amenities, suggesting very poor expectation of basic amenities. For maternal care, the mean score of responsiveness is 78 for communication compared to 36 for choice. In the case of chronic diseases, choice, communication, dignity and basic amenities have a mean score of 100 compared to 70 each for confidentiality, autonomy and prompt attention. For acute diseases, the mean score of responsiveness is 80 compared to 52 for basic amenities. Mean score for responsiveness rating was higher for major

domains when receiving health care from private sector compared to government health services.

In sum, those treated for chronic diseases reported very high responsiveness of the health system performance consistently on all domains. Respondents from urban areas, those with better education and respondents receiving health care from private hospitals have reported very high responsiveness in the health system performance based on their experiences. Respondents rating of health system performance on basic amenities are extremely poor for out-patient services irrespective of respondents' characteristics. Overall, the health system responsiveness of the country can be rated as 'good' but not 'excellent'.

## Health Expenditure, Insurance and Human Resources for Health

### 9.1 HEALTH EXPENDITURE

Health expenditure comprises of 1) government and private sector expenditure and 2) household expenditure. In India, the government provides major allocation of funds to provide health services to the people irrespective of their capacity to pay for the services. In addition, there is substantial investment on health by the private sector also. On the other hand, households and individuals spend a certain amount of money from their pockets for treatment known as out-of-pocket health expenditure. The evidence on health spending characteristics is reviewed from other studies as a background before presenting the results from the World Health Survey.

In an economy as a whole, public spending on health forms only a minuscule proportion of the total spending on health, with very high levels of out of pocket expenditure. Out-of-pocket health expenditure refers to the payments made by households at the point they receive health services that includes doctor's consultation fees, purchase of medicines and hospital bills. Traditional medicine is included in out of pocket payments, but expenditure on health related transportation and special nutrition are excluded. Out-of-pocket

payments are net of any insurance reimbursement. The household expenditure on health accounts for a major share of about 70-80 percent of the total health expenditure in India. Rural households in India bear the maximum burden as they account for about 85 percent of the total household expenditure on health (Sanyal, 1996). The lack of appropriate and consistent information on out-of-pocket expenditure is found to be the prime reason for the exclusion of this important category from health policy planning in India (Selvarajau, 2000).

As a percentage of income, households spend about 5.4 percent while government spends only 1.09 percent in rural India according to 1993-94 data (Selvarajau, 2003). In India households on average spent nearly 9.9 percent of their income on curative health care. Rural households bear the largest burden to the extent of 5.3 percent of their income compared to their urban counterparts with 4.3 percent (Shariff, 1995). Health subsidies are not particularly well targeted towards the poor in India, especially those living in rural areas and in the poorer states.

States in south India, such as Kerala and Tamil Nadu, do considerably better in this regard than

their poorer counterparts in the north such as Uttar Pradesh, Bihar and Orissa. These differences are most apparent when we consider subsidies as a portion of consumption expenditure by quintile (Selvarajau, 2000).

Indeed, it is remarkable that all the south Indian states show a progressive distribution of subsidies in that ratio of subsidies to per capita consumption expenditure falls with expenditure, whereas the poor states (recently referred to as empowered action group states) have a regressive distribution of public subsidies on health (NCAER, 2000). The poorest states also had the most unequal distributions of in-patient day utilization in public facilities—most notably the backward states in health transition. The states performing particularly well with regard to distribution of total in-patient days are Kerala, Tamil Nadu, Gujarat and Maharashtra. The poorer groups tend to rely more on public facilities for hospital-based care, relative to richer ones (Shariff, 1995). During 1995-96, of the total estimated 14.6 million hospitalisations, nearly 56 percent were in private facilities, although the share of public and private facilities in total in-patient days utilized was about equal (Shariff, 1995). The poor tend to rely on public sector for in-patient care and the rich mostly on private care measured in terms of proportions of in-patient days consumed. A substantial proportion of poorer households in rural India depend on public health facilities for treatment of short duration and major morbidity.

All India rural health expenditure for all types of categories together has averaged out to 56 rupees per episode of treatment during a 30-day reference period. Expenditure on non hospitalised treatment was considerably lower than the hospitalised care and the expenditure in seeking public health care were much less than in private facilities. For non-

hospitalised treatment, it is interesting to note that the expenditures were substantially lower when treatment was sought in public extension facilities compared to public hospitals. Similarly, the expenditures were much lower when treatment was sought in public clinics rather than private hospitals. The mean expenditure only on fees and medicines is worked out to be 78 rupees for the country as a whole. Poor households spend 7-8 percent of their annual household income on health care. Relatively, richer households spend 2-3 percent of their household income on health care. This suggests that the adverse effect of ill-health and sickness have been disproportionately higher on the poorer section in India. The benefits of public health care investment and free provision of primary health care appears to have not reached those who deserve them most (NCAER, 2000).

Studies have shown that on an average in-patient visits cost about four to 10 times as much as an out-patient visit though the exact ratio depends on quality of care, capacity utilisation, case mix of the in-patient services, level of facility and the actual number of visits and in-patient days (Drummond et al, 1997; Castro-Leal et al, 1999; World Bank, 1997; NCAER, 2000).

Also, patients in India, Indonesia and Vietnam had to pay 2-3 times the official fees for each visit in terms of indirect costs such as transport expenses, the opportunity cost of time spent etc. for availing the health services (World Bank, 1993). It is however, not clearly known that the decline in public spending on health may have increased the household out-of-pocket expenditure on health, because a clear link between the public and private shares of health expenditure and the proportion of income devoted to health is not sufficiently established.

Given the background on health spending characteristics, the World Health Survey collected detailed data on household expenditure on various services of health during the last one month. Information was also collected on various sources of health financing by the households. Notice that the analysis of household health financing is based on 10279 household interviews completed. The analysis of previous chapters on risk factor, morbidity, health state description and health system responsiveness are based on 9994 individual interviews completed.

## 9.2 HEALTH EXPENDITURE BY TYPE OF SERVICES

Total expenditure on health treatment incurred by households in India is presented in table 9.1. A household on average spent 117 rupees in a month for health treatment. Households on average spent 52 rupees for drugs, seven rupees for traditional

medicines and 18 rupees for other expenses related to health treatment in a month. The pattern of maximum spending on drugs indicates that there is more reliance on drugs than payments for health services consultation. There are interstate variations in total health spending across the states. It ranges from the lowest of 90 rupees in Karnataka to 203 rupees in Maharashtra. Household health expenditure on in-patient, out-patient, traditional medicines, drugs and for other related health purpose is highest in Maharashtra. In the high health spending state of Maharashtra, a large share of expenditure is on both out-patient fees and drugs. Comparatively, in the states of Rajasthan and Uttar Pradesh the major share of health spending is on drugs.

Household spending on health treatment shows systematic increase with increasing household income quintiles. In the highest income quintile, a household spent 221 rupees compared to 136

Table 9.1 Household health expenditure in rupees by types of services and income<sup>1</sup> in India, 2003

States	Total health spending (Rs.)	In-patient Fees (Rs.)	Out-patient Fees (Rs.)	Traditional Medicine Practitioners (Rs.)	Drugs (Rs.)	Other (Rs.)	No. of Households
Assam	105.3	2.0	29.5	5.0	57.5	11.2	1141
Karnataka	90.2	3.2	30.8	1.7	34.0	20.4	1451
Maharashtra	203.3	13.8	70.8	24.1	73.1	21.5	2051
Rajasthan	125.7	5.8	25.4	6.1	71.3	17.1	1882
Uttar Pradesh	122.6	9.6	19.9	17.7	63.6	11.9	2035
West Bengal	138.2	2.1	44.0	4.4	70.9	16.7	1719
<b>India (pooled)</b>	<b>116.7</b>	<b>5.2</b>	<b>34.7</b>	<b>7.0</b>	<b>51.8</b>	<b>18.0</b>	<b>10279</b>
<b>Household income quintiles</b>							
Q1	65.3	1.3	17.9	8.0	30.5	7.6	2037
Q2	80.7	2.4	24.0	6.7	39.1	8.5	2062
Q3	127.6	5.2	37.9	5.9	60.0	18.6	2066
Q4	148.2	4.9	45.2	6.9	60.9	30.3	2019
Q5	148.0	12.0	43.6	7.8	62.4	22.2	2095

Note:

<sup>1</sup> Reference period for household health expenditure is last one month



rupees in the lowest income quintile. Household health expenditure on each services of in-patient, out-patient treatment, drugs and other related expenses also show systematic increase with increasing income quintiles. However, health spending on traditional medical treatment does not vary across the income quintile. The health spending on drugs ranges from 80 rupees in the highest income quintile to the low of 47 rupees in the lowest income quintile.

