CHAPTER 6

MORTALITY, MORBIDITY, AND IMMUNIZATION

This chapter presents infant and child mortality rates and crude death rates, and data on the prevalence of certain diseases (morbidity). It also presents information on the prevention and treatment of diseases, especially those that are life-threatening to young children. The chapter ends with data on women's knowledge of AIDS. This type of information is relevant both to an assessment of the demographic situation in Madhya Pradesh and to the design of appropriate health policies and programmes. Mortality estimates are also useful for projecting the future size of the population. Detailed information on mortality and morbidity (by demographic and socioeconomic characteristics) can be used to identify population groups that are at high risk and in need of health services. This chapter primarily presents information on child health, while other chapters of this report, particularly Chapter 8, present information on maternal and reproductive health.

The Government of India has repeatedly taken steps to strengthen maternal and child health services in India, starting during the First and Second Five-Year Plans (1951–56 and 1956–61) under the Ministry of Health, and continuing with the Minimum Needs Programme initiated during the Fifth Five-Year Plan (1974–79). More recently, efforts to improve maternal and child health have been enhanced by activities of the Family Welfare Programme and by the introduction of the Child Survival and Safe Motherhood Programme (Ministry of Health and Family Welfare, 1992). The Ministry of Health and Family Welfare has also sponsored special projects under the Maternal and Child Health Programme, including the Oral Rehydration Therapy (ORT) programme, the establishment of Regional Institutes of Maternal and Child Health in states where infant mortality rates are high, the Universal Immunization Programme, and the Maternal and Child Health Supplemental Programme within the Postpartum Programme (Ministry of Health and Family Welfare, 1992). These programmes are now integrated into the Reproductive and Child Health Programme launched in 1996.

Maternal and child health services in rural areas of India are delivered mainly by government-run Primary Health Centres and sub-centres. In urban areas, such services are available mainly through government or municipal hospitals, urban health posts, hospitals and nursing homes operated by nongovernmental organizations (NGOs), and private nursing homes and maternity homes.

The second National Family Health Survey (NFHS-2) includes questions on mortality and morbidity in both the Household Questionnaire and the Woman's Questionnaire. The Household Questionnaire has questions on individuals in the household suffering from asthma, tuberculosis, jaundice, and malaria, plus questions on deaths occurring to usual residents of the household during the two years preceding the survey. The Woman's Questionnaire collects information on the survival status of all births and the age at death of children who died. The Woman's Questionnaire also contains questions on child immunization coverage and sources; vitamin A supplementation for children; prevalence of acute respiratory infections, fever, and diarrhoea among children and the treatment of these illnesses; and mothers' knowledge of oral rehydration therapy.

The information on child health and health-care practices was collected from mothers for children born since 1 January 1995. If a woman had more than two live births during the three years preceding the survey, the information was collected for only the two most recent births. The information on child health presented in this chapter pertains to children born during the three years preceding the survey.

6.1 Crude Death Rates and Age-Specific Death Rates

Table 6.1 shows crude death rates (CDR) and age-specific death rates by sex and age for the usual resident (*de jure*) population of Madhya Pradesh from NFHS-2 and the Sample Registration System (SRS). The table also presents crude death rates and age-specific death rates from NFHS-1 for the total population (both sexes combined). The SRS death rates are based on deaths to the usual resident population in 1997. The NFHS-1 and NFHS-2 death rates are based on the average annual number of deaths occurring to usual residents of the household during the two-year period preceding the survey (approximately 1990–91 for NFHS-1 and 1997–98 for NFHS-2). The denominators for the NFHS-2 death rates are obtained by projecting the number of usual residents at the time of the survey backwards to the mid-point of the time period in question on the basis of the intercensal population growth rate in the state. The intercensal growth rate is assumed to be the same for all age and sex groups. Similarly, the rural intercensal growth rate is applied to all rural age and sex groups and the urban intercensal growth rate is applied to all urban age and sex groups.

Questions on the number of deaths occurring to usual residents in each household during a particular time period have been included in demographic surveys in many countries and have often resulted in a substantial underreporting of deaths. The Sample Registration System (SRS), maintained by the Office of the Registrar General of India, provides a useful comparison. The most recent report on mortality estimates by age for Madhya Pradesh is for 1997 (Office of the Registrar General, 1999a).

Table 6.1 shows an estimated average annual CDR for Madhya Pradesh of 10.2 deaths per 1,000 population based on NFHS-2 data (covering roughly 1997–98) compared with 11.0 from the 1997 SRS. Thus, the CDR estimated from NFHS-2 is very similar to the corresponding SRS estimate. NFHS-2 estimates of the CDR are also similar to SRS estimates in both urban and rural areas. There is, however, greater divergence in the age-specific death rates from NFHS-2 and SRS, particularly for the youngest (age <5) and oldest (age 50 and above) age groups.

The NFHS-2 CDR estimate of 10.2 is virtually unchanged from the corresponding NFHS-1 estimate of 10.3 (covering roughly 1990–91). Age-specific death rates for each of the broad age groups 15–49 and below are almost identical in NFHS-1 and NFHS-2, but death rates for age 50–59 increased between the two surveys and those for the oldest age group decreased. This comparison suggests a slight reduction in the age at death since 1990–91, if the completeness of reporting of deaths is the same in the two surveys.

In most countries, male death rates are higher than female death rates at nearly all ages. South Asia generally has been an exception in this respect, with higher death rates for females over much of the age span (Tabutin and Willems, 1995; Preston, 1989; Ghosh, 1987). However, in Madhya Pradesh, substantial sex differences in death rates are evident only for the age groups

Table 6.1 Age-specific death rates and crude death rates

Age-specific death rates and crude death rates (CDR) by sex from NFHS-1, NFHS-2, and the SRS, Madhya Pradesh

	NFHS-1 (1990–91)	NFHS-2 (1997–98)			SRS (1997)		
Age	Total	Male	Female	Total	Male	Female	Total
< 5	27.3	27.3	26.7	27.0	32.6	31.9	32.3
5–14	2.0	2.1	2.1	2.1	2.1	2.7	2.4
15–49	2.9	3.5	4.0	3.7	3.7	3.9	3.8
50–59	8.1	17.1	11.3	14.2	19.4	14.9	17.1
60+	54.3	41.6	52.0	46.6	59.2	51.1	53.9
CDR	10.3	10.0	10.5	10.2	11.2	10.9	11.0

Note: Age-specific death rates and crude death rates (CDR) from NFHS-1 and NFHS-2 are based on the annual number of deaths reported for the *de jure* population during the two years preceding the survey. The SRS rates are also *de jure,* based on deaths during 1997. Rates are specified on a per-thousand basis.
Source for SRS: Office of the Registrar General, 1999b

50–59 and 60 and above. According to NFHS-2, the male death rate is higher than the female death rate for the age group 50–59, but is lower for the age group 60 and above. The SRS, by contrast, reports higher male than female death rates for both of these age groups.

6.2 Infant and Child Mortality

Infant and child mortality rates reflect a country's level of socioeconomic development and quality of life and are used for monitoring and evaluating population and health programmes and policies. NFHS-2 asked all ever-married women age 15–49 to provide a complete history of their births including, for each live birth, the sex, month, and year of birth, survival status, and age at the time of the survey or age at death. Age at death was recorded in days for children dying in the first month of life, in months for other children dying before their second birthday, and in years for children dying at later ages. This information was used to calculate the following direct estimates of infant and child mortality[1]:

Neonatal mortality: The probability of dying in the first month of life
Postneonatal mortality: The probability of dying after the first month of life but before the first birthday
Infant mortality ($_1q_0$): The probability of dying before the first birthday
Child mortality ($_4q_1$): The probability of dying between the first and fifth birthdays
Under-five mortality ($_5q_0$): The probability of dying before the fifth birthday

[1]A detailed description of the method for calculating the probabilities presented here is given in Rutstein (1984). The mortality estimates are not rates, but are true probabilities, calculated according to the conventional life-table approach. Deaths and exposure in any calendar period are first tabulated for the age intervals 0, 1–2, 3–5, 6–11, 12–23, 24–35, 36–47, and 48–59 months. Then age-interval-specific probabilities of survival are calculated. Finally, probabilities of mortality for larger age segments are produced by multiplying the relevant age-interval survival probabilities together and subtracting the product from one:

$$ {}_nq_x = 1 - \prod_i (1 - q_i) $$

Assessment of Data Quality

The reliability of mortality estimates calculated from retrospective birth histories depends upon the completeness with which deaths of children are reported and the extent to which birth dates and ages at death are accurately reported and recorded. Estimated rates of infant and child mortality are subject to both sampling and nonsampling errors. While sampling errors for various mortality estimates are provided in Appendix A, this section describes the results of various checks for nonsampling errors—in particular, underreporting of deaths in early childhood (which would result in an underestimate of mortality) and misreporting of the date of birth or age at death (which could distort the age pattern of under-five mortality). Both problems are likely to be more pronounced for children born further in the past than for children born recently. Underreporting of infant deaths is usually most serious for deaths that occur very early in infancy. If deaths in the early neonatal period are selectively underreported, there will be an abnormally low ratio of deaths under seven days to all neonatal deaths and an abnormally low ratio of neonatal to infant deaths. Changes in these ratios over time can be examined to test the hypothesis that underreporting of early infant deaths is more common for births that occurred further in the past than for births that occurred more recently. Failure to report deaths will result in mortality figures that are too low and if underreporting is more severe for children born longer ago than children born recently, any decline in mortality will tend to be understated.

Results from Table B.5 (Appendix B) suggest that early neonatal deaths have not been seriously underreported in Madhya Pradesh in NFHS-2, since the ratios of deaths under seven days to all neonatal deaths are consistently high (between 66 and 72 percent) for the different time periods preceding the survey (a ratio of less than 25 percent is often used as a guideline to indicate underreporting of early neonatal deaths). The ratios of infant deaths that occurred during the neonatal period (Appendix Table B.6) are also consistently high (between 63 and 67 percent) for the different time periods preceding the survey.

Another problem inherent in most retrospective surveys is heaping of age at death on certain digits, e.g., 6, 12, and 18 months. If the net result of age misreporting is the transference of deaths between age segments for which the rates are calculated, misreporting of the age at death will bias estimates of the age pattern of mortality. For instance, an overestimate of child mortality relative to infant mortality may result if children dying during the first year of life are reported as having died at age one year or older. Thus, heaping at 12 months can bias the mortality estimates because a certain fraction of these deaths may have actually occurred during infancy (i.e., at ages 0–11 months). In such cases, heaping would bias infant mortality ($_1q_0$) downward and child mortality ($_4q_1$) upward.

In NFHS-2 in Madhya Pradesh, there appears to be some preference for reporting age at death at 3, 5, 6, 8, 10, 12, 15, and 18 days (Table B.5 in Appendix B). An examination of the distribution of deaths under age two years during the 15 years preceding the survey by month of death (Appendix Table B.6) indicates some heaping of deaths at 6, 10, 12, and 18 months of age. The amount of heaping on 12 months is substantial, despite the strong emphasis on this problem during the training of interviewers for the NFHS–2 fieldwork[2]. Nevertheless, even if one-third of the deaths reported at age 12 months actually occurred at less than 12 months of age, the infant

[2]Interviewers were trained to probe for the exact number of months lived by the child if the age at death was reported as 'one year'.

mortality rate for the five years before the survey would be underestimated by less than 3 percent.

An examination of the distribution of births and deaths since 1988 (Table B.4 in Appendix B) suggests that there may be some underreporting of deaths in the most recent five-year period. The proportion of deaths to births decreases from 16 percent in 1988 to 6 percent in 1998. Some of this decrease undoubtedly reflects a real reduction in mortality during that period and some reflects the fact that younger children have had less exposure to the risk of mortality. However, the sharp disjuncture in the proportion of deaths between 1994 and 1995 evident in the table, is probably due, at least in part, to underreporting of deaths relative to births during the most recent period.

It is seldom possible to establish mortality levels with confidence for a period of more than 15 years before a survey. Even within the recent 15-year period considered here, apparent trends in mortality rates should be interpreted with caution for several reasons. First, there may be differences in the completeness of death reporting related to the length of time before the survey. Second, the accuracy of reports of age at death and of date of birth may deteriorate with time. Third, sampling variability of mortality rates tends to be high, especially for groups with relatively few births. Fourth, mortality rates are truncated as they go back in time because women currently age 50 or above who were bearing children during earlier periods were not included in the survey. This truncation affects mortality trends, in particular. For example, for the period 10–14 years before the survey, the rates do not include any births for women age 40–49 at that time since these women were over age 50 at the time of the NFHS-2 survey and were not eligible to be interviewed. Since these excluded births to older women were likely to be at a somewhat greater risk of dying than births to younger women, the mortality rates for the period may be slightly underestimated. Estimates for more recent periods are less affected by truncation bias since fewer older women are excluded. The extent of this bias depends on the proportion of births omitted. Table 4.18 (Chapter 4) shows that only 4 percent of the children born in the three years before the survey were born to women age 35 and above. Given the small proportion of births excluded, selection bias for infant and child mortality statistics as far back as 15 years before the survey should be negligible.

Levels, Trends, and Differentials in Infant and Child Mortality

Table 6.2 and Figure 6.1 present various measures of infant and child mortality by residence for the three five-year periods preceding the survey. Infant mortality in Madhya Pradesh declined from 118 deaths per 1,000 live births during 1984–88 (10–14 years before the survey) to 86 deaths per 1,000 live births during 1994–98 (0–4 years before the survey), an average rate of decline of over 3 infant deaths per 1,000 live births per year. All other measures of infant and child mortality presented in Table 6.2 have also declined during the past 15 years. A comparison with the corresponding mortality rates derived from NFHS-1, however, suggests no significant change over the six and one-half years between the two surveys. For example, the infant mortality rate of 86 for the period 0–4 years before NFHS-2 is almost unchanged from the infant mortality rate of 85, 0–4 years before NFHS-1. The under-five mortality rate of 138 for the period 0–4 years before NFHS-2, is somewhat higher than the under-five mortality rate of 130 for the period 0–4 years before NFHS-1, but this apparent increase is not statistically significant.

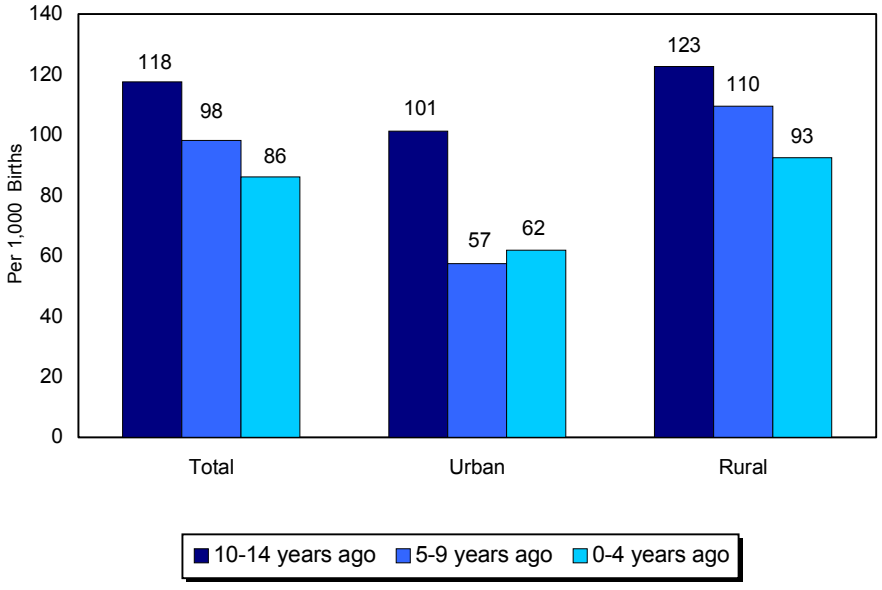
Table 6.2 Infant and child mortality

Neonatal, postneonatal, infant, child, and under-five mortality rates for five-year periods preceding the survey by residence, Madhya Pradesh, 1998–99

Years preceding the survey	Neonatal mortality (NN)	Postneonatal mortality[1] (PNN)	Infant mortality ($_1q_0$)	Child mortality ($_4q_1$)	Under-five mortality ($_5q_0$)
URBAN					
0–4	44.0	17.9	61.9	22.4	82.9
5–9	40.0	17.4	57.4	30.3	86.0
10–14	71.4	29.9	101.3	34.4	132.3
RURAL					
0–4	57.8	34.7	92.5	65.8	152.2
5–9	70.8	38.7	109.5	67.5	169.6
10–14	74.9	47.8	122.6	77.3	190.4
TOTAL					
0–4	54.9	31.2	86.1	56.4	137.6
5–9	64.1	34.1	98.2	58.8	151.3
10–14	74.1	43.5	117.5	66.5	176.2

Note: The first five-year period preceding the survey does not include the month in which the interview took place. Rates are specified on a per-thousand basis. See text for definition of rates.
[1]Computed as the difference between the infant and neonatal mortality rates

Figure 6.1
Infant Mortality Rates for Five-Year Periods by Residence



Note: Rates are for five-year periods preceding the survey

NFHS-2, Madhya Pradesh, 1998–99

Overall, however, it is clear that infant and child mortality in Madhya Pradesh remains very high. In fact, Madhya Pradesh has the highest neonatal, child, and under-five mortality rates of any state in India and even the infant mortality and postneonatal mortality rates are among the highest in the country. With 1 in every 12 children born during the five years before NFHS-2 dying within the first year of life, and 1 in every 7 children dying before reaching age five, it is clear that child survival programmes in Madhya Pradesh need to be intensified in order to achieve further reductions in infant and child mortality.

The NFHS-2 rural mortality rates are considerably higher than the urban mortality rates. Postneonatal mortality is almost twice as high in rural areas as in urban areas, and child mortality is almost three times as high in rural areas as in urban areas. Neonatal mortality is 31 percent higher in rural areas, infant mortality is 49 percent higher, and the under-five mortality rate is 84 percent higher in rural areas than in urban areas.

All infant and child mortality rates declined in both urban and rural areas of Madhya Pradesh during the 15 years preceding NFHS-2, with rates declining more steadily in rural than in urban areas. Infant mortality in rural areas declined by 25 percent, from 123 deaths per 1,000 live births during 1984–88 to 93 deaths per 1,000 live births during 1994–98. Neonatal mortality declined by 23 percent and postneonatal mortality declined by 27 percent in rural areas over the same period. In urban areas, infant mortality declined from 101 deaths per 1,000 live births during 1984–88 to 57 deaths per 1,000 live births during 1989–93 and then rose slightly to 62 deaths per 1,000 live births during 1994–98. Neonatal and postneonatal mortality in urban areas have a similar pattern of decline as infant mortality, with overall declines of 38 percent and 40 percent from 1984–88 to 1994–98, respectively. Child mortality and under-five mortality declined more steadily in urban areas and both rates are more than one-third lower in 1994–98 than in 1984–88.

The estimated NFHS-2 infant mortality rate of 86 deaths per 1,000 live births during 1994–98 is somewhat lower than the SRS value of 97 deaths per 1,000 live births averaged for the period 1994–98. The NFHS-2 estimate of the infant mortality rate for rural areas is also lower than the average rural SRS estimate for the same period (93 deaths per 1,000 live births from NFHS-2 compared with 102 deaths per 1,000 live births from the SRS), but the NFHS-2 urban estimate (62 deaths per 1,000 live births) is very similar to the corresponding average urban SRS estimate (59 deaths per 1,000 live births). A target couple survey conducted in Madhya Pradesh in 1996 also estimates the infant mortality rate around 1995, at 86 per 1,000 live births (Chaurasia,1997). The target couple survey estimate for the under-five mortality rate at 126 per 1,000 live births is, however, lower than the corresponding NFHS-2 estimate of 138 per 1,000 live births.

Socioeconomic Differentials in Infant and Child Mortality

The probability of dying in early childhood is higher in some population subgroups than in others. Table 6.3 presents differentials in infant and child mortality rates for the ten-year period preceding the survey. The infant mortality rate in rural areas, at 102 infant deaths per 1,000 live births, is nearly two times higher than the rate in urban areas, at 60 infant deaths per 1,000 live births. Children in rural areas of Madhya Pradesh experience a 91 percent higher probability of dying before their fifth birthday than urban children, which is slightly higher than the 84 percent differential in the most recent five-year period shown in Table 6.2. This comparison corroborates

Table 6.3 Infant and child mortality by background characteristics

Neonatal, postneonatal, infant, child, and under-five mortality rates for the 10-year period preceding the survey by selected background characteristics, Madhya Pradesh, 1998–99

Background characteristic	Neonatal mortality (NN)	Postneonatal mortality[1] (PNN)	Infant mortality ($_1q_0$)	Child mortality ($_4q_1$)	Under-five mortality ($_5q_0$)
Residence					
Urban	41.9	17.6	59.5	26.5	84.4
Rural	64.6	36.8	101.5	66.5	161.2
Region					
Chattisgarh	66.4	24.2	90.6	46.8	133.1
Vindhya	63.8	41.8	105.6	78.5	175.8
Central	55.5	37.1	92.6	48.9	137.0
Malwa Plateau	49.9	27.2	77.1	59.2	131.7
South Central	65.4	38.5	103.9	60.7	158.3
South Western	48.7	29.5	78.2	54.8	128.7
Northern	61.5	37.7	99.2	54.7	148.5
Mother's education					
Illiterate	65.3	37.0	102.3	70.2	165.3
Literate, < middle school complete	52.1	26.8	79.0	30.5	107.1
Middle school complete	42.7	26.9	69.7	(9.1)	78.1
High school complete and above	28.4	2.2	30.6	3.7	34.2
Religion					
Hindu	61.1	33.1	94.2	60.1	148.6
Muslim	42.4	35.5	77.9	22.4	98.6
Caste/tribe					
Scheduled caste	68.2	33.3	101.5	60.7	156.0
Scheduled tribe	69.4	31.7	101.0	87.4	179.6
Other backward class	58.0	34.4	92.3	52.3	139.8
Other	42.2	30.2	72.4	24.1	94.8
Standard of living index					
Low	64.4	41.4	105.8	85.2	182.0
Medium	63.2	32.2	95.3	50.4	141.0
High	37.2	13.0	50.2	15.2	64.7
Total	59.8	32.7	92.5	57.6	144.7

Note: The 10-year period preceding the survey does not include the month in which the interview took place. Rates are specified on a per-thousand basis. See text for definition of rates.
( ) Based on 250–499 children surviving to the beginning of the age interval
[1]Computed as the difference between the infant and neonatal mortality rates

the finding in Table 6.2 that the under-five mortality rate is falling only somewhat faster in rural areas than in urban areas.

By region, the infant and under-five mortality rates are highest in the Vindhya and South Central Regions and lowest in the Malwa Plateau and South Western Regions. In the Vindhya and South Central Regions at least 1 in 10 children die before their first birthday and 1 in 6 die before their fifth birthday. By contrast, in the Malwa Plateau and South Western Regions, about 1 in 13 children die before their first birthday and 1 in 8 die before their fifth birthday. The Malwa Plateau and the South Western Regions also have the lowest neonatal mortality rates in the state (49–50 infant deaths per 1,000 live births).

The infant mortality rate declines sharply with education of mothers, ranging from a high of 102 deaths per 1,000 live births for children of illiterate mothers to a low of 31 deaths per 1,000 live births for children of mothers who have completed at least high school. Other

mortality indicators shown in the table vary similarly with mothers' education. As one would expect, mother's education has a stronger negative effect on postneonatal and child mortality than on neonatal mortality (which is strongly affected by biological factors).

All the mortality rates are much higher for Hindu children than for Muslim children, with the exception of the postneonatal mortality rate, which does not vary much by religion. The infant mortality rate for Hindus, at 94 deaths per 1,000 live births, is 21 percent higher than the infant mortality rate for Muslims, at 78 deaths per 1,000 live births. The neonatal mortality rate for Hindus is almost one and one-half times the rate for Muslims, and the child mortality rate for Hindus is about three times the rate for Muslims. These findings are consistent with those of NFHS-1, which also recorded much higher rates of infant and child mortality for Hindus than Muslims in Madhya Pradesh. Even for India as a whole, the infant mortality rate is 31 percent higher and the child mortality rate is 28 percent higher for Hindu children than for Muslim children. Mortality differentials by religion presumably reflect influences other than religion alone. For example, a larger proportion of Muslims than Hindus live in urban areas where mortality rates are generally low. This is supported by a study based on NFHS-1 data, which found that the difference between Hindu and Muslim infant and child mortality is reduced considerably when other demographic and socioeconomic variables are controlled statistically (Pandey et al., 1998).

Children of women belonging to scheduled castes and scheduled tribes have higher rates of infant mortality than children of women belonging to other backward classes or to women not belonging to a scheduled caste, scheduled tribe, or an other backward class. Children of mothers belonging to the 'other' caste/tribe category have the lowest levels of infant and child mortality, by far. As expected, all indicators of infant and child mortality decline steadily with increases in the household standard of living. Infant mortality is more than two times as high and under-five mortality is almost three times as high among children in households with a low standard of living as among children in households with a high standard of living.

Demographic Differentials in Infant and Child Mortality

This section examines differentials in early childhood mortality by demographic characteristics of the child and the mother. Table 6.4 and Figure 6.2 present various indicators of infant and child mortality for the 10 years preceding the survey by sex of the child, mother's age at the child's birth, birth order, length of the previous birth interval, medical care received by the mother during pregnancy, delivery, and the early postpartum period, and size of the child at the time of birth.

Table 6.4 shows that the female mortality rate below age five years is slightly higher than the male mortality rate (148 deaths per 1,000 live births for females compared with 142 deaths per 1,000 live births for males). The infant mortality rate during the 10-year period before the survey is higher for boys (97 deaths per 1,000 live births) than for girls (88 deaths per 1,000 live births), but the child mortality rate ($_4q_1$) is considerably higher for girls (66 deaths per 1,000) than for boys (49 deaths per 1,000). This reversal of sex differentials in mortality with increasing age has been observed in other studies in South Asia and is thought to reflect the relative medical and nutritional neglect of the girl-child (Das Gupta, 1987; Basu, 1989).

The lower female than male infant mortality rate in Madhya Pradesh results from the considerably higher neonatal mortality of males (67 deaths per 1,000) than of females (52 deaths

Table 6.4 Infant and child mortality by demographic characteristics

Neonatal, postneonatal, infant, child, and under-five mortality rates for the 10-year period preceding the survey by selected demographic characteristics, Madhya Pradesh, 1998–99

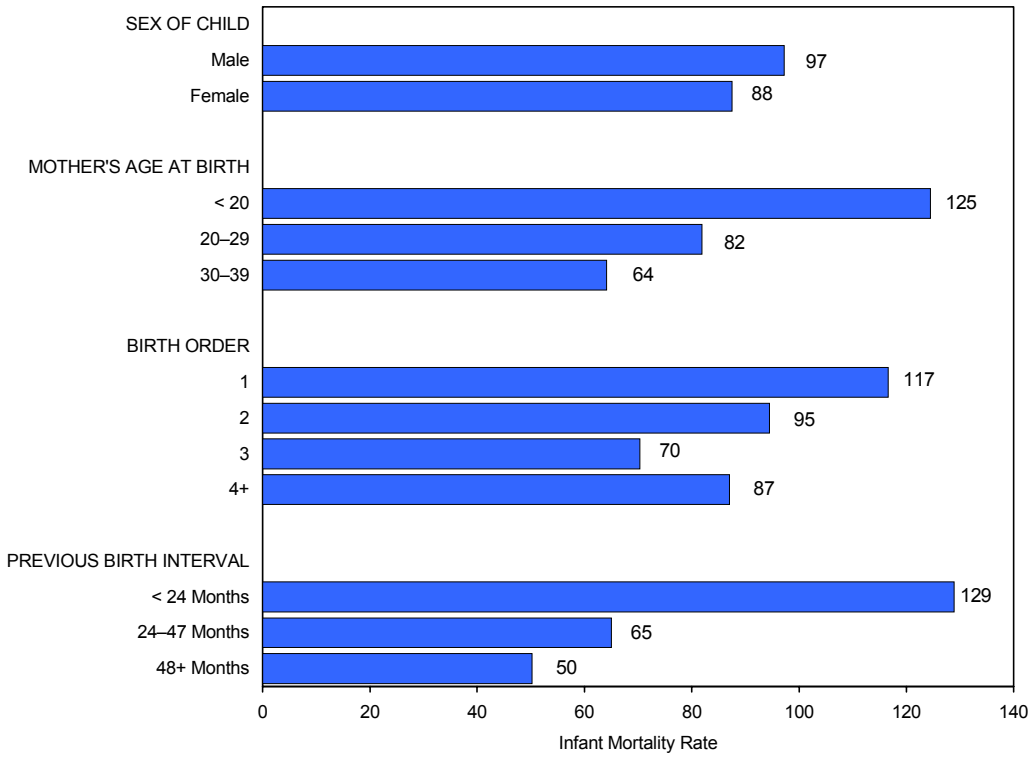
Demographic characteristic	Neonatal mortality (NN)	Postneonatal mortality[1] (PNN)	Infant mortality ($_1q_0$)	Child mortality ($_4q_1$)	Under-five mortality ($_5q_0$)
Sex of child					
Male	67.3	29.8	97.2	49.4	141.7
Female	51.7	35.9	87.5	66.3	148.0
Mother's age at birth					
< 20	84.2	40.2	124.5	63.6	180.2
20–29	51.7	30.2	81.9	52.0	129.6
30–39	38.0	26.1	64.1	66.4	126.2
Birth order					
1	80.4	36.2	116.6	38.6	150.7
2	64.4	30.2	94.5	55.9	145.1
3	46.2	24.2	70.3	60.9	127.0
4+	50.5	36.5	87.0	68.8	149.8
Previous birth interval					
< 24 months	81.1	47.8	128.9	89.4	206.8
24–47 months	39.0	26.0	65.0	56.4	117.8
48+ months	37.0	13.2	50.2	19.0	68.3
Medical care[2]					
No care	72.3	43.4	115.7	U	U
One or two types of care	42.5	23.1	65.6	U	U
Birth size[3]					
Large	(55.0)	(33.5)	(88.6)	U	U
Average	43.9	25.2	69.1	U	U
Small	42.7	27.7	70.4	U	U
Very small	(101.6)	(50.4)	(152.0)	U	U

Note: The period preceding the survey does not include the month in which the interview took place. Rates are specified on a per-thousand basis. See text for definition of rates.
U: Not available
( ) Based on 250–499 children surviving to the beginning of the age interval
[1]Computed as the difference between the infant and neonatal mortality rates
[2]Medical care includes (i) antenatal care received from a health worker, (ii) delivery assistance given by a doctor, nurse, trained midwife, or other health professional, and (iii) postnatal care received in a health facility or at home within two months of delivery; rates are for the three-year period preceding the survey.
[3]Birth size as reported by mother; rates are for the three-year period preceding the survey.

per 1,000) although excess female mortality among children is already evident from the postneonatal period. This pattern of gender differentials in the first month of life is expected because neonatal mortality, which reflects largely congenital conditions, tends to be higher for boys than for girls in most populations.