The health spending for out-patient treatment for respondents in the lowest income quintile is 44 rupees, which increases to 80 rupees in the highest income quintile. Health spending on drugs ranges between 47 and 80 rupees from low to high-income quintile households. Other medical related expenses are about three times higher in the highest income quintile (29 rupees) compared to lowest income quintile (eight rupees).

Previous studies (Selvarajau, 2003) have also confirmed similar trends. First, expenditure on treatment of both short and long duration illness

by various income levels clearly indicates that the expenditure on health care also increases with income quintiles. Expenditure on indigenous medicines also declines with the rise in the income of the patients.

#### *Sources of health financing*

World Health Survey in India collected information on the source of financing by income categories on health expenditures (table 9.2). The percentages shown are based on multiple responses. Eighty percent of the households reported they paid their health expenditure through current income followed by 16 percent from borrowed sources. Nine percent of households paid their health expenditure through savings (bank account) and 11 percent of households paid through income from outside the family (family members or outside). About seven percent of the households financed their health spending by selling household assets such as furniture, cattle, jewellery etc. Less than one percent of households relied on health insurance to meet their health payments.

**Table 9.2 Percentage of households by source of health financing<sup>1</sup> in states and India, 2003**

States	Current Income	Savings <sup>2</sup>	Insurance <sup>3</sup>	Sold assets <sup>4</sup>	Family outside <sup>5</sup>	Borrowed <sup>6</sup>	Other	No. of households
Assam	76.9	10.8	4.6	16.5	17.8	15.8	3.2	1141
Karnataka	76.1	0.2	0.1	0.4	2.0	4.7	4.0	1451
Maharashtra	87.5	12.8	0.6	4.9	12.2	15.2	2.0	2051
Rajasthan	80.9	12.7	1.1	14.4	27.1	35.2	17.7	1882
Uttar Pradesh	79.8	24.9	0.7	15.3	20.0	30.5	6.1	2035
West Bengal	83.9	12.6	1.4	8.2	14.3	22.4	1.6	1719
<b>India (pooled)</b>	<b>79.6</b>	<b>8.9</b>	<b>0.8</b>	<b>6.6</b>	<b>11.3</b>	<b>16.1</b>	<b>5.4</b>	<b>10279</b>

Note:

<sup>1</sup> Reference period for household expenditure is last one year; percentages are based on multiple responses

<sup>2</sup> Savings (bank account etc)

<sup>3</sup> Payment from a health insurance plan

<sup>4</sup> Sold assets like furniture, animals, jewellery, etc.

<sup>5</sup> Family members or friends from outside the household

<sup>6</sup> Borrowed from someone other than a friend or family

The percent of households depending on current income varies between 76 percent in Karnataka and 88 percent in Maharashtra. About fifteen percent of the households in Uttar Pradesh, Rajasthan and Assam sold their household assets to meet their health payments.

Differences in health spending are very small by current income as source of health treatment. Thirty seven percent of households with overall health expenditure of 2500 rupees and above financed their health expenditure through savings compared to just six percent of households with less than 500 rupees on overall health expenditure. Those households that paid their health expenditure through insurance coverage and sale of household assets increases with increasing health-spending categories. Also, there is a systematic increase in the percentage of households

meeting their health expenditure through borrowings from different sources at the higher health-spending category compared to lower health spending category. Households depending on income from outside the families is about five times and borrowings is about four times higher at the higher health spending categories compared to those in the lower health spending categories (table 9.3).

Household expenditure on health from current income, savings and insurance increases at highest income quintiles. Households that sold their household assets and borrowed from someone other than the family members and others to pay their health expenditure are mostly in the lower income quintiles compared to higher income quintiles. This pattern suggests that those who are at the higher

**Table 9.3 Percentage of households by source of health expenditures<sup>1</sup> and by expenditure categories and income quintiles in India, 2003**

Characteristics	Current Income	Savings <sup>2</sup>	Insurance <sup>3</sup>	Sold assets <sup>4</sup>	Family outside <sup>5</sup>	Borrowed <sup>6</sup>	Other	No. of households
<b>Health spending categories</b>								
0-500	76.0	6.2	0.6	4.9	7.9	10.7	4.1	7436
501-1000	92.2	14.8	1.1	10.2	18.5	30.7	8.7	2192
1001-2500	82.9	21.4	1.1	18.2	30.2	37.6	12.0	369
2501-105150	86.6	37.2	4.6	18.3	38.0	45.5	13.8	282
<b>Income quintiles</b>								
Q1	74.4	1.7	0.03	10.4	17.0	26.1	5.2	2037
Q2	80.9	7.4	0.1	15.0	18.1	30.5	6.6	2062
Q3	81.3	7.2	0.2	9.4	17.9	20.6	9.0	2066
Q4	70.4	7.5	0.5	3.2	6.7	10.7	5.3	2019
Q5	89.7	16.0	2.1	2.1	5.1	6.3	2.9	2095
<b>Total (pooled)</b>	<b>79.6</b>	<b>8.9</b>	<b>0.8</b>	<b>6.6</b>	<b>11.3</b>	<b>16.1</b>	<b>5.4</b>	<b>10279</b>

Note:

<sup>1</sup> Reference period for Household expenditure is last one year and percentages are for multiple responses

<sup>2</sup> Savings (Bank account etc)

<sup>3</sup> Payment from a health insurance plan

<sup>4</sup> Sold assets like furniture, animals, jewellery etc.

<sup>5</sup> Family members or friends from outside the household

<sup>6</sup> Borrowed from someone other than a friend or family

end income scale were able to manage their health spending through current income and savings and those at the lower end of low-income scale depended on selling their own household items or borrowed from outside family sources.

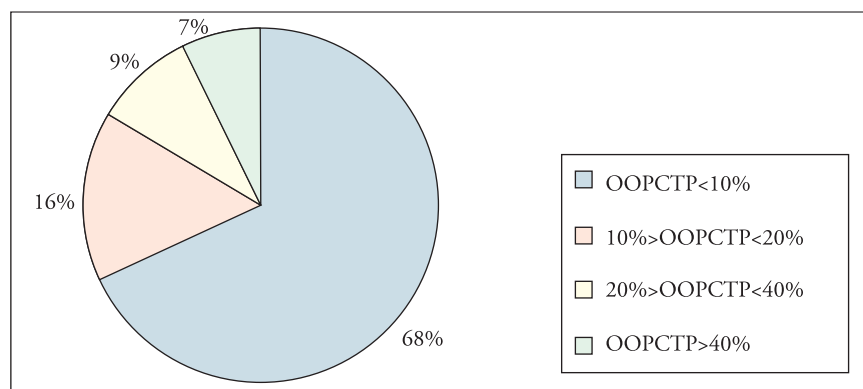
### 9.2.1 OUT OF POCKET EXPENDITURE ON HEALTH

Figure 9.1 shows that in about 88 percent of households, out of pocket expenditure as a share of households' capacity to pay (OOPCTP) is less than 10 percent. In 16 percent of households, out of

pocket expenditure as a share of household capacity to pay range between 10 and 20 percent and in nine percent of households out of pocket of expenditure as a share of capacity to pay is between 20 and 40 percent. In seven percent of the households out of pocket expenditure as a share of capacity to pay is equal to or above 40 percent, which by definition constitutes catastrophic payments.

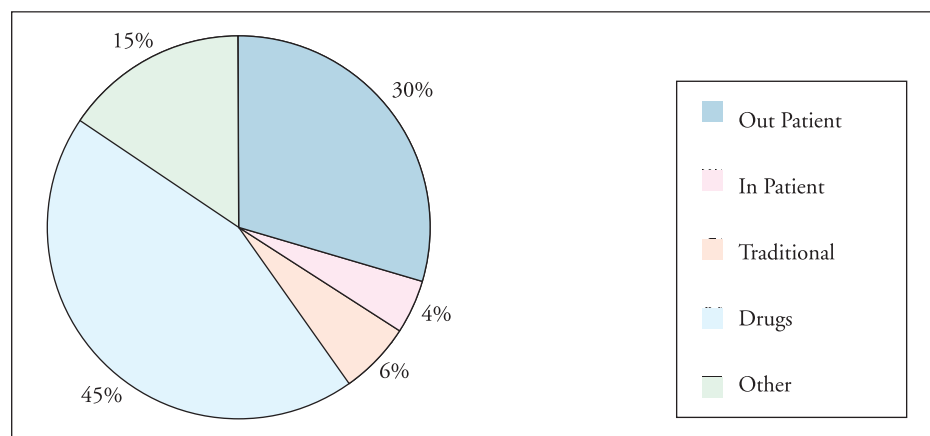
Figure 9.2 shows the pattern of out of pocket health payment of households to different health services in India. The highest proportion of out of pocket health payment is for drugs (45 percent),

**Figure 9.1 Percentage of out of pocket expenditure as a share of capacity to pay in India, 2003**



*Note: Out-of-pocket [OOP] capacity to pay [CTP] is out-of-pocket share of non-subsistence spending*

**Figure 9.2 Structure of out of pocket expenditure on health payments in India, 2003**



30 percent for out-patient treatment, 15 percent in other category and six percent for traditional medicines. The lowest four percent of out of pocket expenditure on health is for in-patient care. The overall structure of out of pocket expenditure also indicates that the major outgo of health payments is on drugs and out-patient care.