For both social and biological reasons, infant mortality rates and child mortality rates often exhibit a U-shaped pattern with respect to the mother's age at childbirth, with children of the youngest and oldest mothers experiencing higher mortality rates than children whose mothers are in the prime reproductive ages. Children born to very young mothers are more likely to be of low birth weight, which is probably an important factor contributing to their higher neonatal mortality rate. Similarly, children born to older mothers are at a relatively high risk of experiencing congenital problems. Madhya Pradesh, however, exhibits the expected U-shaped pattern of mortality by mother's age only in the case of the child mortality rate; for all the other

Figure 6.2
Infant Mortality Rates by Selected Demographic Characteristics



Note: Based on births in the 10 years preceding the survey (1989–98)

NFHS-2, Madhya Pradesh, 1998–99

mortality rates, the rate declines more or less steadily as mothers' age at birth increases. For example, neonatal mortality among children of mothers under age 20 (84 deaths per 1,000 live births) is more than twice the neonatal mortality among children of mothers age 30–39 (38 deaths per 1,000 live births). Similarly, infant mortality is also almost twice as high among children of the youngest mothers (125 deaths per 1,000 live births) than children of mothers age 30–39 (64 deaths per 1,000). The decline in postneonatal and under-five mortality with mothers' age at birth are also substantial.

Birth order also tends to have a U-shaped relationship to infant deaths, with first births and high-order births having elevated mortality rates. In Table 6.4, birth order shows the expected U-shaped pattern for all the mortality rates, with the exception of the child mortality rate. This U-shaped association is likely to reflect not only the effect of birth order but also the effect of the age of the mother at childbirth and several socioeconomic and environmental factors. For example, the increase of mortality at higher birth-orders, especially the increase in child mortality, may reflect a more intense competition faced by higher birth-order children for the caregiver's time, for medical resources, and for nutritious food once children are weaned. It is also likely that higher birth-order children are disproportionately from lower socioeconomic groups, in which mortality tends to be higher.

The timing of successive births has a powerful effect on the survival chances of children in Madhya Pradesh. Infant and child mortality rates decrease sharply as the length of the

previous birth interval increases, and all mortality measures are especially high for children born less than 24 months after a previous birth. The infant mortality rate is more than two and one-half times as high for children with a previous birth interval of less than 24 months as for children with a previous birth interval of 48 months or more (129 deaths compared with 50 deaths per 1,000 live births). Differentials in child mortality and under-five mortality by length of previous birth interval are even greater. For example, the under-five mortality rate is more than three times as high for children with a previous birth interval of less than 24 months as for children with a previous interval of 48 months or more (207 deaths compared with 68 deaths per 1,000 live births). Notably, there is a much greater decline in neonatal mortality if the birth interval increases from less than 24 months to 24–47 months than if the birth interval increases from 24–47 months to 48 months or more. In the case of most other mortality rates, an increase in the birth interval from 24–47 months to 48 months or more is associated with either a similar or a greater reduction in the rate than an increases in the birth interval from less than 24 months to 24–47 months. Although the length of the previous birth interval is likely to affect mortality risks directly, a substantial portion of the association between birth intervals and mortality risks may reflect the effect of factors that are correlated with birth intervals. For example, shorter birth intervals are likely to occur in large families, and large families tend to come from lower socioeconomic groups and are more likely than other families to live in rural areas where medical facilities and other survival-enhancing resources are less readily available. Nevertheless, multivariate analyses of birth-interval effects and child survival commonly find an association between short birth intervals (less than 24 months) and increased mortality, even after controlling for other demographic and socioeconomic characteristics (Retherford et al., 1989).

Antenatal, delivery, and postnatal care are usually associated with lower infant mortality. Table 6.4 shows that children of women who receive even one or two types of care have considerably lower risk of neonatal and postneonatal mortality than those with none of these types of care. It is not possible to compare the mortality rates for children of mothers who receive all of the three types of pregnancy-related care due to the small number of cases in that category.

Another important determinant of the survival chances of children is the baby's weight at the time of birth. Many studies have found that low birth weight babies (under 2500 grams) have a substantially increased risk of mortality. Because most babies in Madhya Pradesh are not weighed at the time of birth, in addition to birth weight, mothers were asked whether their babies born during the three years preceding the survey were "large, average, small, or very small" at birth. The last panel in Table 6.4 shows neonatal, postneonatal, and infant mortality rates for children by their size at birth as reported by mothers. Although the number of cases is small, children reported as 'very small' by their mothers, as expected, have a considerably higher risk of dying before age one, than children of any other size or even children with any other demographic characteristics.

6.3 Morbidity

There is limited experience in collecting morbidity data in population-based demographic sample surveys. NFHS-1 collected data on five major morbidity conditions—partial and complete blindness, tuberculosis, leprosy, physical impairment of the limbs, and malaria—among all persons in the sampled households. The results were found to be generally plausible and useful. For this reason, it was decided to include similar morbidity questions in NFHS-2. In NFHS-2, questions on blindness, leprosy, and physical impairment of the limbs were replaced by

questions on asthma and jaundice. The questions on tuberculosis and malaria were retained, and a question on medical treatment of tuberculosis was added to get a better measure of the prevalence of tuberculosis. The household head or other knowledgeable adult in the household reported on morbidity for all household members, and no effort was made to do clinical tests for any of the disease conditions.

Table 6.5 shows the prevalence of asthma, tuberculosis, jaundice, and malaria in the household population by age, sex, and place of residence. There are several reasons why the results of NFHS-2 may understate the prevalence of these conditions. Respondents may underreport diseases carrying a stigma, such as tuberculosis due to intentional concealment by respondents. Underestimation may also occur because the household respondents are unaware that they or other members of the household have the condition. It is also possible that the respondents know that a household member suffers from a given condition but fail to report it because they do not recognize the term used by the enumerator to describe the condition. On the other hand, a factor contributing to a possible overestimation of prevalence without clinical verification is that some other disease can be mistaken by the respondent as one of the listed diseases; for example, chronic bronchitis may be reported as asthma or tuberculosis, or common flu may be reported as malaria.

Asthma

Asthma is a chronic respiratory disease characterized by sudden attacks of laboured breathing, chest constriction, and coughing. There has been a rapid increase in asthma cases in recent years in many parts of the world. In Madhya Pradesh, 2,273 persons per 100,000 population were reported to be suffering from asthma at the time of the survey. The prevalence of asthma is considerably higher in rural areas (2,457 per 100,000) than in urban areas (1,737 per 100,000), and is higher among males (2,581 per 100,000) than among females (1,944 per 100,000). Age differences are marked, with the prevalence of asthma increasing from 499 per 100,000 at age 0–14 to 11,853 per 100,000 at age 60 and over.

Tuberculosis

Tuberculosis, which is also 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. According to NFHS-2, the overall prevalence of tuberculosis in the state is 602 per 100,000. This is a 27 percent increase in the prevalence recorded in NFHS-1 (440 per 100,000). The prevalence of tuberculosis is much higher in rural areas (669 per 100,000) than in urban areas (405 per 100,000). The prevalence is much higher for males (678 per 100,000) than for females (519 per 100,000). The sex differential in the prevalence of tuberculosis is much larger in rural areas than in urban areas. Probable reasons for the much higher prevalence of tuberculosis among males than females are that men are more likely than women to come in contact with people who suffer from active tuberculosis, and that men in Madhya Pradesh smoke more than women. The prevalence of tuberculosis increases rapidly with age. It is substantially higher among persons age 60 and above (1,938 per 100,000) than among persons age 15–59 (727 per 100,000) or age 0–14 (147 per 100,000).

Table 6.5 Morbidity

Number of persons per 100,000 usual household residents suffering from asthma, tuberculosis, jaundice, or malaria by age, sex, and residence, Madhya Pradesh, 1998–99

Age and sex	Number of persons per 100,000 suffering from: Asthma	Tuberculosis[1]	Medically treated tuberculosis	Jaundice during the past 12 months	Malaria during the past 3 months	Number of usual residents
			URBAN			
Age						
< 15	379	137	137	1,396	4,566	3,377
15–59	1,528	402	307	1,316	5,529	5,597
60+	10,646	1,831	1,476	931	6,265	646
Sex						
Male	1,748	446	326	1,380	5,089	5,052
Female	1,726	359	326	1,250	5,408	4,569
Total	1,737	405	326	1,318	5,240	9,620
			RURAL			
Age						
< 15	535	150	128	1,841	11,120	11,231
15–59	2,312	853	741	2,457	11,904	14,498
60+	12,174	1,967	1,785	1,567	12,537	2,437
Sex						
Male	2,872	759	665	2,493	11,828	14,486
Female	2,017	573	504	1,755	11,453	13,681
Total	2,457	669	587	2,134	11,646	28,167
			TOTAL			
Age						
< 15	499	147	130	1,738	9,604	14,609
15–59	2,094	727	620	2,139	10,128	20,095
60+	11,853	1,938	1,720	1,434	11,223	3,083
Sex						
Male	2,581	678	578	2,205	10,086	19,538
Female	1,944	519	459	1,628	9,940	18,249
Total	2,273	602	520	1,927	10,015	37,787

[1]Includes medically treated tuberculosis

Medically treated tuberculosis is expected to give a more reliable measure of the prevalence of active tuberculosis than the measure based on all reported cases considered in the preceding paragraph. As expected, the prevalence of medically treated tuberculosis is considerably lower (520 per 100,000) than the prevalence based on all reported cases (602 per 100,000). Differentials in the prevalence of medically treated tuberculosis by residence, age, and sex are similar to differentials in the prevalence of all reported cases.

Jaundice

Jaundice is characterized by yellowish discolouration of the eyes and skin, fever, liver enlargement, and abdominal pain. NFHS-2 asked household respondents if any member of the household had suffered from jaundice at any time during the 12 months preceding the survey. In Madhya Pradesh, 1,927 persons per 100,000 population were reported to have suffered from jaundice during the 12 months preceding the survey. People living in rural areas were somewhat

more likely to have suffered from jaundice (2,134 per 100,000) than those living in urban areas (1,318 per 100,000). Males were 35 percent more likely to have suffered from jaundice than females. Jaundice, unlike the other conditions measured, is higher among the population age 15–59 (2,139 per 100,000) than among the population age less than 15 years (1,738 per 100,000) and the population age 60 or older (1,434 per 100,000). Age differentials in the prevalence of jaundice in rural areas also follow this pattern, however, prevalence in urban areas decreases with age. Sex differentials are much greater in rural than in urban areas.

Malaria

Malaria is characterized by recurrent high fever with shivering. NFHS-2 asked household respondents whether any member of their household had suffered from malaria any time during the three months preceding the survey. In Madhya Pradesh, 10,015 persons per 100,000 population were reported to have suffered from malaria during the three months preceding the survey. Since the prevalence of malaria is known to vary considerably by season, the NFHS-2 estimates should not be interpreted as representative of the level throughout the year. It is also misleading to compare this estimate with the lower NFHS-1 estimate because the months of the year comprising the reference period for the malaria estimates from the two surveys are different.

Rural residents are more than twice as likely to suffer from malaria (11,646 per 100,000) as are urban residents (5,240 per 100,000). The reported prevalence of malaria is slightly higher for females than for males in urban areas, but is slightly lower for females than for males in rural areas. The prevalence of malaria during the three months preceding the survey increases with age, from 9,604 per 100,000 in the population age 0–14 to 11,223 per 100,000 in the population age 60 years and above. This steady increase with age occurs in both rural and urban areas.

6.4 Child Immunization

The vaccination of children against six serious but preventable diseases (tuberculosis, diphtheria, pertussis, tetanus, poliomyelitis, and measles) has been a cornerstone of the child health care system in India. As part of the National Health Policy, the National Immunization Programme is being implemented on a priority basis. The Expanded Programme on Immunization (EPI) was initiated by the Government of India in 1978 with the objective of reducing morbidity, mortality, and disabilities from these six diseases by making free vaccination services easily available to all eligible children. Immunization against poliomyelitis was introduced in 1979–80, and tetanus toxoid for school children was added in 1980–81. Immunization against tuberculosis (BCG) was brought under the EPI in 1981–82. The latest addition to the Programme was vaccination against measles in 1985–86 (Ministry of Health and Family Welfare, 1991).

The Universal Immunization Programme (UIP) was introduced in 1985–86 with the following objectives: to cover at least 85 percent of all infants against the six vaccine-preventable diseases by 1990 and to achieve self-sufficiency in vaccine production and the manufacture of cold-chain equipment (Ministry of Health and Family Welfare, 1991). This scheme has been introduced in every district of the country, and the target now is to achieve 100 percent immunization coverage. Pulse Polio Immunization Campaigns began in December 1995 as part of a major national effort to eliminate polio. The standard immunization schedule developed for the child immunization programme specifies the age at which each vaccine is to be administered, the number of doses to be given, and the route of vaccination (intramuscular, oral,

or subcutaneous). Routine vaccinations received by infants and children are usually recorded on a vaccination card that is issued for the child.

NFHS-2 asked mothers in Madhya Pradesh whether they had a vaccination card for each child born since January 1995. If a card was available, the interviewer was required to copy carefully the dates when the child received vaccinations against each disease. For vaccinations not recorded on the card, the mother's report that the vaccination was or was not given was accepted. If the mother could not show a vaccination card, she was asked whether the child had received any vaccinations. If any vaccinations had been received, the mother was asked whether the child had received a vaccination against tuberculosis (BCG); diphtheria, whooping cough (pertussis), and tetanus (DPT); poliomyelitis (polio); and measles. For DPT and polio, information was obtained on the number of doses of the vaccine given to the child. Mothers were not asked the dates of vaccinations. To distinguish Polio 0 (polio vaccine given at the time of birth) from Polio 1 (polio vaccine given about six weeks after birth), mothers were also asked whether the first polio vaccine was given just after birth or later[3].

Table 6.6 gives the percentages of urban and rural children age 12–23 months who received specific vaccinations at any time before the interview and before 12 months of age, according to whether a vaccination card was shown to the interviewer or the mother was the source of all vaccination information. The 12–23 month age group was chosen for analysis because both international and Government of India guidelines specify that children should be fully immunized by the time they complete their first year of life. Because the date of vaccination was not asked of the mother if she could not show a vaccination card, for children whose information is based on the mother's report, the proportion of vaccinations given during the first year of life is assumed to be the same as the proportion of vaccinations given during the first year of life among children with an exact date of vaccination on the card.

In NFHS-2, children who received BCG, measles, and three doses each of DPT and polio (excluding Polio 0) are considered to be fully vaccinated. Based on information obtained from a card or reported by the mother ('either source'), 22 percent of children age 12–23 months are fully vaccinated, and 14 percent have not received any vaccinations. The proportion of children age 12–23 months fully vaccinated in Madhya Pradesh is about half the national average of 42 percent. Coverage for BCG, DPT, and polio (except Polio 0) vaccinations is much higher than the percentage fully vaccinated. BCG and the first dose of DPT have been received by 65 and 63 percent of children, respectively, and the first and second doses of polio vaccine have each been received by at least 79 percent of children (see Figure 6.3). Thirty-seven percent of children have received three doses of DPT and 57 percent have received three doses of polio vaccine. Although DPT and polio vaccinations are given at the same time as part of the routine immunization programme, the coverage rates are much higher for polio than for DPT, undoubtedly because of the Pulse Polio campaigns. Not all children who begin the DPT and polio vaccination series go on to complete them. The drop-out rate (i.e., the percentage of children who receive the first dose

[3]Because mothers sometimes report that the first dose was given just after birth even if it was given several weeks later, an adjustment was made to the estimates of the number of polio vaccinations given, based on reports of the number of DPT vaccinations. This adjustment is based on the fact that when children receive a DPT vaccination, they are almost always given a polio vaccination at the same time. Thus, if the number of polio vaccinations was reported to be less than the number of DPT vaccinations and the first polio vaccination was reported to be given just after birth, then Polio 0 is assumed to really be Polio 1, Polio 1 is assumed to be Polio 2, etc. For comparative purposes, this same adjustment was made to the NFHS-1 vaccination estimates.

Table 6.6 Childhood vaccinations by source of information

Percentage of children age 12–23 months who received specific vaccinations at any time before the interview and before 12 months of age by source of information on vaccination history and residence, Madhya Pradesh, 1998–99

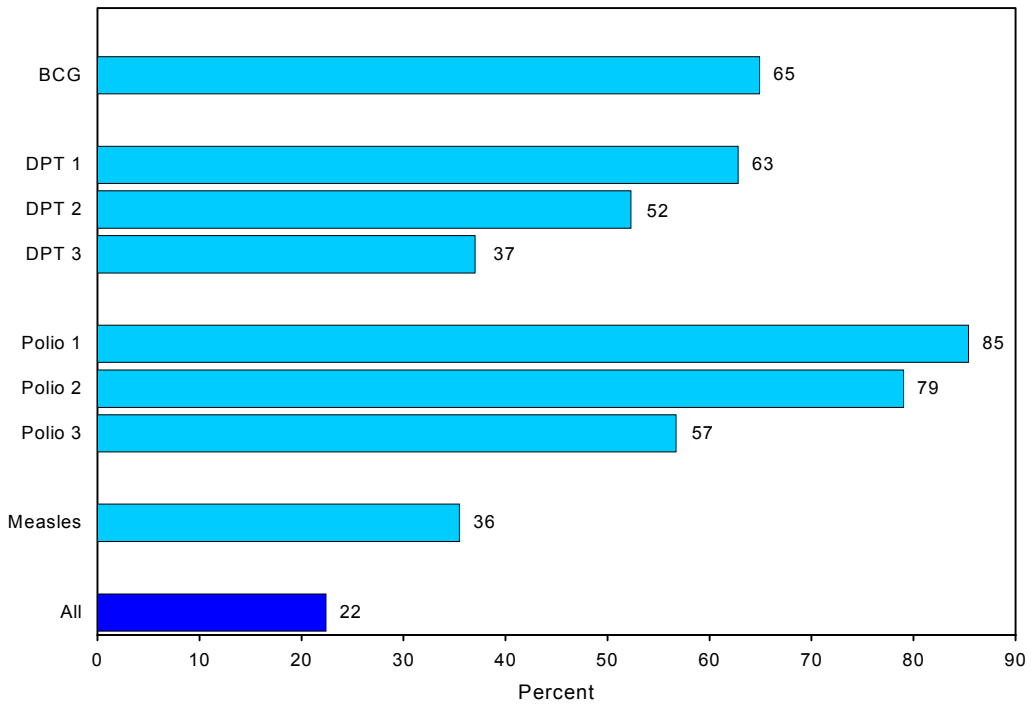
	Percentage vaccinated											
			DPT			Polio						Number of
Source of information	BCG	Polio 0	1	2	3	1	2	3	Measles	All[1]	None	children
URBAN												
Vaccinated at any time before the interview												
Vaccination card	94.7	32.0	99.1	91.8	83.2	99.1	91.7	83.2	63.8	62.9	0.0	84
Mother's report	74.0	13.7	69.0	61.3	36.7	90.2	85.0	57.3	48.4	23.4	9.1	103
Either source	83.3	21.9	82.6	75.0	57.7	94.2	88.0	69.0	55.3	41.2	5.0	187
Vaccinated by 12 months of age[2]	82.6	21.9	80.5	73.6	54.6	91.7	86.3	65.3	50.9	38.1	6.6	187
RURAL												
Vaccinated at any time before the interview												
Vaccination card	85.3	11.1	99.0	83.7	72.3	97.1	83.7	70.7	49.6	45.4	0.0	125
Mother's report	53.4	5.6	47.0	36.7	21.1	79.4	74.6	48.9	25.0	10.2	20.5	521
Either source	59.6	6.7	57.1	45.8	31.0	82.8	76.4	53.1	29.7	17.0	16.5	645
Vaccinated by 12 months of age[2]	58.1	6.7	54.4	43.7	30.0	78.8	72.9	51.3	25.4	15.0	20.3	645
TOTAL												
Vaccinated at any time before the interview												
Vaccination card	89.1	19.5	99.1	87.0	76.7	97.9	86.9	75.8	55.3	52.5	0.0	209
Mother's report	56.8	6.9	50.6	40.7	23.7	81.2	76.3	50.3	28.8	12.4	18.6	623
Either source	64.9	10.1	62.8	52.3	37.0	85.4	79.0	56.7	35.5	22.4	13.9	832
Vaccinated by 12 months of age[2]	63.8	10.1	60.4	50.5	35.4	82.0	76.3	54.3	31.4	20.3	16.8	832

Note: Table includes only surviving children from among the two most recent births in the three years preceding the survey.
[1]BCG, measles, and three doses each of DPT and polio vaccines (excluding Polio 0)
[2]For children whose information was based on the mother's report, the proportion of vaccinations given by 12 months of age is assumed to be the same as for children with a written record of vaccination.

but not the third dose of the vaccine) is 41 percent for the DPT vaccine and 34 percent for the polio vaccine. Only 36 percent of children 12–23 months have been vaccinated against measles.

A comparison of vaccination coverage in Madhya Pradesh at the time of NFHS-1 with vaccination coverage at the time of NFHS-2 shows that the proportion of children fully vaccinated has declined, although the coverage of some individual vaccines has increased. Specifically, the proportion of children age 12–23 fully vaccinated has declined by 23 percent, from 29 percent at the time of NFHS-1 to 22 percent at the time of NFHS-2. The percentage who have not received any of the required vaccinations, however, has been more than halved during this period, from 34 percent to 14 percent. While the coverage of each of the three doses of the polio vaccine and of polio 0 has increased considerably over the six and one-half years between the two surveys, the increase in BCG coverage has been more moderate, and there has been little change in the coverage of the first and second doses of the DPT vaccine. The coverage of the third dose of DPT and the measles vaccines has, however, declined during this period, greatly reducing the proportion of children fully vaccinated. These data indicate that the goal of

Figure 6.3
Percentage of Children Age 12–23 Months Who Have Received Specific Vaccinations



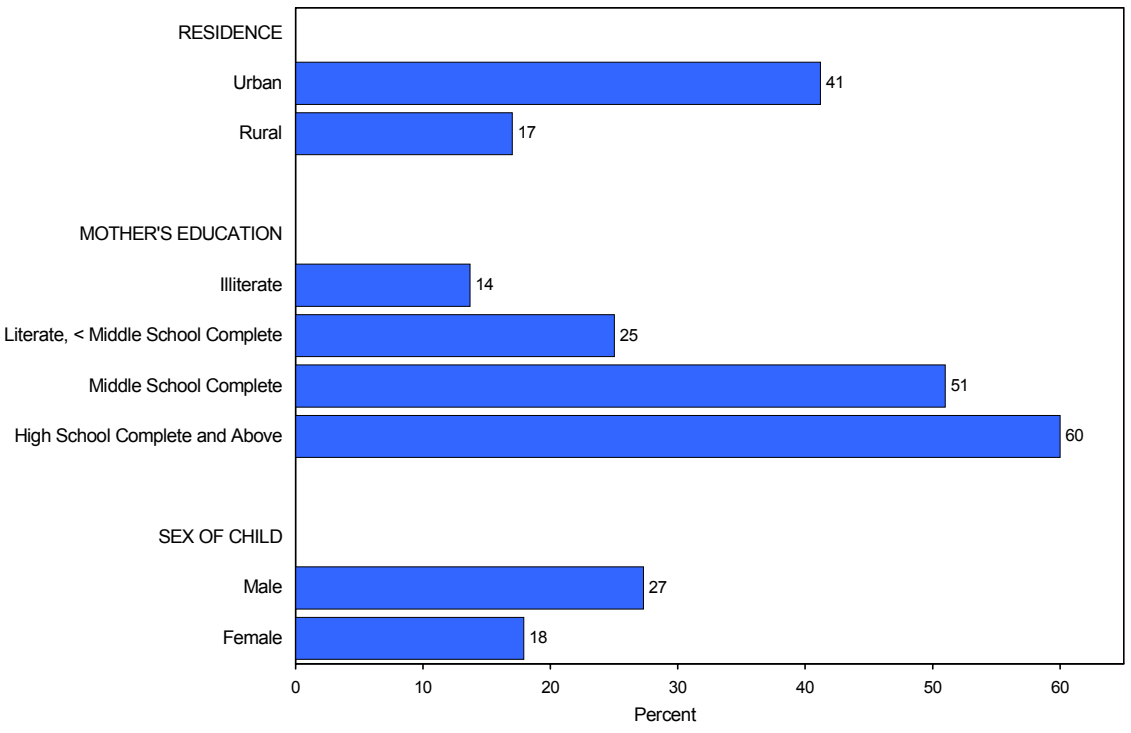
NFHS-2, Madhya Pradesh, 1998–99

universal immunization coverage for children in Madhya Pradesh is not only very far, but is further away in 1998–99 than it was in 1992–93.

Government statistics for Madhya Pradesh suggest a much higher level of vaccination coverage than NFHS-2 estimates. According to government statistics for 1997–98, 41 percent of children age 12–23 months are fully vaccinated compared with only 22 percent according to NFHS-2 (Ministry of Health and Family Welfare, 1999). Government statistics and NFHS-2 have similar estimates for BCG coverage (64 percent and 65 percent, respectively) and differ only slightly with respect to the estimates for the three doses of polio (63 percent from government statistics and 57 percent from NFHS-2). Estimates for the measles vaccine, however, vary greatly. The estimate for measles vaccine coverage from Government statistics, at 53 percent, is much higher than the NFHS-2 estimate, at 36 percent.

According to the immunization schedule, all primary vaccinations, including measles, should be completed by the time a child is 12 months old. Table 6.6 shows that 20 percent of all children (or 91 percent of fully vaccinated children) were fully vaccinated by age 12 months. The percentages of children who received BCG, the third dose of DPT, and the third dose of polio by age 12 months is only slightly lower than the percentage who received these vaccines at any time before the survey. For measles vaccination, however, which is supposed to be given when the child is nine months old, the gap is slightly wider (36 percent at any time before the survey

Figure 6.4
Percentage of Children Age 12–23 Months Who Have Received All Vaccinations



NFHS-2, Madhya Pradesh, 1998–99

compared with 31 percent by age 12 months). Twelve percent of children who were vaccinated against measles received the vaccination after their first birthday.

The analysis of vaccine-specific data indicates much higher coverage in urban areas than in rural areas. Forty-one percent of children age 12–23 months in urban areas had received all of the recommended vaccinations by the time of the survey, compared with only 17 percent in rural areas. The proportion fully vaccinated during the first year of life is also higher in urban areas (38 percent) than in rural areas (15 percent) and dropout rates for DPT and polio are lower in urban areas than in rural areas. Nonetheless, even in urban areas 30 percent of children who received the first dose of the DPT vaccine did not receive all three doses, and 27 percent of children who received the first dose of the polio vaccine did not receive all three doses.

Figure 6.4 and Table 6.7 present vaccination coverage rates (according to the vaccination card or the mother) for children age 12–23 months by selected background characteristics. The table also shows the percentage of children with vaccination cards that were shown to the interviewer. Mothers could show vaccination cards for only 25 percent of children age 12–23 months. Vaccination cards were shown for 45 percent of children in urban areas and 19 percent in rural areas. As expected, vaccination coverage is much higher for children for whom a vaccination card was shown than for other children (see Table 6.6).

Table 6.7 Childhood vaccinations by background characteristics

Percentage of children age 12–23 months who received specific vaccinations at any time before the interview (according to the vaccination card or the mother) and percentage with a vaccination card that was shown to the interviewer by selected background characteristics, Madhya Pradesh, 1998–99

Background characteristic	Percentage vaccinated											Percentage showing vaccination card	Number of children
			DPT			Polio							
	BCG	Polio 0	1	2	3	1	2	3	Measles	All[1]	None		
Sex of child													
Male	66.5	10.6	66.9	57.2	42.5	87.6	81.0	61.9	40.4	27.3	11.5	27.7	403
Female	63.5	9.6	58.9	47.8	31.8	83.3	77.1	51.8	30.9	17.9	16.1	22.6	429
Birth order													
1	70.3	17.0	65.9	55.4	42.0	88.5	83.2	67.5	42.3	28.7	10.9	33.1	217
2	69.6	9.5	66.9	57.4	42.6	89.7	81.1	52.3	36.6	26.3	9.9	29.2	192
3	69.4	9.7	65.2	53.5	38.1	87.4	80.7	59.3	38.3	24.6	11.6	18.9	139
4+	55.5	5.4	56.5	46.0	28.9	79.1	73.5	50.2	28.1	14.0	20.0	19.3	284
Residence													
Urban	83.3	21.9	82.6	75.0	57.7	94.2	88.0	69.0	55.3	41.2	5.0	45.1	187
Rural	59.6	6.7	57.1	45.8	31.0	82.8	76.4	53.1	29.7	17.0	16.5	19.3	645
Region													
Chattisgarh	74.3	9.5	67.6	56.1	40.9	94.3	85.7	57.1	40.0	21.8	5.7	28.6	199
Vindhya	49.5	4.7	47.1	33.0	22.0	73.0	67.4	51.0	20.5	10.2	27.0	16.6	119
Central	68.0	12.8	65.2	55.5	41.0	83.0	78.6	57.0	39.0	24.6	17.0	23.8	78
Malwa Plateau	64.1	13.1	64.1	57.0	41.1	82.5	78.1	69.3	40.3	32.4	16.6	30.7	136
South Central	67.8	4.8	72.6	55.7	42.3	87.4	79.3	46.2	35.7	23.2	10.7	31.1	95
South Western	63.5	7.9	61.2	54.1	41.3	83.5	79.3	61.4	38.3	26.9	15.8	25.6	90
Northern	62.4	17.2	60.5	54.0	30.6	87.5	80.2	51.8	32.8	18.8	10.5	16.9	115
Mother's education													
Illiterate	56.0	5.8	53.3	41.3	25.3	81.1	72.8	48.8	25.1	13.7	18.2	17.6	569
Literate, < middle school complete	74.6	13.4	73.4	64.1	46.3	92.6	89.8	66.2	42.3	25.0	6.7	32.3	126
Middle school complete	85.7	16.3	87.6	82.9	69.4	93.2	90.2	72.9	62.3	51.0	6.8	45.4	55
High school complete and above	98.0	30.4	95.7	90.7	82.2	99.0	97.8	86.4	78.9	60.0	0.0	52.7	82
Religion													
Hindu	63.2	9.9	60.9	50.2	35.0	84.7	78.1	55.7	33.3	20.2	14.6	23.9	754
Muslim	72.7	11.5	75.9	69.9	55.3	88.5	81.8	63.2	51.6	42.2	10.0	36.0	51
Caste/tribe													
Scheduled caste	66.5	7.8	62.8	50.6	33.1	87.7	82.1	58.7	33.2	17.9	11.7	25.4	145
Scheduled tribe	53.8	2.2	43.3	30.6	18.4	72.8	62.5	42.1	18.8	11.1	26.2	16.3	215
Other backward class	64.7	12.8	67.4	56.8	40.0	89.6	84.6	60.0	38.2	23.6	10.0	24.4	317
Other	79.4	17.6	80.6	75.0	60.4	92.1	87.6	68.5	55.2	40.1	7.0	38.4	155
Standard of living index													
Low	54.3	5.7	49.7	37.2	22.3	79.7	70.2	43.5	25.0	12.1	18.8	17.3	294
Medium	64.1	8.1	63.2	54.0	36.9	86.5	81.0	59.1	32.2	21.2	13.3	23.0	400
High	90.2	25.6	90.2	82.1	70.5	94.3	92.2	78.2	68.9	49.2	5.1	49.1	133
Total	64.9	10.1	62.8	52.3	37.0	85.4	79.0	56.7	35.5	22.4	13.9	25.1	832

Note: Table includes only surviving children from among the two most recent births in the three years preceding the survey. Total includes 7 Jain children, 21 children belonging to 'other' religions, and 5 children with missing information on the standard of living index, who are not shown separately.