### 9.2.2 CATASTROPHIC SPENDING ON HEALTH

Catastrophic spending on health occurs when a household must reduce its basic expenses over a certain period of time in order to cope with medical bills of one or more of its members. Insurance coverage is low in India, in rural areas; as a result, poor households tend to spend a larger share of their income on health care.

Also poor households borrow from other sources when there is an incidence of major morbidity and get into a debt trap. Morbidity and expenditure incurred are found to be major causes for indebtedness among rural Households (Selvarajau, 2003). Even households with higher levels of income resort to other sources, like borrowing for

financing the treatment of major illness, however marginally, as the level of income increases.

This implies that poor households bear a heavy financial burden on account of illness (Selvarajau, 2000). From the fifty second round of the National Sample Survey Organisation (1998) the estimated loss of household income per hospitalisation episode in rural areas was 13.5 percent of mean per capita expenditure for the lowest income quintile, somewhat smaller than 11.7 percent for the highest. Taken as a proportion of mean expenditures per capita, these income losses were substantially higher for rural than for urban respondents (NCAER, 2000).

The World Health Survey in India identified 12 percent of households (1229) in the catastrophic health-spending category. Table 9.4 presents the distribution of households with catastrophic expenditure. The households with catastrophic spending on health on average spent 202 rupees for health treatment in the last one month. This is nearly twice higher than the average health expenditure of all households. Of this, the expenditure on drugs amounted to highest of 77

**Table 9.4 Households with catastrophic health spending by types of services and income<sup>1</sup> in India (pooled), 2003**

Characteristics Household income quintiles	Total health spending (Rs.)	In-patient Fees (Rs.)	Out-patient Fees (Rs.)	Traditional Medicine Practitioners (Rs.)	Drugs (Rs.)	Other (Rs.)	No. of Households
Q1	151.2	3.3	40.1	15.7	69.9	22.2	250
Q2	188.7	8.5	53.3	17.5	76.2	33.2	183
Q3	222.9	28.0	51.1	25.2	86.3	32.3	209
Q4	178.6	10.5	46.1	9.4	69.2	43.4	254
Q5	260.4	53.2	56.6	9.1	88.1	53.4	333
<b>Total (pooled)</b>	<b>201.7</b>	<b>22.1</b>	<b>49.1</b>	<b>13.8</b>	<b>77.2</b>	<b>39.5</b>	<b>1229</b>

Note:

<sup>1</sup> Reference period for Household health expenditure is last one month

rupees followed by out-patient fees of 49 rupees. Health spending is for in-patient fees is 22 rupees, other treatment 40 rupees, and for traditional medicines 14 rupees. Expenditure on different services of health are also higher for households with catastrophic health spending. However, the expenditure on in-patient care is four times higher for households with catastrophic health spending than the average in-patient fees for all households.

Total catastrophic health expenditures tend to increase at higher income quintiles. In the lowest income quintiles, on average, the catastrophic health expenditure is 151 rupees compared to 202 rupees in the highest income quintile. Highest income quintile households on average spent 12 times higher for in-patient treatment compared to the low-income quintile households.

The amount spent on traditional medical practitioners is 16 rupees in the lowest income quintile and nine rupees in the highest income quintile. The lowest income quintile household

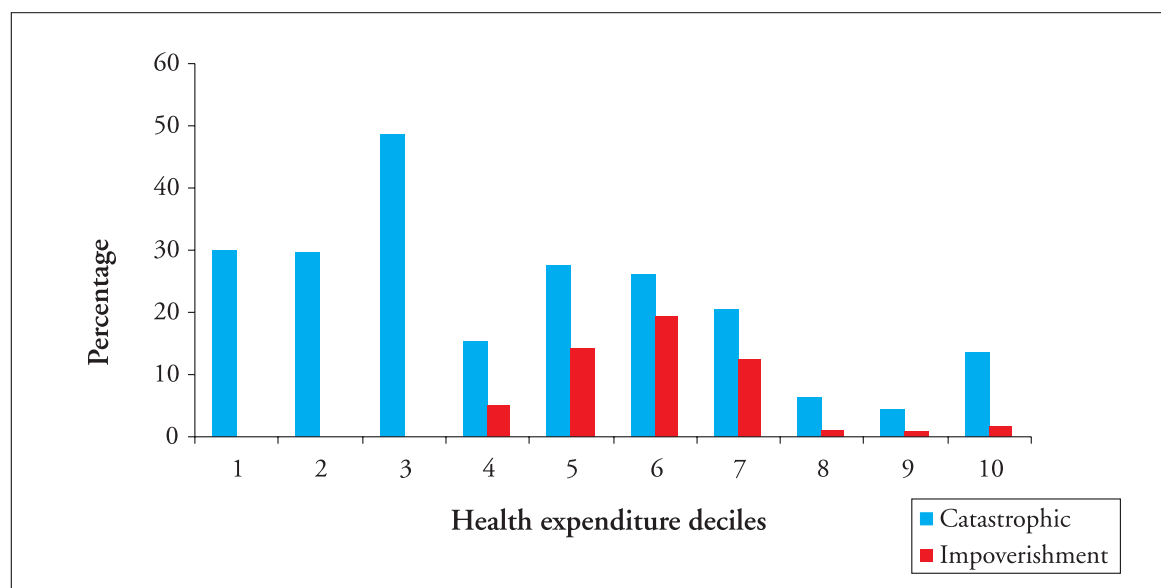
spent 70 rupees on drugs compared to 88 rupees by the highest income quintile households. The very high spending on drugs and out-patient by lower income quintile households with catastrophic expenditure suggests a greater dependence on drugs and public health spending and avoidance of payments for private consultation. The expenditure on other items is 22 rupees in the lowest income quintile and 53 rupees at the highest household income quintile.

### 9.2.3 IMPOVERISHMENT (IMPOOR)

A non-poor household is impoverished by health payment when it becomes poor after paying for health services. The household is pushed in to poverty due to health payments, in the absence of insurance coverage and lack of protectional measures by other health reimbursement schemes.

Figure 9.3 presents the percentage of households with catastrophic expenditure and the percentage of households impoverished by health spending by

Figure 9.3 Percentage of households with catastrophic expenditure in India, 2003



expenditure deciles in India. The proportion of households with catastrophic expenditure in the first and second quintile is 13 percent and 25 percent respectively. About 30 percent of the households incurred catastrophic expenditure in the third decile. A majority of households with catastrophic health spending are concentrated in the lower income deciles, indicating a higher burden of health spending for the poor households. As economic status improves, the catastrophic and impoverishment levels come down. Households in the fifth and sixth deciles experienced highest impoverishment. Most of the impoverished households are concentrated in the middle categories of health expenditure. In sum, both catastrophic expenditure and impoverishment levels due to health payments are the highest in the middle health expenditure decile categories.

### 9.3 INSURANCE

The purpose of this section is to understand the extent of coverage by health insurance along with some characteristics of the insurance plans. The

two major insurance schemes are mandatory and voluntary insurance. Mandatory health insurance would include any system or organization that covers a person's health costs on the condition that the person is formally registered or enrolled in the programme. The insurance voluntarily taken by an individual is known as voluntary insurance.

#### 9.3.1 INSURANCE COVERAGE

In the World Health Survey, information was collected on the coverage of both mandatory and voluntary insurance. The mandatory insurance scheme in India consists of coverage by Employee State Insurance Scheme (ESIS), Central Government Health Scheme (CGHS) and medical reimbursements by employers (both government and private). Voluntary insurance consists of coverage by other personal insurances such as Mediclaim etc. In India only two percent of the household population are reported to be covered by any insurance scheme and the rest are uninsured (figure 9.4).

Table 9.5 presents the insurance coverage levels

**Table 9.5 Health insurance coverage for the household population in states and India (pooled), 2003**

States	Percentage of population with			No. of persons with insurance coverage	Total HH population size
	Insurance coverage (Total)	Mandatory insurance coverage <sup>1</sup>	Voluntary insurance coverage <sup>2</sup>		
Assam	0.02	0.02	-	2	6157
Karnataka	0.2	0.2	0.01	50	7838
Maharashtra	2.3	1.6	0.7	146	10674
Rajasthan	4.7	4.6	0.1	562	11662
Uttar Pradesh	0.04	0.01	0.03	5	13138
West Bengal	6.0	4.6	1.4	473	8874
<b>India (pooled)</b>	<b>1.6</b>	<b>1.4</b>	<b>0.4</b>	<b>1238</b>	<b>58343</b>

Note:

- No case reported.