[1]BCG, measles, and three doses each of DPT and polio vaccines (excluding Polio 0)

Boys (27 percent) are much more likely than girls (18 percent) to be fully vaccinated. Boys are also more likely than girls to have received each of the individual vaccinations. Mothers showed vaccination cards for 28 percent of boys and 23 percent of girls. In NFHS-1, also, vaccination coverage was higher for girls than for boys. These results show persistent discrimination against female children in Madhya Pradesh with regard to immunization.

Vaccination coverage does not differ much by birth-order for children at order one, two, and three; however, these children are much more likely than children at birth-orders four and above to be fully vaccinated and to have received each of the different vaccinations. Fourteen percent of children at birth orders four and above are fully vaccinated compared with 25–29 percent of children at birth orders one, two, and three. A large majority of lower-order births, especially first-order births, occur to younger women who are more likely than older women to utilize maternal and child health care services. There is a strong positive relationship between mother's education and children's vaccination coverage. Only 14 percent of children of illiterate mothers are fully vaccinated, compared with 60 percent of children of mothers who have completed at least high school. Muslim children (42 percent) are more than twice as likely to be fully vaccinated as are Hindu children (20 percent). Scheduled-tribe children are not only least likely to have received all vaccinations (11 percent), but are also more likely than most other children not to have received any recommended vaccinations (26 percent). Scheduled-caste children (18 percent) and children belonging to other backward classes (24 percent) are also less likely than children not belonging to any scheduled caste, scheduled tribe, or other backward class (40 percent) to have received all vaccinations. Household standard of living has a strong positive relationship with vaccination coverage. Twelve percent of children from households with a low standard of living, 21 percent of children from households with a medium standard of living, and 49 percent of children from households with a high standard of living are fully vaccinated. Notably, only half of the children even in households with a high standard of living are fully vaccinated in Madhya Pradesh.

Vaccination coverage also varies widely by region. One in three children (32 percent) age 12–23 months is fully vaccinated in the Malwa Plateau Region compared with one in ten in the Vindhya Region. In the remaining regions the proportion fully vaccinated varies in a narrow range from 19 percent to 27 percent. The coverage of all of the different vaccines is also particularly low in the Vindhya Region, where 27 percent of children age 12–23 months have not received any vaccination.

Table 6.8 shows the percentage of children age 12–35 months with a vaccination card that was shown to the interviewer and the percentage who received various vaccinations during the first year of life by current age of the child and place of residence. The table shows some improvement in vaccination coverage over a short period of time. The proportion vaccinated during the first year of life is estimated separately for children in each age group. The row labelled 'No vaccinations' indicates the percentage of children who have not received any vaccination by age 12 months.

The proportion of children whose vaccination status was determined from a vaccination card declines with the age of children. This may reflect an upward trend in the use of vaccination cards as well as an upward trend in overall vaccination coverage. On the other hand, vaccination cards are more likely to be lost or discarded for older children who have received all their vaccinations. The proportion of children fully vaccinated by age 12 months declines slightly in

Table 6.8 Childhood vaccinations received by 12 months of age

Percentage of children age 12–23 months and 24–35 months with a vaccination card that was shown to the interviewer and percentage who received specific vaccinations by 12 months of age, according to residence and child's current age, Madhya Pradesh, 1998–99

	Urban		Rural		Total	
Vaccination status	12–23 months	24–35 months	12–23 months	24–35 months	12–23 months	24–35 months
Vaccination card shown to interviewer	45.1	33.7	19.3	13.3	25.1	18.0
Percentage vaccinated by 12 months of age[1]						
BCG	82.6	80.0	58.1	53.6	63.8	60.4
Polio 0	21.9	18.1	6.7	5.8	10.1	9.1
DPT						
1	80.5	76.8	54.4	47.5	60.4	55.2
2	73.6	65.1	43.7	38.3	50.5	45.3
3	54.6	48.3	30.0	27.1	35.4	32.3
Polio						
1	91.7	88.8	78.8	71.4	82.0	77.1
2	86.3	86.2	72.9	64.8	76.3	72.2
3	65.3	64.4	51.3	47.2	54.3	52.0
Measles	50.9	49.2	25.4	22.3	31.4	30.1
All vaccinations[2]	38.1	38.1	15.0	10.5	20.3	17.8
No vaccinations	6.6	11.1	20.3	24.4	16.8	20.4
Number of children	187	191	645	632	832	823

Note: Table includes only surviving children from among the two most recent births in the three years preceding the survey.
[1]Information was obtained either from the vaccination card or from the mother if there was no written record. For children whose information was based on the mother's report, the proportion of vaccinations given by 12 months of age is assumed to be the same as for children with a written record of vaccinations.
[2]BCG, measles, and three doses each of DPT and polio vaccines (excluding Polio 0)

rural areas with age, from 15 percent for children age 12–23 months to 11 percent for children age 24–35 months, and does not decline at all in urban areas. The coverage of each individual vaccine, however, consistently declines with age in both urban and rural areas, although the declines are small in some cases.

Table 6.9 and Figure 6.5 give the percent distribution of children under age three years who have received any vaccinations by the source of most of the vaccinations, according to selected background characteristics. The public sector is the primary provider of childhood vaccinations in Madhya Pradesh. Ninety-two percent of all children who have received any vaccinations received most of them from a public sector medical source and only 4 percent received most of them from a private sector medical source. There is almost no variation by background characteristics in the source of most of the vaccinations. With the exception of children whose mothers have completed at least high school, 85 percent or more of all other children received most of their vaccinations from the public medical sector. Among children whose mothers have completed at least high school, 76 percent received most of their vaccinations from the public medical sector and 21 percent from the private medical sector. Children in urban areas (12 percent) and children belonging to households with a high standard

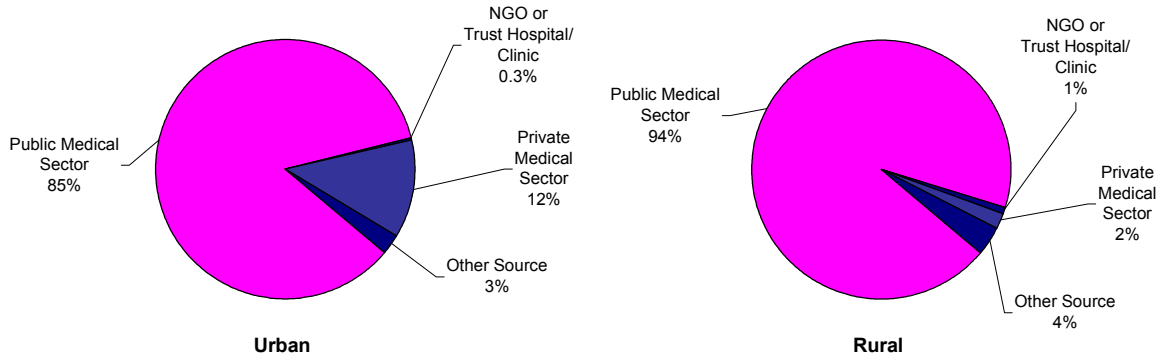
Table 6.9 Source of childhood vaccinations

Percent distribution of children under age 3 who have received any vaccinations by source of most of the vaccinations, according to selected background characteristics, Madhya Pradesh, 1998–99

Background characteristic	Source				Total percent	Number of children
	Public medical sector	NGO or trust hospital/ clinic	Private medical sector	Other		
Age of child						
< 12 months	92.0	0.8	4.5	2.7	100.0	683
12–23 months	92.9	0.4	4.2	2.5	100.0	711
24–35 months	90.1	0.6	4.6	4.7	100.0	712
Sex of child						
Male	91.7	0.7	4.6	3.0	100.0	1,080
Female	91.6	0.6	4.3	3.6	100.0	1,025
Birth order						
1	88.6	0.4	7.9	3.1	100.0	546
2	92.5	1.0	4.0	2.5	100.0	473
3	92.1	1.7	3.2	3.1	100.0	387
4+	93.2	0.0	2.7	4.1	100.0	699
Residence						
Urban	85.1	0.3	12.1	2.5	100.0	510
Rural	93.7	0.7	2.0	3.6	100.0	1,596
Region						
Chattisgarh	92.2	2.2	2.8	2.8	100.0	533
Vindhya	93.3	0.0	0.9	5.7	100.0	291
Central	86.3	0.7	8.7	4.3	100.0	210
Malwa Plateau	91.3	0.0	5.2	3.5	100.0	345
South Central	90.6	0.0	6.9	2.6	100.0	253
South Western	91.5	0.0	5.6	2.9	100.0	205
Northern	94.4	0.0	3.9	1.7	100.0	270
Mother's education						
Illiterate	94.0	0.6	1.6	3.8	100.0	1,357
Literate, < middle school complete	93.2	0.5	3.7	2.6	100.0	388
Middle school complete	86.7	1.2	9.6	2.5	100.0	163
High school complete and above	76.2	0.7	21.0	2.1	100.0	198
Religion						
Hindu	91.5	0.6	4.4	3.5	100.0	1,927
Muslim	94.0	0.0	5.4	0.6	100.0	130
Caste/tribe						
Scheduled caste	92.8	0.6	2.5	4.2	100.0	345
Scheduled tribe	92.3	1.3	1.3	5.1	100.0	458
Other backward class	92.9	0.2	4.7	2.2	100.0	911
Other	86.9	0.9	9.3	3.0	100.0	391
Standard of living index						
Low	93.8	0.8	1.8	3.5	100.0	700
Medium	92.2	0.6	3.6	3.6	100.0	1,032
High	85.7	0.4	11.7	2.1	100.0	367
Total	91.6	0.6	4.4	3.3	100.0	2,106

Note: Table includes only surviving children from among the two most recent births during the three years preceding the survey. Total includes 22 Jain children, 26 children belonging to 'other' religions, and 1 and 6 children with missing information on caste/tribe and the standard of living index, respectively, who are not shown separately.
NGO: Nongovernmental organization

Figure 6.5
Source of Childhood Vaccinations by Residence



Note: Percents add to more than 100 due to rounding

NFHS-2, Madhya Pradesh, 1998–99

of living (12 percent) were the only other groups of children among whom more than 10 percent received most of their vaccinations from the private sector.

6.5 Vitamin A Supplementation

Vitamin A deficiency is one of the most common nutritional deficiency disorders in the world, affecting more than 250 million children worldwide (Bloem et al., 1997). The National Programme on Prevention of Blindness targets children under age five years and administers oral doses of vitamin A every six months starting at age nine months. NFHS-2 asked mothers of children born during the three years before the survey whether their children ever received a dose of vitamin A. Those who said that their child had received at least one dose of vitamin A were asked how long ago the last dose of vitamin A was given. Table 6.10 shows the percentage of children age 12–35 months who received at least one dose of vitamin A and who received a dose of vitamin A within the past six months by selected background characteristics. In the state as a whole, one-quarter (24 percent) of children age 12–35 months received at least one dose of vitamin A, but only 15 percent received a dose within the past six months. This indicates that a large majority of children in Madhya Pradesh have not received vitamin A supplementation at all and even fewer children receive vitamin A supplementation regularly.

First born children, children living in urban areas, children living in the Chattisgarh Region, children of literate mothers, and children living in households with a high standard of living are considerably more likely to receive vitamin A supplementation than other children (Table 6.10). The percentage receiving vitamin A supplementation is particularly low among children living in the Vindhya and Northern Regions and children belonging to households with a low standard of living (13–16 percent). Scheduled-tribe children, children of illiterate mothers, and children at birth orders four and above are also less likely than most other children to receive vitamin A supplementation. As is the case with immunizations, boys have a slight edge in vitamin A coverage over girls. In general, children from groups that are less likely to have received at least one dose of vitamin A supplementation are also less likely to have received a dose in the past six months.

Table 6.10 Vitamin A supplementation for children

Percentage of children age 12–35 months who received at least one dose of vitamin A and who received at least one dose of vitamin A within the six months preceding the survey by selected background characteristics, Madhya Pradesh, 1998–99

Background characteristic	Percentage who received vitamin A: At least one dose	Percentage who received vitamin A: At least one dose within past six months	Number of children
Age of child			
12–23 months	23.1	16.1	832
24–35 months	25.7	13.3	823
Sex of child			
Male	25.9	16.1	817
Female	22.9	13.3	838
Birth order			
1	30.5	17.1	398
2	25.7	15.9	362
3	27.6	16.9	314
4+	17.6	11.1	582
Residence			
Urban	35.3	18.7	378
Rural	21.1	13.5	1,277
Region			
Chattisgarh	35.3	21.9	379
Vindhya	12.7	7.1	250
Central	25.8	18.9	168
Malwa Plateau	23.0	15.6	289
South Central	27.8	13.9	197
South Western	25.3	12.3	166
Northern	15.1	8.7	204
Mother's education			
Illiterate	18.2	12.5	1,110
Literate, < middle school complete	30.3	18.2	282
Middle school complete	44.7	17.6	123
High school complete and above	43.5	22.5	141
Religion			
Hindu	23.8	14.4	1,514
Muslim	25.2	15.8	103
Caste/tribe			
Scheduled caste	21.7	12.6	265
Scheduled tribe	18.0	11.0	396
Other backward class	28.1	16.8	696
Other	26.5	16.5	297
Standard of living index			
Low	15.7	8.4	572
Medium	24.5	15.6	808
High	42.9	25.6	270
Total	24.4	14.7	1,655

Note: Table includes only surviving children from among the two most recent births in the three years preceding the survey. Total includes 14 Jain children, 23 children belonging to 'other' religions, and 1 and 5 children with missing information on caste/tribe and the standard of living index, respectively, who are not shown separately.

6.6 Child Morbidity and Treatment

This section discusses the prevalence and treatment of acute respiratory infection (ARI), fever, and diarrhoea. Mothers of children born during the three years preceding the survey were asked if their children suffered from cough, fever, or diarrhoea during the two weeks preceding the survey, and if so, the type of treatment given. Accuracy of all these measures is affected by the reliability of the mother's recall of when the disease episode occurred. The two-week recall period is thought to be most suitable for ensuring that there will be an adequate number of cases to analyze and that recall errors will not be too serious. Table 6.11 shows the percentage of children with cough accompanied by fast breathing (symptoms of acute respiratory infection), fever, and diarrhoea during the two weeks preceding the survey and the percentage with acute respiratory infection who were taken to a health facility or provider, by selected background characteristics.