<sup>1</sup> Includes coverage of individuals under Employee State Insurance Scheme (ESIS) Central Government Health Scheme (CGHS) and medical reimbursements from employers.

<sup>2</sup> Personal health insurance schemes voluntarily taken such as Mediclaim etc.



Table 9.6 Health insurance coverage by residence and household income quintile in India (pooled), 2003

Characteristics	Percentage of population			No. of persons with insurance coverage	Total HH population size
	Insurance coverage (Total)	Mandatory insurance coverage	Voluntary insurance coverage		
<b>Residence</b>					
Urban	2.2	1.9	0.3	731	15108
Rural	0.7	0.6	0.1	507	43235
<b>Income quintiles</b>					
Q1	0.2	0.2	-	23	10308
Q2	0.4	0.3	0.1	72	11544
Q3	0.7	0.6	0.1	115	12092
Q4	1.4	1.3	0.1	355	12406
Q5	3.6	2.9	0.7	673	11993
<b>Total (pooled)</b>	<b>1.6</b>	<b>1.4</b>	<b>0.4</b>	<b>1238</b>	<b>58343</b>

Note: - No cases reported

among the states of India. The highest level of insurance coverage is in West Bengal (six percent) followed by Rajasthan (five percent) and Maharashtra (two percent). Voluntary insurance is only one percent in West Bengal and less than one percent in the other states.

Table 9.6 presents the insurance status of individual respondents by their selected background characteristics such as type of insurance, residence and economic status. In urban areas two percent of respondents are insured compared to negligible coverage (0.7 percent) in rural areas. Both voluntary and mandatory insurance coverage exists at a minimum scale, but mainly in urban areas.

All the individuals covered under insurance scheme are higher income quintile respondents; not surprising that insurance prevalence is nil in the lower income quintile households.

#### 9.4 HUMAN RESOURCES FOR HEALTH

Human resources for health are defined as “the stock of all individuals engaged in the promotion, protection or improvement of population health”.

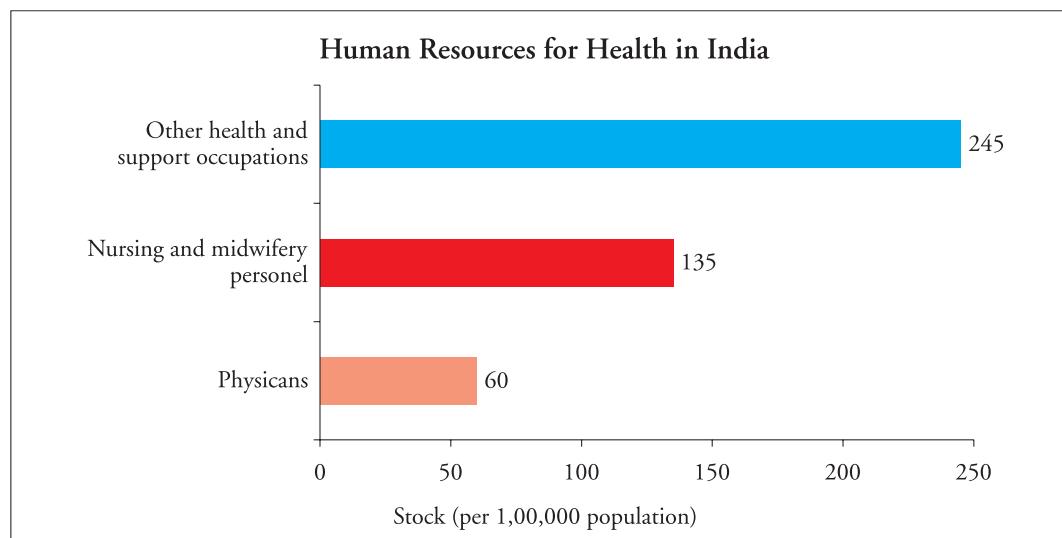
This includes private and public sectors as well as different domains of health system such as personnel, curative or preventive care, non-personal public health interventions, and disease prevention and health promotion services. Standard classifications of human resources are generally based on professional education and training characteristics (WHO, 2003a).

The number of health workers in a country is a key factor of its capacity to scale up delivery of intervention thereby achieving the national health goals. In the household questionnaire of World Health Survey, information was collected about the number of trained health professionals in India. In the household roster a question was asked for each individual if they were trained in a health related occupation. A series of questions were then asked directly to the person working in a health related occupation.

##### *Health professionals' characteristics*

Health professionals comprise three major categories of physicians, nursing and midwifery professionals and professionals involved in other health related and support occupations. The World Health Survey data indicates that there are 60

Figure 9.4 Availability of Health professionals<sup>1</sup> in India, 2003 (per 100,000 population)



Note:

<sup>1</sup> Information on health occupation were obtained from each adult household member who have ever worked in health related field

physicians, 135 nurses and midwives and 245 other health related support staff per 100,000 population in India (figure 9.5).

Of the total household population, less than one percent have ever worked in health related profession in India. Among the states, Maharashtra has the highest number of health professionals per 100,000 population. Physicians and nursing-midwifery personal are lowest in West Bengal and Uttar Pradesh. The number of health professionals is under-reported in Assam and West Bengal. In Uttar Pradesh, only 20 percent are working as either physicians or nursing staff, indicating a low prevalence of physicians.

In India, of the total health professionals, 56 percent are working in other health and support occupations. Thirty one percent are nursing and midwifery professionals and 14 percent are physicians. One fourth of the health professionals each are physicians and nursing and midwifery

professionals in Karnataka. Maharashtra follows Karnataka with 15 percent and 26 percent of health professionals working as physicians and nursing staff. A half of the remaining professionals are in other health and support occupations. In most states, except Uttar Pradesh, the proportion of health professionals working in other health and support occupations is also about 50 percent (table 9.8).

Table 9.9 indicates the availability of health professionals by their background characteristics such as age, sex, place of residence, economic status and educational status per 100,000 population in India.

Proportionately, the number of those working as physicians and in other health and support occupations is greater among males compared to females. As expected, females are dominating the nursing profession with 218 female nurses compared to 57 male nurses per 100,000 of male and female population respectively in India. Altogether, 492 males and 387 female

professionals are working in health and related field per 100,000 of the respective populations.

Health professionals in all categories are concentrated more in urban areas. The availability of physicians is twice higher in urban areas (252) compared to rural areas (95) per 100,000 respective rural and urban population.

Also the availability of nursing-midwifery personnel and professionals in health related field is about

twice higher per 100,000 population in urban areas compared to rural areas. All physicians are concentrated in higher income quintiles, as it is a higher income category. Nursing professionals are greater at the higher income quintile, whereas midwifery professionals show no systematic variation across income quintiles. Also, the number of health categories increases with household income quintiles per 100,000 population of the respective population.

**Table 9.7 Number of health<sup>1</sup> professional per 100,000 population in states and India, 2003**

States	Physicians	Nursing and midwifery personnel	Other health and support occupations <sup>2</sup>	Number of persons in health related occupation	Total household population size
Assam	-	81	81	162	6157
Karnataka	64	64	128	256	7838
Maharashtra	187	262	543	992	10674
Rajasthan	34	163	189	386	11662
Uttar Pradesh	38	23	251	312	13138
West Bengal	11	214	169	394	8874
<b>India (pooled)</b>	<b>60</b>	<b>135</b>	<b>245</b>	<b>440</b>	<b>58343</b>

Note:

<sup>1</sup> Information on health occupation were obtained from each adult household member who have ever worked in health related field.

<sup>2</sup> Other health and support occupations include pharmacist, optician, podiatrist, medical assistant, traditional medicine practitioner etc.

- No cases reported

**Table 9.8 Percent distribution of health professional by type of occupation<sup>1</sup> in states and India, 2003**

States	Physicians	Nursing and midwifery personnel	Other health and support occupations <sup>2</sup>	Total number of persons in health related occupation
Assam	-	50.0	50.0	10
Karnataka	25.0	25.0	50.0	20
Maharashtra	18.9	26.4	54.7	106
Rajasthan	8.9	42.2	48.9	45
Uttar Pradesh	12.2	7.3	80.5	41
West Bengal	2.9	54.3	42.9	35
<b>India (pooled)</b>	<b>13.6</b>	<b>30.7</b>	<b>55.6</b>	<b>257</b>

Note:

<sup>1</sup> Information on health occupation was obtained from each adult household member who have ever worked in health related field.

<sup>2</sup> Other health and support occupations include pharmacist, optician, podiatrist, medical assistant, traditional medicine practitioner etc.

- No cases reported

The highest concentration of doctors is in the younger ages of 18-34 (111 doctors per 100,000 of the populations of that age). The maximum number of nursing-midwifery personnel per 100,000 population are in the ages 18-34 but those other health and support professionals are more in the ages 55 and above. The number of health professionals in ages 55 and above is 416 per 100,000 population.

The percentage distribution of persons working in

health related professions are presented in table 9.10. In India, of the total population in the health profession, 14 percent are physicians, 31 percent are nurses and mid-wifery professionals and 56 percent are other in health and support staff. Seventeen percent of males and nine percent of females are physicians. The proportion of females is about four times higher (56 percent) in nursing and midwifery compared to males (12 percent). In other health and support occupations, the proportion of males is about twice higher (71

**Table 9.9 Number of health professional per 100,000 population by selected background characteristics in India (pooled), 2003**

Characteristics	Physicians	Nursing and midwifery personnel	Other health and support occupations <sup>2</sup>	Number of persons in health related occupation	Total household population size
<b>Sex</b>					
Male	84	57	351	492	29911
Female	35	218	134	387	28432
<b>Residence</b>					
Urban	126	252	391	769	15108
Rural	37	95	194	326	43235
<b>Household income quintiles</b>					
Q1	-	58	456	514	10308
Q2	-	69	78	147	11544
Q3	-	132	132	264	12092
Q4	48	153	258	459	12406
Q5	242	250	325	817	11993
<b>Age group in years<sup>2</sup></b>					
18-34	111	227	407	745	17193
35-54	82	206	371	659	12140
55+	89	223	416	728	6733
<b>Education status</b>					
Primary or less	-	66	150	216	46715
Secondary	-	397	431	828	8576
University	1147	459	1180	2786	3052
<b>Total (pooled)</b>	<b>60</b>	<b>135</b>	<b>245</b>	<b>440</b>	<b>58343</b>

Note:

<sup>1</sup> Other health and support occupations include pharmacist, optician, pediatrician, medical assistant, traditional medicine practitioner etc. The health professionals are calculated based on sex, residence, economic status, age and by educational status per 100,000 population of the respective category.

<sup>2</sup> Classification includes population in ages 18 and above

- No cases reported

percent) compared to females (35 percent).

As indicated earlier, physicians are concentrated in urban areas, whereas those in other health and support occupations are greater in rural areas. Similarly, physicians are concentrated in higher income quintiles, whereas nursing-midwifery and other health staff are concentrated in lower income quintiles. Fourteen percent of physicians, 31 percent nursing and midwifery professionals and 55 percent of other health and support professionals are in the ages 18-34. In ages 55 and above, 12 percent are physicians, 31 percent are nursing-midwifery personnel and 57 percent are

professionals in other health and support occupations.

The qualification of health professionals is a major component affecting the quality of the health services rendered. Among the health professionals with university level education, 41 percent are physicians, 17 percent are nursing and midwifery personnel and 42 percent are other health and support occupations. All professionals with secondary or less than secondary education are working as nursing-midwifery or other health and support occupations. All the physicians have university level education.

**Table 9.10 Percent distribution of health professionals by type of occupation<sup>1</sup> in India (pooled), 2003**

Characteristics	Physicians	Nursing and midwifery personnel	Other health and support occupations <sup>2</sup>	Total number of persons in health related field
<b>Sex</b>				
Male	17.0	11.6	71.4	147
Female	9.1	56.4	34.5	110
<b>Residence</b>				
Urban	16.4	32.8	50.9	116
Rural	11.3	29.1	59.6	141
<b>Household income quintiles</b>				
Q1	-	11.3	88.7	53
Q2	-	47.1	52.9	17
Q3	-	50.0	50.0	32
Q4	10.5	33.3	56.1	57
Q5	29.6	30.6	39.8	98
<b>Age group in years<sup>3</sup></b>				
18-34	14.8	30.5	54.7	128
35-54	12.5	31.3	56.3	80
55+	12.2	30.6	57.1	49
<b>Education status</b>				
Primary or less	-	30.7	69.3	101
Secondary	-	47.9	52.1	71
University	41.2	16.5	42.4	85
<b>Total (pooled)</b>	<b>13.6</b>	<b>30.7</b>	<b>55.6</b>	<b>257</b>

Note:

<sup>1</sup> Information on health occupation was obtained from each adult household member who have ever worked in a health related field.

<sup>2</sup> Other health and support occupations include pharmacist, optician, podiatrist, dietist, medical assistant, traditional medicine practitioner etc.

<sup>3</sup> Age group is calculated for ages 18 and above

- No cases reported

*Current work status of health professionals*

Table 9.11 presents the percent distribution of health professionals by their current work status, primary work location and their main work activity. Eighty eight percent of the physicians have worked in the last one year and the rest of did not work not because they could not find a job but for other reasons. About 71 percent of the nursing and the midwifery personnel have worked in the last one year and 27 percent did not work for other reasons. Among other health and support occupation professionals, 66 percent have worked in the last one year and 34 percent did not work for other reasons. Three percent of nursing and midwifery personnel and less than one percent of professionals in other health and

support occupations could not find a job in the last year.

The primary work location of the health professionals indicates that 21 percent of physicians, 55 percent of nursing and midwifery professionals and 25 percent of other health and support occupation professionals are working in private health services.

About 79 percent of physicians, 26 percent of professionals in other health and support occupations and 31 percent nursing and midwifery personnel are working in private institutions. The proportion of professionals engaged in non-health services is 20 percent among nursing and midwifery professionals and 44 percent among

**Table 9.11 Percent distribution of health professionals by their current work status<sup>1</sup> in India (pooled), 2003**

Characteristics	Physicians	Nursing and midwifery personnel	Other health and support occupations <sup>2</sup>	Total number of persons in health related field
<b>Work status</b>				
Worked in last 12 months	88.2	70.7	66.1	70.8
Could not find a job	-	2.8	0.4	1.0
Did not work for other reasons	11.8	26.6	33.5	28.2
<b>Primary work location</b>				
Public health facility	20.7	54.5	25.2	32.5
Private health facility	79.3	26.1	30.5	38.4
Other/non-health services	-	19.5	44.3	29.1
<b>Main work activity</b>				
Direct patient care	89.5	43.1	24.0	41.7
Health education/research	10.6	52.8	56.3	46.7
Other/non-health activities	-	4.1	19.8	11.7
<b>Total (pooled)</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Note:

<sup>1</sup> Information on health occupation was obtained from each adult household member who have ever worked in a health related field.

<sup>2</sup> Other health and support occupations include pharmacist, optician, podiatrist, medical assistant, traditional medicine practitioner, etc.

- No cases reported



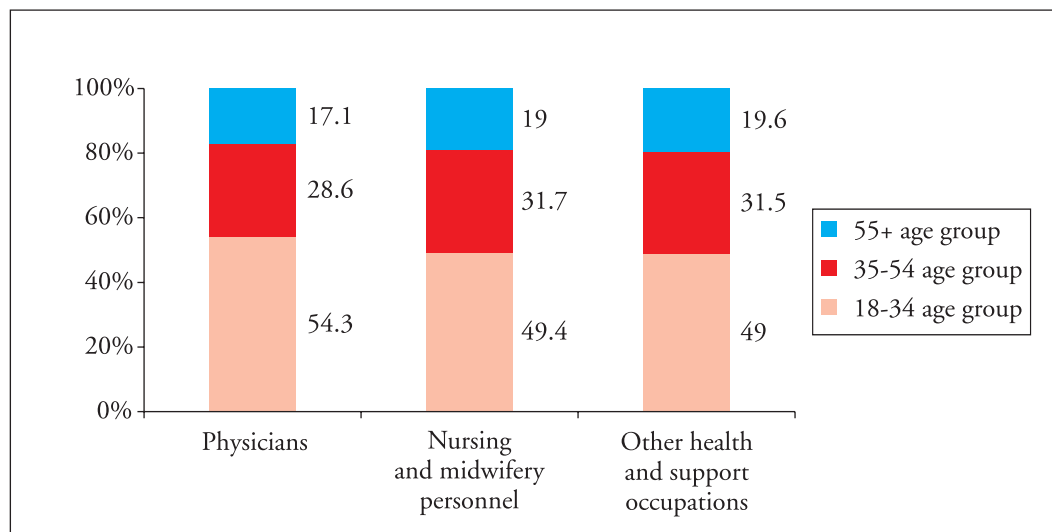
other health and support occupations. Overall, health professionals are concentrated more in the private sector.