Acute Respiratory Infection

Acute respiratory infection (ARI), primarily pneumonia, is a major cause of illness among infants and children and the leading cause of childhood mortality throughout the world (Murray and Lopez, 1996). Early diagnosis and treatment with antibiotics can prevent a large proportion of ARI/pneumonia deaths. NFHS-2 found that 29 percent of children under age three in Madhya Pradesh suffered from acute respiratory infection (cough accompanied by short, rapid breathing) at some time during the two-week period before the survey (Table 6.11). A comparison with NFHS-1 ARI data is not meaningful since the two surveys took place at different times of the year and rates of ARI are affected by the time of the year when the measurements are taken.

Table 6.11 shows that there is little variation in the prevalence of ARI by most of the background characteristics included in the table. Children age 6–11 months (37 percent) are more likely than children at all other ages (25–30 percent) to have ARI in the two weeks preceding the survey. In fact, children age 6–11 months are more likely to have ARI than children in any other population subgroup. Prevalence of ARI varies little by sex, birth order, residence, religion, and standard of living. Prevalence of ARI is highest in the South Central Region (35 percent), followed by the Central, Malwa Plateau, and South Western Regions (32–33 percent), and lowest in the Northern Region (22 percent). Children of mothers who have completed at least middle school have a lower prevalence of ARI than children of mothers who are illiterate or who have not completed middle school. ARI is lower among children who do not belong to a scheduled tribe, scheduled caste, or other backward class than among children who do belong to these caste or tribe groups. The prevalence of ARI does not vary in any predictable manner with the source of drinking water for the household. However, children living in households that use a water filter for the purification of water have a relatively low prevalence of ARI, although the small number of cases makes it difficult to draw any firm conclusion. The small variation in the prevalence of ARI by most socioeconomic characteristics indicates that respiratory infections affect children of all strata irrespective of their socioeconomic background.

Table 6.11 also shows the percentage of children suffering from ARI symptoms in the two weeks before the survey who were taken to a health facility or provider. Fifty-eight percent of children received some advice or treatment from a health facility or health provider when ill with ARI. The likelihood of being taken to a health facility or provider increases with age from a low of 48 percent for children age 1–5 months to 62 percent for children age 24–35 months, and

Table 6.11 Prevalence of acute respiratory infection, fever, and diarrhoea

Percentage of children under age 3 who were ill with a cough accompanied by fast breathing (symptoms of acute respiratory infection—ARI), fever, or diarrhoea during the two weeks preceding the survey and percentage with ARI who were taken to a health facility or provider by selected background characteristics, Madhya Pradesh, 1998–99

Background characteristic	Percentage of children suffering in past two weeks from:				Number of children	Percentage with ARI taken to a health facility or provider	Number of children with ARI
	Cough accompanied by fast breathing (ARI)	Fever	Diarrhoea				
			Any diarrhoea[1]	Diarrhoea with blood			
Age of child							
1–5 months	25.4	16.3	17.4	2.1	446	47.5	113
6–11 months	37.1	34.4	36.0	4.2	445	56.2	165
12–23 months	30.2	37.2	25.6	5.7	832	60.2	251
24–35 months	26.0	31.0	17.5	4.1	823	62.2	214
Sex of child							
Male	30.7	33.4	23.8	4.1	1,290	59.7	396
Female	27.6	28.6	22.9	4.5	1,256	55.9	347
Birth order							
1	32.1	29.4	25.7	4.3	627	65.3	202
2	28.6	29.8	20.2	3.0	559	57.4	160
3	28.9	29.0	22.6	4.3	458	55.9	132
4+	27.7	33.8	24.1	5.0	901	53.4	250
Residence							
Urban	23.4	31.1	26.6	3.2	567	71.3	132
Rural	30.9	31.0	22.4	4.6	1,978	55.1	611
Region							
Chattisgarh	26.2	26.1	20.6	2.9	585	61.6	153
Vindhya	27.3	31.3	16.2	2.5	404	45.8	110
Central	31.5	34.7	32.2	7.3	251	62.7	79
Malwa Plateau	32.7	32.6	28.9	6.5	437	65.6	143
South Central	34.8	35.2	22.9	5.9	299	46.8	104
South Western	33.4	34.9	25.9	3.0	251	62.8	84
Northern	22.1	27.5	21.4	3.2	317	58.9	70
Mother's education							
Illiterate	29.6	30.8	22.6	4.8	1,715	51.4	508
Literate, < middle school complete	34.2	34.1	25.2	4.2	440	68.0	151
Middle school complete	22.4	26.0	28.4	2.8	180	(81.5)	40
High school complete and above	21.3	30.1	21.8	1.4	210	(77.2)	45
Religion							
Hindu	29.9	30.8	22.8	4.2	2,343	57.1	700
Muslim	24.6	33.2	31.7	4.5	154	(67.2)	38
Caste/tribe							
Scheduled caste	30.4	36.7	22.9	5.0	417	50.3	127
Scheduled tribe	26.2	28.7	24.9	5.8	615	43.3	161
Other backward class	32.7	30.8	22.0	3.9	1,070	66.2	350
Other	23.9	29.5	24.9	2.5	442	62.0	106
Standard of living index							
Low	30.4	31.8	21.8	5.5	900	48.3	274
Medium	29.7	30.6	24.7	3.8	1,238	61.4	367
High	25.3	31.0	23.1	3.1	399	72.5	101

Contd…

Table 6.11 Prevalence of acute respiratory infection, fever, and diarrhoea (contd.)

Percentage of children under age 3 who were ill with a cough accompanied by fast breathing (symptoms of acute respiratory infection—ARI), fever, or diarrhoea during the two weeks preceding the survey and percentage with ARI who were taken to a health facility or provider by selected background characteristics, Madhya Pradesh, 1998–99

Background characteristic	Percentage of children suffering in past two weeks from:				Number of children	Percentage with ARI taken to a health facility or provider	Number of children with ARI
	Cough accompanied by fast breathing (ARI)	Fever	Diarrhoea: Any diarrhoea[1]	Diarrhoea: Diarrhoea with blood			
Source of drinking water							
Piped water	26.7	34.1	28.3	4.5	600	70.6	160
Hand pump	29.8	29.1	22.3	4.6	955	58.8	284
Well water	30.7	31.2	20.7	3.3	908	52.6	279
Surface water	24.4	30.1	29.7	10.5	79	*	19
Purification of water[2]							
Straining by cloth	31.1	29.8	24.7	3.5	806	67.6	251
Alum	27.9	32.1	28.7	2.3	72	*	20
Water filter	(8.4)	(16.4)	(7.7)	(0.0)	36	*	3
Boiling	(19.9)	(12.6)	(24.3)	(1.7)	56	*	11
Nothing	28.8	32.1	22.8	5.0	1,581	51.2	456
Other	(35.0)	(36.0)	(23.9)	(3.7)	50	*	18
Total	29.2	31.0	23.4	4.3	2,545	57.9	743

Note: Table includes only surviving children age 1–35 months from among the two most recent births in the three years preceding the survey. Total includes a small number of children whose mothers belong to Jain and 'other' religions, children in households having 'other' sources of drinking water or using electronic water purifiers, and children with missing information on caste/tribe and the standard of living index, who are not shown separately.
( ) Based on 25–49 unweighted cases
*Percentage not shown; based on fewer than 25 unweighted cases
[1]Includes diarrhoea with blood
[2]Number of children and number of children with ARI add to more than the respective totals because multiple methods of purification of water could be recorded.

is slightly higher for male children than for female children. The percentage taken to a health provider is relatively low for children whose mothers are illiterate or who live in households with a low standard of living. Children living in the Vindhya and South Central Regions of the state are less likely than children in other regions and scheduled-tribe children are less likely than children from other castes/tribes to be taken to a health facility. At least 65 percent or more of first born children, children in the Malwa Plateau Region, children from other backward classes, Muslim children, urban children, children whose mothers have completed at least middle school, children from households with a high standard of living, children from households with piped water, and children from households that purify water by straining it through a cloth are taken to a health facility or provider for advice or treatment when suffering from ARI.

Fever

Fever was the most common of the three conditions examined, with 31 percent of children suffering from fever during the two weeks before the survey. The prevalence of fever is lower among children under age six months (16 percent) than among older children (more than 30 percent). Prevalence is higher for boys than for girls and for children at birth orders 4 and above than for children at lower birth orders. Prevalence varies little or not at all by urban-rural residence, standard of living, and religion but is higher for scheduled-caste children than children in other castes or tribes. By region, it varies from 35 percent in the South Central, South Western, and Central Regions to 26 percent in the Chattisgarh Region. The prevalence of fever

does not appear to vary in any predictable way with mother's education and source of drinking water, but is lower for children living in households that use a water filter or boil water to purify it. In general, as with acute respiratory infection, fever tends also to strike young children irrespective of their demographic and socioeconomic background.

Diarrhoea

Diarrhoea is the second most important killer of children under age five world wide, following acute respiratory infection. Deaths from acute diarrhoea are most often caused by dehydration due to loss of water and electrolytes. Nearly all dehydration-related deaths can be prevented by prompt administration of rehydration solutions. Because deaths from diarrhoea are a significant proportion of all child deaths, the Government of India has launched the Oral Rehydration Therapy Programme as one of its priority activities for child survival. One major goal of this programme is to increase awareness among mothers and communities about the causes and treatment of diarrhoea. Oral rehydration salt (ORS) packets are made widely available and mothers are taught how to use them. NFHS-2 asked mothers of children born during the three years preceding the survey a series of questions about episodes of diarrhoea suffered by their children in the two weeks before the survey, including questions on feeding practices during diarrhoea and treatment of diarrhoea, and their knowledge and use of ORS.

Table 6.11 shows that 23 percent of children under age three suffered from diarrhoea in the two-week period before the interview. There are seasonal variations in the prevalence of diarrhoea, however, so that the percentages shown in Table 6.11 cannot be assumed to reflect the situation throughout the year.

Children age 6–11 months, followed by children age 12–23 months, are most susceptible to diarrhoea. Differentials by sex, birth order, place of residence, mother's education, standard of living, and caste/tribe membership are also relatively small. Prevalence of any diarrhoea is highest in the Central Region (32 percent) and lowest in the Vindhya Region (16 percent). Muslim children are more likely than Hindu children to suffer from diarrhoea. Consistent with expectations, diarrhoea is less common among children from households that purify water with a water filter, but the prevalence of diarrhoea does not vary in a predictable fashion with the household's source of drinking water.

Four percent of children under age three (18 percent of children who suffered from diarrhoea) in Madhya Pradesh suffered from diarrhoea with blood, a symptom of dysentery. By age, children under age six months had the lowest prevalence of diarrhoea with blood (2 percent) and children age 12–23 months had the highest prevalence (6 percent). Given the small proportion of children under age three with any diarrhoea with blood, the variation by other background characteristics is also very limited. Prevalence of diarrhoea with blood varies most by source of drinking water, and is highest, at 11 percent, for children from households with surface water. The risk of diarrhoea is also relatively elevated for children of birth order four or higher, children living in the Central, Malwa Plateau, and South Central Regions of the state, scheduled-tribe and scheduled-caste children, children from households with a low standard of living, and children from households that do not purify their water.

Table 6.12 shows that 56 percent of mothers with births during the three years preceding the survey know about ORS packets, compared with 62 percent of mothers in the country as a

Table 6.12 Knowledge of diarrhoea care

Among mothers with births during the three years preceding the survey, percentage who know about oral rehydration salt (ORS) packets, percent distribution by quantity to be given to drink during diarrhoea, and percentage who know two or more signs of diarrhoea that indicate the need for medical treatment by selected background characteristics, Madhya Pradesh, 1998–99

Background characteristic	Percentage who know about ORS packets	Reported quantity to be given to drink					Percentage who know two or more signs for medical treatment of diarrhoea[1]	Number of mothers
		Less	Same	More	Don't know/ missing	Total percent		
Age								
15–19	51.5	28.9	40.4	22.8	8.0	100.0	28.5	417
20–24	56.0	29.7	35.9	29.1	5.3	100.0	30.0	891
25–29	56.7	30.3	35.7	30.3	3.7	100.0	33.6	681
30–34	58.3	28.5	37.0	27.8	6.7	100.0	32.3	344
35–49	51.5	29.2	38.8	27.5	4.5	100.0	26.9	147
Residence								
Urban	72.6	22.8	32.9	41.1	3.2	100.0	27.9	536
Rural	50.8	31.4	38.0	24.5	6.1	100.0	31.7	1,942
Region								
Chattisgarh	58.7	20.4	39.3	33.7	6.6	100.0	54.1	572
Vindhya	50.4	30.4	44.7	21.7	3.2	100.0	19.1	407
Central	65.9	33.8	35.5	26.5	4.2	100.0	29.9	236
Malwa Plateau	51.1	46.0	24.0	24.8	5.2	100.0	28.0	418
South Central	57.4	25.9	40.5	29.1	4.5	100.0	22.2	294
South Western	67.8	31.6	45.1	21.5	1.9	100.0	27.5	239
Northern	42.9	21.6	31.2	35.7	11.5	100.0	19.0	311
Education								
Illiterate	46.2	32.5	38.4	22.7	6.3	100.0	28.1	1,706
Literate, < middle school complete	67.4	23.5	38.9	32.3	5.3	100.0	39.9	409
Middle school complete	76.7	31.0	29.3	37.0	2.7	100.0	30.9	162
High school complete and above	92.5	15.2	26.3	57.7	0.8	100.0	36.3	201
Religion								
Hindu	54.1	29.5	37.4	27.5	5.6	100.0	30.6	2,285
Muslim	73.1	28.7	30.9	36.0	4.3	100.0	28.8	146
Caste/tribe								
Scheduled caste	51.8	35.5	33.9	25.4	5.2	100.0	29.4	417
Scheduled tribe	47.3	28.9	41.5	22.5	7.1	100.0	35.2	609
Other backward class	56.9	29.1	37.4	28.6	4.9	100.0	30.6	1,028
Other	67.3	25.5	32.2	37.4	4.9	100.0	26.9	423
Exposure to media								
Exposed to any media	69.4	26.6	36.3	33.9	3.2	100.0	33.9	1,242
Watches television weekly	72.7	27.4	34.5	35.3	2.8	100.0	32.0	973
Listens to radio weekly	72.5	25.2	37.5	33.9	3.4	100.0	39.4	638
Visits cinema/theatre monthly	78.5	23.3	29.3	43.8	3.5	100.0	32.1	187
Reads newspaper/magazine weekly	83.2	20.3	32.6	44.5	2.7	100.0	37.2	374
Not regularly exposed to any media	41.5	32.5	37.6	22.2	7.8	100.0	27.8	1,237
Total	55.5	29.5	36.9	28.1	5.5	100.0	30.9	2,478

Note: Total includes 20 Jain mothers, 27 mothers belonging to 'other' religions, and 1 mother with missing information on caste/tribe, who are not shown separately.

[1]Percentage who know two or more signs of illness that indicate that a child should be taken to a health facility or health worker

whole. Knowledge of ORS packets has more than doubled since the time of NFHS-1, when it was only 24 percent. Knowledge of ORS packets is higher among mothers age 20–34 than among younger (age 15–19) or older mothers (age 35 and over). As expected, knowledge is considerably higher among urban mothers than rural mothers, and increases sharply with education from 46 percent for illiterate mothers to 93 percent for mothers who have completed at least high school. Mothers in the Northern Region, followed by the Vindhya and the Malwa Plateau Regions are much less likely to know about ORS packets than mothers in any of the other regions of the state. Notably, even in the regions where ORS packets are most widely known (namely, the Central and the South Western Regions) only about two-thirds of mothers know about ORS packets. Knowledge of ORS is much more widespread among Muslim mothers (73 percent) than Hindu mothers (54 percent). Mothers belonging to scheduled tribes are less likely to know about ORS than mothers in any other caste or tribe category. Notably, knowledge of ORS packets is lower among mothers who are not regularly exposed to any mass media than among mothers with any other background characteristic.