The nature of work reflects that direct patient care is the major activity of the physicians (90 percent). About 43 percent of nursing/midwives and five percent of other health professionals are involved in direct patient care. Those who are engaged in health education/non-health activities are greater among other

health staff (56 percent). Twenty percent of professionals in health and support occupation and four percent of nursing professionals are involved in non-health activities.

Figure 9.6 shows that nearly half of the health professionals are concentrated in younger ages of 18-34 followed by ages 35-54. In the higher ages of 55 and above, this percentage ranges between 17-20 percent.

**Figure 9.5 Age distribution of health professionals in India (pooled), 2003**



## Major Issues for India

In India, in the last 50 years, life expectancy nearly doubled, infant mortality rate is halved and modest progress has been achieved in health goals. However, the main concerns are the plateauing health trends in infant mortality, maternal and child health and safe deliveries in the 1990s and slow down progress in achieving the desired health goals, large inter state variations and poor-rich inequalities. There is a lack of regular evidence base on health related information for effective health policy interventions. The WHO initiated an important step of World Health Survey to fill this gap.

Among the six states covered in World Health Survey, Karnataka, Maharashtra and West Bengal are in a relatively progressive stage of demographic and health transition. Overall, educational backwardness and gender gaps in educational attainment are major concerns in the states of Uttar Pradesh and Rajasthan.

Of the environmental risk factors, overall prevalence of tobacco use is 30 percent for India, which increases to about 44 percent for elderly population of 65 and above. One out of every 10 adult males consumed alcohol for more than two days in the previous week, which is higher in

urban areas and in lower income group. The proportion of respondents with insufficient intake of fruits and vegetables is 78 percent and inadequate physical activity is 29 percent in the country.

In West Bengal, nine out of 10 respondents have insufficient intake of fruits and vegetables and three have inadequate physical activity. Two females and one male respondent out of 10 of the respective sexes have a mean height lower than the standard height. Twenty two percent of men in Karnataka and 34 percent of women in Assam have a mean height lower than the standard height and in general, nutritional inadequacy is greater for the poor and women.

One in 10 urban households and three in 10 of rural households do not have access to safe drinking water in India. Seven in 10 households do not have any access to improved sanitation. Three in 10 urban households and seven in 10 rural households do not have access to improved sanitation in the country. Also, only three in 10 urban households and one in 10 rural households use cleaner fuel for cooking with majority of the rest using solid fuel, which is detrimental to health through indoor pollution.

Eight in 10 rural households and 4 urban households respectively have no access to cleaner sanitation and cooking fuel.

Cumulatively the environmental risk factors are a major concern to the overall burden of disease and health outcome gaps. Inequalities in risk factors disproportionately affect the poor, women, elderly and the rural population. Inequalities in household environmental risk factors are largely the outcome of household economic inequalities. It is important to address health inequities that arise from economic inequities

Overall, of the six states, Maharashtra is more advanced than other states in terms of living conditions, infant and child mortality and reduction in risk factors. Maharashtra also performs better in the terms of screening for cervical and breast cancer, antenatal and delivery care, cataract surgery and the percent treated for various diseases.

However, the reported disease burden is higher for Maharashtra with highest prevalence rates for most communicable and non-communicable diseases. This underscores that (as the Kerala experience suggest) population with better education and greater awareness about health issues tend to better appreciate and recognise their health problems in self-report. It also implicitly suggests that health services reach and coverage (Clinical definition) is higher in this states. In particular, self-reports indicate very higher prevalence of angina, diabetes, depression and cataracts (non-communicable diseases) in Maharashtra. However there are very significant inequalities in coverage (treatment) by income, poor and non-poor, education, gender and age. Health services needs to be reached to this group with very low coverage.

Although states differ in socio-economic condition and health transition, a greater proportion of respondents in West Bengal and Maharashtra reported difficulties in various domains of physical and mental health state indicating relatively poor valuation of their health, particularly poor mental health. Overall, males compared to females, urban compared to rural, younger compared to older and educated compared to uneducated population have reported better health state. The reported difficulty in health state shows a sharp rise with age of the respondents.

The prevalence of various forms of difficulties is higher among the female, elderly, poor, illiterate and the rural population. Consistently, all the health state domains clearly establish the perceived ill health of these populations. The pattern of these population health state inequalities is an important domain of evidence.

Six out of 10 respondents (either self or child) indicated a self-assessed need for health care in the last 12 months and two out of 10 respondents indicated a need for health care in the last five years, which increases for females and elderly population. The need for care has been mainly for chronic and other diseases (87 percent) and the remaining for preventive, maternity, child health, dental and injury.

About half of the respondents have a need each for in-patient and out-patient care in the last five years. Of those who needed in-patient care, four in five needed care for acute diseases (fever, diarrhoea, cough, injury, minor surgery, dental care etc), and among those who needed out-patient care seven in 10 needed care for acute diseases. Overall normalised responsiveness mean score of 70 on scale of maximum 100 indicates

that respondents experience and expectation of health system performance is good but not expected to perform that could be rated as excellent. Mean score is higher in urban areas for the educated and for private health facility. Responsiveness rating did not vary significantly between in-patient and out-patient care. Responsiveness rating of public health services is lower than private healthcare services.

The average health spending by a household in India is 117 rupees per month. Household health spending is lower than the national average in Karnataka (90 rupees) and Assam (105 rupees). Household expenditure on health is highest in Maharashtra (204 rupees). As a result, health expenditure on all the domains of health is also the highest in Maharashtra. Major household health spending is on drugs. About two in 10 households in India have catastrophic health spending. On an average those households with catastrophic health expenditure, spent 202 rupees for medical treatment with the highest in Maharashtra (267 rupees) followed by West Bengal (224 rupees). Overall, insurance coverage is very minimal at two percent, which suggests that serious policy intervention is required to develop it as an important source of health financing.

About 60 physicians, 135 nursing and midwives and 245 health related support staff per 100,000 population are available in India. The ratio of health personnel resources to population is highest in Maharashtra and the least in Uttar Pradesh. Nearly one in two physicians and other health support occupations are males and one in four in nursing and midwifery personnel is males. Most physicians (88 percent), nursing and midwifery personnel (71 percent), other health professional (66 percent) have worked in the last 12 months. Those who have not worked are not because of lack of employment but because of other reasons. Three fourth of the physicians (79 percent) work in private health facility and their main activity is direct patient care. Nursing and midwifery professionals are equally distributed between public and private health care sector. Thirty percent of the professionals in other health and support occupations are working in private health facilities and 25 percent in public health facility.

Based on this assessment of evidence bases on burden of disease, health financing and health system responsiveness, the country's health system performance can be rated as 'good' but than that below of a performance that can be rated as 'very good' or excellent.

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## References

- Bhat, Ramesh. 2000. "Health Care financing: Goals of Health Care System." Paper presented at the conference on Health Insurance during 18-19 March 2000, Indian Institute of Management, Ahmedabad.
- Bonita R, Decour Courten M, Dwyer T, Jamrozik K, Winkelmann R. 2001. "Surveillance of risk factors for non-communicable diseases." *The WHO STEPwise approach*, Geneva. [http://www.who.int/ncd\\_surveillance/ncds/stepsriskfactor/en/](http://www.who.int/ncd_surveillance/ncds/stepsriskfactor/en/)
- Castro-Leal, Florencia, Julia Dayton, Lionel Demery and Kalpana Mehra. 1999. "Public social spending in Africa: Do the Poor Benefit?" *The World Bank Research Observer* 14 (1) Pp.49-72.
- CMIE. 1997. *Profile of States*, Mumbai Centre for Monitoring Indian Economy.
- De Silva A. 2000. *A Framework for Measuring Responsiveness, Global Programme on Evidence for Health Policy (GPE)*, Discussion Paper-32, Geneva, World Health Organisation. [http://www3.who.int/whosis/discussion\\_paper/pdf/paper32.pdf](http://www3.who.int/whosis/discussion_paper/pdf/paper32.pdf).
- Department of Family Welfare. 1997. *Reproductive and Child health Programme: Schemes for Implementation*, Ministry of Health and Family Welfare, New Delhi.
- Department of Family Welfare. 1998. *Family Welfare Programme Year Book*, Ministry of Health and Family Welfare, New Delhi, Government of India.
- Department of Family Welfare. 1998. *Manual on Community Needs Assessment Approach in Family Welfare Programme*, New Delhi, Ministry of Health and Family Welfare, Government of India.
- Doanabedian A. 1980. *Explorations in Quality Assessment and Monitoring: The Definition of Quality and Approaches to its Assessment*, Ann Arbor: Michigan, Health Administration Press.
- Drummond, Michael, Bernie O' Brien, Greg Stoddart and George Torrance. 1997. *Methods for Economic Evaluation of Health Care Programmes*, Oxford Medical Publications, Second Edition, London.



- Duraisamy P. 1998. "Morbidity in Tamil Nadu: Levels, Differentials and Determinants," *Economic and Political Weekly*, Vol: XXXIII, No.17, Pp.982-90.
- Gertler, Paul and Jaques Van der Gaag. 1990. *The Willingness to Pay for Medical Care: Evidences from Two Developing Countries*, Johns Hopkins University Press, Baltimore.
- Government of India. 1983. "National Health Policy 1983," *Ministry of Health and Family Welfare*, New Delhi, Government of India.
- Government of India. 1996. *Constitution of India*, Ministry of Law, New Delhi.
- Government of India. 1998. *Annual Report 1997-98, Ministry of Health and Family Welfare*, New Delhi.
- Government of India. 2002. "National Health Policy-2002." *Ministry of Health and Family Welfare*, Government of India, New Delhi.
- Government of India. 2002a. "Health Information of India-2002," *Central Bureau of Health Intelligence*, Director General of Health Services, Nirman Bhavan, New Delhi.
- Gumber, Anil. 1997. "Burden of Disease and Cost of ill-health in India: Setting Priorities for Health Interventions During the Ninth Plan", *Margin*, 29 (2) 133:72
- Hogarth J. 1975. "Glossary of Health Care Terminology", Copenhagen, WHO/EURO
- Shengelra, Oadam, C. Muney, M. Thieren P. Berckmanr
- Hotchkiss D.R. and Gordillo A. 1999. "Household Health Expenditure in Morocco: Implications for Health Reform", *International Journal of Health Planning and Management*, 14 (3), Pp.201-217.
- International Institute for Population Sciences (IIPS) and ORC Macro. 1993. *National Family Health Survey, India report, 1992-93*, International Institute for Population Sciences, Mumbai, India.
- International Institute for Population Sciences (IIPS) and ORC Macro. 2000. *National Family Health Survey, India report, 1998-99*, International Institute for Population Sciences, Mumbai, India.
- International Institute for Population Sciences. 1998. *Rapid Household Survey Under RCH Project-Phase I, 1997-98*, International Institute for Population Sciences, Mumbai, India.
- International Institute for Population Sciences. 2002. *Rapid Household Survey Under RCH Project-Phase II, 2001-2002*, International Institute for Population Sciences, Mumbai, India.
- Lee J.W. 2003. "Child Survival: A Global Health Challenge." *Lancet*, Vol. 362, Pp. 262.
- Lever P. 1998. "Management by Targets: Is Coverage an Adequate Measure for Health Care?" *Health Policy*, 14(3): 356-359.

- Lok Sabha. 1985. "National Health Policy." Government of India Press, New Delhi.
- Meesook, Oey. 1984. "Financing and Equity in Social Sectors in Indonesia." *World Bank Staff working papers No.703*, World Bank, Washington D.C.
- Murray C.J.L., Kawabata K. and Valentine N.B. 2001. "Peoples Experiences Versus Peoples Expectations: Satisfaction Measures are Profoundly Influenced by Peoples Expectations, say these WHO Researchers" Health Affairs, World Health Organisation, Geneva.
- National Council of Applied Economic Research. 2000. "Who Benefits from Public Health Spending in India?" *National Council of Applied Economic Research*, October, New Delhi.
- National Sample Survey Organisation. 1998. *Morbidity and Treatment of Ailments*, Department of Statistics, Government of India, Report No: 441, New Delhi.
- Reddy, K.N. and Selvarajau V. 1994. *Health Care Expenditure by Government in India*, Seven Hills publications, New Delhi.
- Registrar General. 1991. *Economic Tables*, B-Series, Office of Census commissioner, New Delhi.
- Registrar General. 2001. *Provisional Population Totals*, New Delhi, Office of Census commissioner.
- Registrar General. 2005. *Sample Registration System-2003*, Office of the Registrar General, New Delhi.
- Registrar General. 2004. *Sample Registration System-2002*, Office of the Registrar General, New Delhi.
- Rutenberg N. and Sullivan J. 1991. "Direct and Indirect Estimates of Maternal Mortality from the Sisterhood Method." In Proceedings of the Demographic and Health Surveys World Conference, Washington D.C., 1991. Volume 3. Columbia, MD: IRD/Macro International Inc. 1669-1696.
- Sankar Deepa and Kathuria Vinish. 2004. "Health System Performance in rural India: Efficiency Estimates Across the States," *Economic and Political Weekly*, March 27, Pp.1427-1433.
- Sanyal, S.K. 1996. "Household Financing of Health Care," *Economic and Political Weekly*, 31(20): Pp.1216-1222.
- Selden, Thomas and Michael Wasylenko. 1992. "Benefit Incidence Analysis in Developing Countries," *Working Paper No.1015*, Country Economics Department, World Bank, Washington D.C.
- Selvarajau V. 2000. "Government Expenditure in Health Sector 1995-96," Draft Report, National Institute of Public Finance and Policy, New Delhi.
- Selvarajau V. 2003. "Health-Care Expenditure in Rural India," Working Paper series No.90, *National Council of Applied Economic Research*, New Delhi.

- Shariff A. 1995. "Health Transition in India," Working paper No.57, *National Council of Applied Economic Research*, New Delhi.
- Shengelra, O Adams, C. Murray, M. Thieren, P.Berckmans and Y. Kwahkam. 2003. "Measuring the Coverage of Critical Intervention Through Household Surveys", *Mimeo*, Geneva: WHO.
- Sundar, Ramamani. 1995. "Household Survey of Health care Utilisation and Expenditure" Working Paper No.53, *National Council of Applied Economic Research*, New Delhi.
- United Nations. 2003. *Human Development Report-2003*, United Nations, New York.
- Valentine N.B., De Silva A. and Kawabata K. et al. 2003. "Health System Responsiveness: Concepts, Domains, and Operationalisation," In Murray C.J.L., Evans D.B. (eds.) *Health System Performance Assessment: Debates, Methods and Empiricism*, World Health Organisation, Geneva. <http://whqlibdoc.who.int/publications/2003/9241562455.pdf>.
- Valentine N.B., Ortiz J.P. and Tandon A. et al. 2003. "Patients Experiences with Health Services: Population Surveys from 16 OECD countries," In Murray C.J.L., Evans D.B. (eds.) *Health System Performance Assessment: Debates, Methods and Empiricism*, World Health Organisation, Geneva. <http://whqlibdoc.who.int/publications/2003/9241562455.pdf>
- van de Walle and Dominique. 1992. "The Distribution of the Benefits from Social Services in Indonesia 1978-87," *Policy Research Working Paper No.871*, Country Economics Department, World Bank, Washington D.C.
- Visaria, Pravin and Anil Gumber. 1994. "Utilization of Primary Health Care in Western India," *Working Paper No.25*, Gujarat Institute of Development Studies, Ahmedabad.
- Visaria, Pravin, Anil Gumber and Paul Jacob. 1996. "Morbidity, Health Care Utilization and Expenditure Pattern in Andhra Pradesh, Kerala, Madhya Pradesh and Punjab 1986-87," Gujarat Institute of Development Studies, Ahmedabad.
- Vogel R.J. 1998. "Cost Recovery in the Health Care Sector: Selected Country Studies in West Africa," *World Bank Technical paper No.82*, World Bank, Washington D.C.
- WHO, UNICEF, Water Supply and Sanitation Collaborative Council. 2000. "Global water supply and sanitation assessment 2000." <http://www.who.int/watersanitationhealth/monitoring/globalassess/en>.
- World Bank. 1993. *World Development Report 1993*. Oxford University Press, New York.
- World Bank. 1995. *India: Policy and Finance Strategies for Strengthening Primary Health Care Services*,

- Population and Human Resources Division, South Asia Country Department II, Washington D.C.
- World Bank. 1997. *Health, Nutrition and Population*. Human Development Network, Washington D.C.
- World Health Organisation. 2002a. "Addressing the Linkage Between Indoor Air Pollution, Household Energy and Human Health." *WHO USAID global consultation on the Health impact of Indoor air pollution and household energy in developing countries*. <http://www.who.int/mediacentre/events/HSDplaq10.pdf>.
- World Health Organisation. 2002a. *Addressing the Impact of Household Energy and Indoor Air Pollution on the Health of the Poor: Implications for Policy Action and Intervention Measures*. Paper prepared for the Commission on Macro economics and health. <http://www.who.int/mediacentre/events/H&SDplaqno9.pdf>.
- World Health Organization Manual. 2003a. *World Health Survey-Data Analysis and Report Writing Guideline*. World Health Organization, Geneva.
- World Health Organization. 1947. *Constitution of the World Health organization*. *WHO Chronicle* (1), Geneva.
- World Health Organization. 2000. *World Health Report-2000*. Geneva.
- World Health Organization. 2002. *World Health Report: Health Systems-Improving performance*. Geneva. <http://www.who.int/whr2000/2001/archives/2000/en/index.htm>.
- World Health Organization. 2003. *World Health Report-Shaping the Future*. Geneva.
- World Health Organization. 2004. "Cervical cancer prevention: Screening still the only Option," *Progress in reproductive health research*, No.65, Geneva.
- World Health Report. 1998. *Life in the 21<sup>st</sup> Century: A Vision for all*. World Health Organization, Geneva.
- World Health Report. 2002. *Reducing Risks, Promoting Healthy Life*. World Health Organization, Geneva.