In order to assess mothers' knowledge of children's need for extra fluids during episodes of diarrhoea, all mothers of children born in the three years preceding the survey were asked: 'When a child is sick with diarrhoea should he/she be given less to drink than usual, about the same amount, or more than usual?' Table 6.12 shows the response of mothers to this question by selected background characteristics. In Madhya Pradesh, only 28 percent of mothers report that children should be given more to drink than usual during an episode of diarrhoea and, contrary to the standard recommendation, 30 percent report that children should be given less to drink. This suggests that mothers in Madhya Pradesh need much more education in the proper management of diarrhoea. The proportion reporting correctly that children with diarrhoea should be given more to drink is particularly low among the youngest mothers (age 15–19), rural mothers, mothers in the Vindhya and South Western Regions of the state, less educated mothers, mothers belonging to the scheduled tribes, and mothers not regularly exposed to any mass media. Thirty-six percent of Muslim mothers reported correctly that children with diarrhoea should be given more to drink compared with only 28 percent of Hindu mothers.

To assess whether mothers are aware of one or more signs associated with diarrhoea which suggest the need for medical treatment, mothers were also asked: 'When a child is sick with diarrhoea, what signs of illness would tell you that he or she should be taken to a health facility or health worker?' All answers given by the respondent were recorded. The signs warranting medical treatment include repeated watery stools, repeated vomiting, blood in the stools, fever, marked thirst, not eating or not drinking well, getting sicker or very sick, and not getting better. Table 6.12 shows that only 3 in 10 mothers were able to name two or more signs of diarrhoea that indicate that a child with diarrhoea should be given medical treatment. Contrary to expectations, the percentage of mothers who were able to name two or more such signs is lower for urban than rural mothers, for the most educated literate mothers than for the least educated literate mothers, and for mothers who do not belong to scheduled castes, scheduled tribes, or other backward classes than for those who do belong to these castes or tribes. This percentage, however, is higher among literate than illiterate mothers. Fifty-four percent of mothers in the Chattisgarh Region correctly named two or more signs of diarrhoea that suggest a need for medical treatment compared with only 19 percent of mothers in the Vindhya and Northern Regions. Mothers who are regularly exposed to media are more likely than mothers who are not regularly exposed to any media to know the danger signs. Notably, however, knowledge of two or more signs of diarrhoea that suggest the need for medical treatment is

universally low across demographic and socioeconomic groups. This suggests a need for further educating mothers with regard to children's diarrhoea so that they are better able to recognize the signs of diarrhoea for which a health provider should be consulted.

Table 6.13 shows the percentage of children under age three with diarrhoea during the two weeks preceding the survey who were taken to a health facility or provider, the percentage who received various types of oral rehydration therapy (ORT), and the percentage who received other types of treatment, by selected background characteristics. Among children in Madhya Pradesh who suffered from diarrhoea during the two weeks preceding NFHS-2, medical advice or treatment was sought for 59 percent. Thirty percent of children with diarrhoea did not receive any treatment at all. Medical advice or treatment was more likely to be sought for children at least 12 months of age than for younger children, for boys than for girls, for urban children than for rural children, for children of literate mothers than for children of illiterate mothers, and for Muslim children than for Hindu children. Scheduled-tribe children, children living in the Vindhya and South Central Regions, and children living in households with a low standard of living are the least likely to receive medical advice or treatment. Notably, the likelihood of seeking treatment is higher for children living in households with a high standard of living than for children with any other background characteristic.

Thirty percent of the children age 1–35 months who suffered from diarrhoea during the two weeks preceding the survey were treated with a solution made from ORS packets. This is up from 22 percent in NFHS-1, and is also higher than the average for India as a whole (27 percent). Only one-fifth (21 percent) of the children age 1–11 months were given a solution made from ORS packets, compared with over one-third (35–36 percent) of older children. As expected, use of ORS packets is relatively high among urban children, children of more educated mothers, and children living in households with a high standard of living. Use of ORS does not vary much by sex of child or religion, but is lower for children belonging to other backward classes and to the scheduled-castes than for children of other caste/tribe groups. Children with diarrhoea in the Northern Region were less likely than all other children in the state to be given a solution made from ORS packets, even though, children in the Northern Region were more likely than children in other regions to be taken to a health facility or provider.

Fifty-four percent of children did not receive any of the types of oral rehydration therapies (ORT) when sick with diarrhoea. Only 21 percent received increased fluids, 14 percent received gruel, and 2 percent received a homemade sugar-salt-water solution when sick with diarrhoea. The youngest children (age 1–11 months), children living in rural areas, children living in the Vindhya, South Central, and Malwa Plateau Regions of the state, children of illiterate mothers, and children belonging to households with a low standard of living are less likely than other children to receive any of the various types of oral rehydration therapy.

The use of antibiotics and other antidiarrhoeal drugs is not generally recommended for the treatment of childhood diarrhoea. Yet 54 percent of the children who had diarrhoea in the two weeks before NFHS-2 were treated with pills or syrup, and 16 percent received an injection. The use of unnecessary antidiarrhoeal drugs is widespread across most socioeconomic groups, and is particularly common for children of more educated mothers and for children belonging to households with a high standard of living. The use of both pills/syrups and injections is higher for boys than for girls and for older than for younger children. Although the proportion receiving pills or syrup is higher in the urban areas than in the rural areas, injections are received by 19

Table 6.13 Treatment of diarrhoea

Among children under age 3 who had diarrhoea in the past two weeks, percentage taken to a health facility or provider, percentage who received various types of oral rehydration therapy (ORT), and percentage who received other treatments by selected background characteristics, Madhya Pradesh, 1998–99

		Oral rehydration					Other treatment					
Background characteristic	Taken to a health facility or provider	Oral rehydration salt (ORS) packets	Gruel	Homemade sugar-salt-water solution	Increased fluids	ORT not given	Pill or syrup	Injection	Intrave-nous (IV/drip/ bottle)	Home remedy/ herbal medicine	No treat-ment	Number of children with diarrhoea
Age of child												
1–11 months	53.4	21.2	7.5	1.7	14.7	67.5	48.3	14.7	1.8	4.5	36.8	238
12–23 months	64.9	35.8	16.7	2.6	26.6	45.1	60.6	18.5	4.7	2.1	24.7	213
24–35 months	61.3	35.1	21.7	0.0	23.3	46.0	55.3	15.6	3.0	0.6	27.8	144
Sex of child												
Male	62.9	30.7	15.4	1.7	23.1	52.9	57.6	18.0	2.8	2.6	27.9	307
Female	55.6	28.8	13.0	1.5	18.9	55.7	50.9	14.4	3.4	2.8	32.9	288
Residence												
Urban	74.9	36.8	19.4	4.8	28.1	45.2	60.5	8.5	3.4	1.7	17.4	151
Rural	54.2	27.4	12.5	0.5	18.6	57.3	52.3	18.9	3.0	3.1	34.7	444
Region												
Chattisgarh	59.3	29.7	12.6	4.6	31.1	51.6	45.2	12.5	6.3	7.8	28.3	121
Vindhya	41.7	21.6	13.0	0.0	23.0	59.8	51.6	18.7	4.3	1.4	42.6	65
Central	69.5	34.3	14.9	1.8	21.2	42.8	66.6	16.7	4.4	0.9	19.3	81
Malwa Plateau	67.9	38.6	17.0	0.0	15.1	57.6	60.5	21.8	1.0	0.9	29.2	127
South Central	45.9	29.6	12.0	1.3	18.7	59.7	41.9	14.9	0.0	2.7	38.0	68
South Western	51.0	32.5	14.9	0.0	10.7	53.7	58.7	19.7	2.9	3.0	26.3	65
Northern	70.5	13.7	14.0	2.4	24.2	56.2	56.0	8.0	2.3	0.0	33.4	68
Mother's education												
Illiterate	54.2	24.8	11.5	1.1	17.0	60.7	52.6	17.6	3.4	2.6	34.3	387
Literate, < middle school complete	65.3	39.4	18.6	0.0	28.2	43.0	51.8	15.4	1.4	4.8	27.5	111
Middle school complete	62.7	22.6	12.3	7.3	22.7	52.8	65.6	13.7	0.0	0.0	20.8	51
High school complete and above	(85.5)	(57.1)	(29.0)	(3.1)	(35.8)	(28.5)	(63.1)	(10.0)	(8.3)	(1.4)	(13.6)	46

Contd…

Table 6.13 Treatment of diarrhoea (contd.)

Among children under age 3 who had diarrhoea in the past two weeks, percentage taken to a health facility or provider, percentage who received various types of oral rehydration therapy (ORT), and percentage who received other treatments by selected background characteristics, Madhya Pradesh, 1998–99

		Oral rehydration					Other treatment					
Background characteristic	Taken to a health facility or provider	Oral rehydration salt (ORS) packets	Gruel	Homemade sugar-salt-water solution	Increased fluids	ORT not given	Pill or syrup	Injection	Intrave-nous (IV/drip/ bottle)	Home remedy/ herbal medicine	No treat-ment	Number of children with diarrhoea
Religion												
Hindu	58.3	29.1	13.6	1.6	20.5	54.9	53.4	17.0	3.2	2.9	31.3	534
Muslim	69.3	31.7	17.0	1.9	24.3	48.6	65.5	8.4	2.8	1.5	17.0	49
Caste/tribe												
Scheduled caste	59.3	30.1	14.3	0.0	22.2	55.6	58.6	23.8	2.7	2.9	26.1	95
Scheduled tribe	48.2	34.0	11.6	0.5	16.9	55.2	44.8	18.1	0.9	6.1	39.2	153
Other backward class	65.4	25.2	11.8	1.8	21.7	58.2	57.7	13.1	4.4	1.1	29.1	235
Other	62.9	33.9	22.9	4.0	24.5	43.0	57.5	14.1	3.9	1.2	23.5	110
Standard of living index												
Low	47.1	22.5	10.7	1.8	20.2	60.6	47.1	12.8	1.5	2.0	38.9	196
Medium	61.7	31.0	14.3	1.5	21.3	54.0	55.0	19.2	3.6	3.8	28.1	306
High	77.6	40.8	20.7	0.8	22.2	42.0	68.3	13.3	4.9	0.7	19.7	92
Total	59.4	29.8	14.2	1.6	21.0	54.3	54.4	16.3	3.1	2.7	30.3	595

Note: Table includes only surviving children age 1–35 months from among the two most recent births in the three years preceding the survey. Total includes 6 children each belonging to Jain and 'other' religions, and 1 child each with missing information on caste/tribe and the standard of living index, who are not shown separately.
( ) Based on 25–49 unweighted cases

Table 6.14 Source of ORS packets

Among children under age 3 who were treated with a solution made from oral rehydration salt (ORS) packets for diarrhoea in the two weeks preceding the survey, percent distribution of children by source of ORS packets, Madhya Pradesh, 1998–99

Source	Percent
Public medical sector	36.7
Government/municipal hospital	18.6
Government dispensary	2.1
UHC/UHP/UFWC	0.7
CHC/rural hospital/PHC	6.9
Sub-centre	2.9
Government paramedic	1.0
Other public medical sector	4.5
NGO or trust hospital/clinic	2.2
Private medical sector	35.9
Private hospital/clinic	12.3
Private doctor	16.2
Private paramedic	0.8
Vaidya/*hakim*/homeopath	1.1
Pharmacy/drugstore	5.5
Other source	25.3
Shop	22.1
Husband	2.0
Other	1.3
Total percent	100.0
Number of children treated with ORS	177

Note: Table includes only surviving children age 1–35 months from among the two most recent births in the three years preceding the survey. Table excludes children with missing information on source of ORS packets.
UHC: Urban health centre; UHP: Urban health post; UFWC: Urban family welfare centre; CHC: Community health centre; PHC: Primary Health Centre; NGO: Nongovernmental organization

percent of rural children sick with diarrhoea compared with 9 percent of urban children sick with diarrhoea. These figures indicate poor knowledge about the proper treatment of diarrhoea not only among mothers but also among health-care providers. The results underscore the need for informational programmes for mothers and supplemental training for health-care providers that emphasizes the importance of ORT, increased fluid intake, and continued feeding, and discourages the use of drugs to treat childhood diarrhoea.

Table 6.14 shows the percent distribution of children who were treated with ORS for diarrhoea in the two weeks before NFHS-2 by the source of the ORS packets. Only 177 children were treated with a solution made from ORS packets in the Madhya Pradesh sample, so the results in this table should be interpreted with caution. For 37 percent of children who were treated with ORS, the packets were obtained from public-sector medical sources, for 36 percent the packets were obtained from private-sector medical sources, for 2 percent they were obtained from nongovernmental organization or trust sources, and for the remaining 25 percent the packets were obtained from shops and other sources. Among public-sector sources, government or municipal hospitals are mentioned most often, followed by community health centres (CHC), rural hospitals, or Primary Health Centres (PHC). Among private-sector medical sources, ORS packets were usually obtained from a private doctor or a private hospital or clinic. The pharmacy

or drugstore category listed under private-sector sources, accounts for 6 percent of all cases. If this category is added to the 'shop' category, the proportion purchasing ORS packets from shops, pharmacies, or drugstores becomes 28 percent.

6.7 HIV/AIDS

Acquired Immune Deficiency Syndrome (AIDS) is an illness caused by the HIV 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 women to their unborn children, or through contact with contaminated needles (injections) or blood. HIV and AIDS prevalence in India have been on the rise for more than a decade and have reached alarming proportions in recent years. The Government of India established a National AIDS Control Organization (NACO) under the Ministry of Health and Family Welfare in 1989 to deal with the epidemic. Since then there have been various efforts to prevent HIV transmission, such as public health education through the media and the activities of many nongovernmental organizations (NGOs).

NFHS-2 included a set of questions on knowledge of AIDS and AIDS prevention. Ever-married women age 15–49 were first asked if they had ever heard of an illness called AIDS. Respondents who had heard of AIDS were asked further questions about their sources of information on AIDS, whether they believe that AIDS is preventable, and if so, what precautions, if any, a person can take to avoid infection.

Knowledge of AIDS

Table 6.15 shows the percentage of women who have heard about AIDS by background characteristics. Seventy-seven percent of women in Madhya Pradesh have never heard of AIDS. Madhya Pradesh is one of only four states in the country where less than one in four women have heard about AIDS. NFHS-1 did not include AIDS-awareness questions for Madhya Pradesh so it is not possible to assess the trend in AIDS awareness between NFHS-1 and NFHS-2.

Urban residence, education, and standard of living have a strong positive association with AIDS knowledge, although knowledge varies little by age. Fifty-four percent of urban women in Madhya Pradesh have heard about AIDS, compared with only 12 percent of rural women. Knowledge of AIDS increases from 7 percent among illiterate women to 91 percent among women who have completed at least high school. Similarly, knowledge of AIDS increases from 6 percent among women in households with a low standard of living to 62 percent among women in households with a high standard of living. By region, knowledge varies from 35 percent in the Central and Malwa Plateau Regions, to only 13 percent in the Vindhya Region.