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## Glossary

**Alcohol products:** A broad range of types of beverages containing alcohol (ethanol), including wine (10 to 14 percent alcohol), distilled spirits (greater than 20 percent alcohol), ciders, pulque, schochu and other local beverages.

**Angina:** It is also known as angina pectoris or ischaemic disease. It is characterised by a temporary pain in the chest that radiate to other parts of the upper body, mainly to the left arm. Some persons with angina may experience increasingly severe episodes that can lead to a heart attack and it can be controlled by life style changes, using medicines or drugs.

**Arthritis:** It is a chronic inflammatory disease, which affects joints and impairs their functioning. The joints show swelling, redness, raised temperature and pain are the signs of inflammation and arthritis took different forms.

**Asthma:** Asthma (allergic respiratory disease) is a condition that affects the airways (bronchi/bronchioles)-the tubes that carry air in and out of the lungs. The airways of the lungs become either narrowed or completely blocked, impeding normal breathing. The obstruction of the lungs is reversible, either spontaneously or with medication.

**Cataract:** It is a condition in which the lenses of the eyes become cloudy and opaque, causing partial or total blindness. If the cataracts become too thick, the eye lenses can usually be removed with laser surgery and replaced with clear, plastic lenses.

**Catastrophic health expenditure:** Catastrophic health expenditure occurs when a household's total out-of-pocket health payments equal or exceed 40 percent of household's capacity to pay on non-subsistence spending.

**Communicable diseases:** communicable diseases are those diseases spread only through air or water.

**Depression:** It is a condition of mood disorder or anxiety. Although depression is common, it is often undetected because it may be attributed to a person's physical, social or economic difficulties. If left untreated, it can lead to a poor quality of life and even suicide.

**Disability adjusted life years (DALYs):** It is a composite summary measure, which combines years lost through premature death and the years lost through disability for incident cases of the health condition. One DALY can be thought of as one lost year of healthy life and the burden of disease as a measurement of the gap between the current health of the population and an ideal situation in which every one in the population lives into old age in full health.

**Diabetes:** It is a chronic condition whereby a person's pancreas has problems in producing insulin. Insulin is necessary to turn the sugars and starches that people eat into glucose, to help regulate the body's blood sugar levels. People with diabetes eventually develop a high blood sugar level, which can lead to blood vessel abnormalities that can cause damage to the kidneys, nerves and heart.

**Drinking water piped to household:** Provision of piped water to households represents a high technology, which usually includes treatment to make the water safe and quality monitoring, where minimal or no disease transmission occurs through drinking water.

**Flush toilet to sewage system:** Access to a flush toilet that is connected to a public sewage system represents a high technology, where sanitation does not take place onsite but municipally. This technology minimizes the possibility of contact between the facility's user and human excreta.

**Food expenditure:** Household food expenditure is the amount spent on all foodstuffs by the household plus the value of family's own food production consumed within the household. However, it excludes expenditure on alcoholic beverages, tobacco and food consumption outside the home.

**Geographic Information (GI):** Information that contains a reference to its location on the earth surface.

**Geographic Information System (GIS):** GIS is a computer package for capturing, storing, checking, integrating, manipulating, analyzing and displaying data related to positions on the Earth's surface (hyper dictionary).

**Global Positioning System (GPS):** GPS is a satellite-based system allowing to precisely identifying locations on the earth's surface. This system offers highly precise location data for any point on the planet, in any weather conditions, 24 hours a day. It is mainly used for navigation, positioning and other research applications.

**Household capacity to pay:** The household capacity to pay is defined as a household non-subsistence spending.



**Household consumption spending:** Household consumption expenditure comprises both monetary and in-kind payment on all goods and services, and the money value of the consumption of homemade products.

**Human Resources for Health [HRH]:** Stock of all individuals engaged in the promotion, protection or improvement of population health.

**Impoverishment:** A non-poor household is impoverished by health payment when it becomes poor after paying for health services.

**Improved drinking water:** Refers to those sources that are likely to provide safe drinking water and sufficient quantities of drinking water.

**Improved sanitation:** Refers to those facilities that are likely to provide adequate sanitation. Facilities are considered adequate if they are private and not shared between multiple households and if they hygienically separate human excreta from human contact.

**Improved stove:** Reduces emissions from solid fuel burning by venting the smoke to the exterior of the home through a chimney, hood or flue. In a vented and closed improved stove the combustion process is contained within a compartment and thereby results in more complete combustion and often higher fuel efficiency. Many of the “improved stoves” currently in use are fuel-efficient but do not reduce emissions.

**Income quintile:** Household income quintiles used in this analysis reflect relative inequalities in income within each state. In this report, the income quintile is based on households possession of 20 permanent income (assets). Quintile is a statistical division of sample households based on income (assets) distribution of the total sample into five equal parts. The variable takes on the values 1-5 with 1 being the quintile with the poorest households and 5 being the quintile with the richest households. The analysis comparing the bottom quintile to the top quintile within each data set will be reflecting those in relative poverty.

**In-patient fees:** It is the expenditure incurred by the patient for the treatment while staying in the hospital. It includes consultation fees, payment made for the medicines, transport charges and the payments made to stay in the hospital charges.

**Items non-response:** It occurs when a respondent fail to respond to one or more relevant item (s) in the survey.

**Kerosene:** Hydrocarbon oil that is used as fuel for lighting, cooking and heating in many parts of the world. In terms of indoor air pollution levels, kerosene is intermediate between solid and gaseous fuels.

**Kish Tables:** The respondent for the survey is selected among all eligible members of the household. The Kish table provide a method by which each eligible person as has an equal probability of the selection in to the survey sample.

**Moderate intensity physical activity:** Refers to activities, which take moderate physical effort and that make you breathe somewhat harder than normal. Examples include carrying light loads, bicycling at a regular pace, or double tennis. Walking is not included in the question assessing moderate activity because another item assesses all types of walking separately. Moderate intensity activities require an energy expenditure of 3-6 METs.

**Need and coverage:** Need refers to the percent of population diagnosed with a morbidity and coverage refers to percent of population treated for the morbidity.

**Non-communicable diseases:** Non-communicable diseases are those diseases spread because of changing life style.

**Out-of-pocket health payments:** Out-of-pocket health payments refer to the payments made by households at the point they receive health services. Typically these include doctor's consultation fees, purchases of medication and hospital bill. Although spending on alternative and/or traditional medicine is included in out of pocket payments, expenditure on health-related transportation and special nutrition are excluded. It is also important to note that out-of-pocket payments are net of any insurance reimbursement.

**Out-patient fees:** It is those fees incurred by the patient at the time of consultation with the doctor. It includes consultation fees, payment made for the medicines, transport charges.

**Physical activity:** Refers to activities undertaken at work, around the home and garden, to get to and from places (i.e. for transport) and for recreation, fitness exercise or sport.

**Pi-star:** It is a minima type of summary measure for measuring goodness of fit assuming some model. In WHO report it relates to standard deviation index and completes our inference gained by the *Pearson chi-square test* testing statistically the discrepancy between the population and sample figures.

**Psychosis:** It is a mental health problem occurring as a behavioural change.

**Sample Deviation Index (SDI):** It shows the representativeness of the sample (in terms of certain main characteristics e.g. sex, age, education).

**Subsistence spending and poverty line:** The household subsistence spending is the minimum

requirement to maintain basic life in a society. The poverty line is used in the analysis as subsistence spending. The poverty line was set at the household food expenditure whose food share of total household spending is at the median of the country. According to this poverty line, 26 percent of households were classified as poor.

**Solid fuels:** Include wood, agriculture residues, animal dung, charcoal. Coal and their use for cooking and heating can result in high level of health damaging indoor air pollution. In contrast, the use of nonsolid, cleaner fuels (gas, liquid, electricity) is associated with low levels or no indoor pollution.

**Total potential Human Resources Health Population:** Total number of human resources for health (HRH) related individuals identified in the household roster. It includes persons trained or working in a health related occupation.

**Vignettes:** Vignettes are hypothetical stories about peoples' health condition and their experience with health care system. In vignettes, the respondents are asked to rate the condition and experience of the person in the story as if it was respondents' own experience.

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**HEALTH SYSTEM PERFORMANCE ASSESSMENT**