Hindu women are much less likely to know about AIDS (21 percent) than Muslim (45 percent) or Jain (76 percent) women. Greater knowledge of AIDS among Muslims and Jains than among Hindus may in part be due to the greater concentration of Muslims and Jains in urban areas and their much higher literacy rates. Only 5 percent of scheduled-tribe women have heard about AIDS, compared with 17 percent of scheduled-caste women, 21 percent of women belonging to other backward classes, and 49 percent of 'other' women. AIDS knowledge varies substantially by exposure to mass media. Seventy-two percent of women who read a newspaper or magazine at least once a week know about AIDS compared with 3 percent of women who are

Table 6.15 Source of knowledge about AIDS

Percentage of ever-married women who have heard about AIDS and among women who have heard about AIDS, percentage who received information from specific sources by selected background characteristics, Madhya Pradesh, 1998–99

Background characteristic	Percentage who have heard about AIDS	Number of women	Among those who have heard about AIDS, percentage who received information from:										Number of women who have heard about AIDS
			Radio	Television	Cinema	Newspaper/ magazine	Poster/ hoarding	Health worker	Adult education programme	Friend/ relative	School/ teacher	Other source	
Age													
15-24	22.5	2,191	28.4	93.8	3.7	20.8	7.1	3.2	0.1	10.6	0.6	2.0	492
25–34	23.9	2,544	30.2	93.4	6.6	33.4	7.7	3.6	0.6	11.9	0.5	2.5	607
35–49	21.5	2,206	24.2	94.3	5.5	34.9	6.1	3.3	0.2	9.1	1.4	1.2	474
Residence													
Urban	54.1	1,756	27.7	97.4	6.7	36.5	7.9	2.6	0.2	8.7	0.8	1.2	950
Rural	12.0	5,185	28.0	88.4	3.3	19.9	5.7	4.5	0.5	13.6	0.8	3.2	622
Region													
Chattisgarh	19.6	1,779	47.3	93.0	5.4	30.1	6.5	3.8	0.5	9.2	0.5	2.7	349
Vindhya	13.1	1,030	16.6	88.9	9.7	26.4	6.2	6.3	0.0	12.5	1.4	1.4	135
Central	35.0	667	28.5	96.7	7.5	38.0	9.7	2.4	0.9	7.7	2.2	0.6	234
Malwa Plateau	34.5	1,155	24.9	95.5	4.5	29.7	6.9	3.0	0.0	11.7	0.0	2.7	399
South Central	18.8	841	24.3	90.2	5.2	28.9	7.5	4.0	0.6	12.7	1.7	2.9	159
South Western	22.8	620	18.0	91.4	3.1	17.6	9.5	3.6	0.0	13.0	0.9	0.9	141
Northern	18.4	848	12.9	97.1	2.5	33.3	2.5	1.5	0.0	10.0	0.0	1.0	156
Education													
Illiterate	7.3	4,753	15.5	85.6	1.6	1.5	0.8	3.7	0.2	17.1	0.3	1.6	346
Literate, < middle school complete	32.8	1,133	27.6	93.7	2.0	12.7	3.0	2.0	0.2	10.9	0.9	1.7	371
Middle school complete	64.4	398	29.2	96.7	4.3	27.5	6.9	3.6	0.7	7.5	0.0	1.7	256
High school complete and above	91.3	656	34.5	97.4	10.0	58.1	13.1	4.0	0.3	8.1	1.5	2.4	599
Religion													
Hindu	20.6	6,396	28.1	94.1	5.4	30.1	6.8	3.2	0.4	10.6	0.7	2.0	1,320
Muslim	44.6	372	20.1	94.8	2.5	16.0	7.7	4.3	0.0	10.6	0.6	1.1	166
Jain	76.0	70	30.1	98.8	8.2	55.2	5.7	2.3	0.0	6.0	0.0	0.0	53
Other	32.1	103	(51.3)	(69.6)	(10.8)	(52.2)	(12.2)	(5.8)	(0.0)	(19.9)	(8.6)	(5.6)	33

Contd…

Table 6.15 Source of knowledge about AIDS (contd.)

Percentage of ever-married women who have heard about AIDS and among women who have heard about AIDS, percentage who received information from specific sources by selected background characteristics, Madhya Pradesh, 1998–99

Background characteristic	Percentage who have heard about AIDS	Number of women	Among those who have heard about AIDS, percentage who received information from:										Number of women who have heard about AIDS
			Radio	Television	Cinema	Newspaper/ magazine	Poster/ hoarding	Health worker	Adult education programme	Friend/ relative	School/ teacher	Other source	
Caste/tribe													
Scheduled caste	17.1	1,050	26.8	89.7	3.6	18.9	6.0	4.6	0.0	12.3	0.0	2.8	180
Scheduled tribe	5.2	1,571	29.5	78.7	3.4	27.3	8.5	8.0	0.0	14.4	2.3	3.4	82
Other backward class	21.1	2,863	26.8	93.9	4.6	21.9	5.9	2.6	0.0	11.4	0.5	2.6	605
Other	48.5	1,452	28.8	96.5	6.7	39.9	8.1	3.2	0.7	9.1	1.1	1.0	705
Standard of living index													
Low	6.1	2,149	23.7	77.1	0.7	8.2	3.8	4.4	1.1	19.9	3.2	0.7	131
Medium	18.4	3,491	23.6	92.5	3.9	17.1	5.1	3.3	0.3	10.6	0.2	1.9	643
High	61.8	1,283	32.1	97.6	7.2	43.9	9.2	3.3	0.2	9.3	0.9	2.2	793
Exposure to mass media													
Exposed to any media	38.9	3,804	28.4	95.1	5.5	31.5	7.5	3.1	0.3	9.7	0.8	2.0	1,478
Listens to radio weekly	37.9	1,956	43.5	94.5	7.9	37.7	9.2	3.3	0.3	9.0	1.0	2.2	742
Watches television weekly	45.4	3,088	27.6	97.0	5.7	31.8	7.5	2.8	0.3	9.5	0.7	2.0	1,403
Goes to cinema/theatre monthly	53.4	512	42.4	97.4	11.7	41.7	10.0	3.5	1.3	12.5	0.9	4.0	273
Reads newspaper/magazine weekly	72.1	1,135	35.0	96.2	8.4	49.3	10.2	3.5	0.4	8.3	1.2	2.5	818
Not regularly exposed to any media	3.0	3,137	19.4	73.8	3.0	5.9	0.0	8.0	0.8	26.2	0.7	1.2	94
Total	22.7	6,941	27.8	93.8	5.3	29.9	7.0	3.4	0.3	10.7	0.8	2.0	1,573

Note: Total includes a small number of women with missing information on education, caste/tribe, and the standard of living index, who are not shown separately.
( ) Based on 25–49 unweighted cases

not regularly exposed to any mass media (newspapers, magazines, radio, television, cinema, or theatre).

Source of Knowledge About AIDS

As part of the AIDS prevention programme, the Government of India has been using mass media extensively to create awareness among the general public about AIDS and its prevention. NFHS-2 asked women who had heard of AIDS about their sources of AIDS information. Table 6.15 shows the percentage of ever-married women who have heard about AIDS from specific sources. Television is the most important source of information about AIDS among ever-married women in Madhya Pradesh. Ninety-four percent of women who know about AIDS report television as a source of their information about AIDS, followed by newspaper or magazine (30 percent), radio (28 percent), poster or hoarding (7 percent) and cinema (5 percent). Eleven percent have received information on AIDS from a friend or relative and only 3 percent received information about AIDS from a health worker.

Television is the most important source of information about AIDS for women of all background characteristics. Also, the proportion who heard about AIDS from television does not vary much by background characteristics. Only women from religions other than Hindu, Muslim, and Jain, women from households with a low standard of living, and scheduled-tribe women are much less likely than most women to have heard about AIDS through television. After television, radio is the most important source of information about AIDS in rural areas and newspapers or magazines are the most important source in urban areas. Rural women are more likely than urban women to have learned about AIDS from friends or relatives. In all regions too, radio and newspapers are also common sources of knowledge about AIDS. The radio as a source of information on AIDS is most common in the Chattisgarh Region (47 percent) and least common in the Northern Region (13 percent) and newspapers or magazines are most common as a source of information on AIDS in the Central Region (38 percent) and least common in the South Western Region (18 percent). Between 8 and 13 percent of women in all regions heard about AIDS from friends or relatives.

More educated women are more likely than less educated women to have learned about AIDS from each of the mass media sources, but are less likely to have done so from a friend or relative. Jain women are more likely than Hindu, Muslim, or women of other religions to have learned about AIDS from all media sources other than posters or hoardings, but least likely to have learned about AIDS from friends or relatives. Hindus are more likely than Muslims to have heard about AIDS from radio, cinema, or newspaper or magazine, but about equally likely to have done so through television. Scheduled-tribe women are less likely than women of any other caste/tribe group to have heard of AIDS through television, but are more likely than women in other caste/tribe groups to have heard about AIDS from a health worker, a poster or hoarding, or from a friend or relative.

The likelihood that television, cinema, newspapers or magazines, and posters or hoardings are the source of AIDS knowledge for women increases sharply with the standard of living, whereas, the likelihood that the source of AIDS knowledge is a friend or relative decreases sharply with standard of living. Notably, one in five women from households with a low standard of living have heard of AIDS from a friend or relative. Women in households with a high standard of living are more likely to have heard of AIDS through the radio than women in

households with a low or medium standard of living. Women who are not regularly exposed to mass media are much more likely to have learned about AIDS from a friend or relative than from any other source, as might be expected.

Knowledge of Ways to Avoid AIDS

Respondents who have heard of AIDS were asked if a person can do anything to avoid becoming infected. Those who reported that something could be done were asked what a person could do to avoid AIDS. Table 6.16 shows the percentage of ever-married women who know of no way to avoid AIDS and the percentages who report that AIDS can be avoided in specific ways, by selected background characteristics.

Among women who have heard about AIDS, 45 percent do not know any way to avoid infection. This percentage is higher among rural women than urban women, women living in the Chattisgarh and the Vindhya Region than in other regions and among women not regularly exposed to mass media than among other women. Women age 25–34 are more likely than older and younger women to know of ways to avoid AIDS. The percentage who do not know any way to avoid becoming infected with AIDS decreases sharply with increasing levels of education and household standard of living. This percentage is also higher for Muslim women (54 percent) than for Hindu women (44 percent) or Jain women (37 percent). Scheduled-tribe women, followed by scheduled-caste women, are less likely to know any way to avoid AIDS than other women. Notably, the percentage who know ways to avoid AIDS is highest for women in the Central Region and women who have completed at least high school (both 74 percent).

Among women who report that something can be done to prevent AIDS, 'using condoms' (26 percent), 'avoiding injections or using clean needles' (23 percent) and 'having only one sex partner' (22 percent) are the most commonly mentioned ways of avoiding AIDS. 'Avoiding blood transfusions' (11 percent), 'abstaining from sex' (10 percent) and 'avoiding sex with commercial sex workers' (7 percent) are the only other methods mentioned by more than 3 percent of women. The use of condoms and abstaining from sex are mentioned more often by younger than older women, but having only one sex partner is mentioned less often by women age 15–24 than older women. While most of the ways of avoiding AIDS are mentioned more often by urban than rural women, 'abstaining from sex' is mentioned more often by rural women than urban women. There is no definite pattern by region to the frequency with which women mention the different means of avoiding AIDS. For example, the use of condoms is mentioned most often in the Central Region, abstaining from sex is mentioned most often in the Vindhya Region, and having only one sex partner is mentioned most often in the Chattisgarh Region. There is also no set pattern to the frequency with which women of different religions or castes/tribes mention these means. The level of education and the household standard of living, however, are strongly and positively associated with women mentioning most of these ways of avoiding AIDS. The percentage reporting each of the ways of avoiding AIDS is lower among women not regularly exposed to mass media than other women.

If the spread of AIDS is to be contained by 2010 as specified by the National Population Policy 2000 of the Government of India (Ministry of Health and Family Welfare, 2000) then dissemination of information about AIDS and means to avoid AIDS are absolutely necessary as first steps in this direction. These data, however, suggest that in Madhya Pradesh few women have heard of AIDS and fewer still know of even one way of avoiding AIDS. Very few women

Table 6.16 Knowledge about avoidance of AIDS

Among ever-married women who have heard about AIDS, percentage who believe AIDS can be avoided in specific ways by selected background characteristics, Madhya Pradesh, 1998–99

Background characteristic	Percentage who believe AIDS can be avoided by:									Knows no way to avoid AIDS	Number of women
	Abstaining from sex	Using condoms	Having only one sex partner	Avoiding sex with commercial sex workers	Avoiding sex with homo-sexuals	Avoiding blood transfusions	Avoiding injections/ using clean needles	Avoiding IV drug use	Other ways		
Age											
15-24	12.4	25.7	16.2	4.8	1.0	10.0	21.2	1.5	2.8	47.2	492
25–34	10.2	31.5	24.5	7.5	2.0	11.7	23.4	1.3	2.6	39.7	607
35–49	7.5	20.4	23.4	9.4	3.1	12.5	25.2	0.9	3.7	49.2	474
Residence											
Urban	8.1	29.4	22.3	8.4	2.5	14.0	26.2	1.2	2.9	41.2	950
Rural	13.1	21.8	20.5	5.5	1.2	7.4	18.7	1.4	3.1	50.5	622
Region											
Chattisgarh	2.2	20.9	29.1	3.8	2.7	7.5	12.4	0.0	1.6	54.9	349
Vindhya	17.3	16.7	20.1	5.5	2.1	7.6	18.7	0.0	5.6	52.1	135
Central	12.7	36.8	26.7	10.2	2.2	13.4	39.8	0.3	3.1	25.8	234
Malwa Plateau	15.2	32.3	18.0	8.4	0.3	7.0	16.8	3.3	2.4	44.6	399
South Central	11.6	21.4	18.6	6.3	1.7	12.7	31.8	0.6	2.9	45.0	159
South Western	7.2	30.7	23.4	6.4	1.8	12.6	29.8	1.8	6.8	40.5	141
Northern	5.4	17.4	8.9	10.9	5.0	29.2	28.2	1.5	1.9	49.5	156
Education											
Illiterate	7.3	14.2	9.8	3.4	0.5	4.1	11.9	1.6	2.8	69.5	346
Literate, < middle school complete	9.3	19.5	14.5	6.1	1.7	6.9	17.6	1.3	3.1	52.8	371
Middle school complete	10.6	25.8	19.8	7.2	0.8	13.1	22.9	0.7	3.2	45.6	256
High school complete and above	11.9	37.9	33.5	10.2	3.5	17.7	33.4	1.2	3.0	25.5	599
Religion											
Hindu	10.1	26.6	22.2	8.1	2.1	11.8	23.3	1.3	2.7	44.2	1,320
Muslim	6.8	24.1	12.7	3.5	1.4	8.8	22.9	0.8	4.4	54.3	166
Jain	9.4	24.0	34.9	1.4	1.7	11.6	18.3	0.0	2.2	36.9	53
Other	(24.0)	(32.2)	(20.2)	(1.9)	(2.8)	(10.0)	(28.2)	(1.9)	(8.6)	(39.0)	33

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Table 6.16 Knowledge about avoidance of AIDS (contd.)

Among ever-married women who have heard about AIDS, percentage who believe AIDS can be avoided in specific ways by selected background characteristics, Madhya Pradesh, 1998–99

Background characteristic	Percentage who believe AIDS can be avoided by:									Knows no way to avoid AIDS	Number of women
	Abstaining from sex	Using condoms	Having only one sex partner	Avoiding sex with commercial sex workers	Avoiding sex with homo-sexuals	Avoiding blood transfusions	Avoiding injections/ using clean needles	Avoiding IV drug use	Other ways		
Caste/tribe											
Scheduled caste	9.7	25.9	15.3	5.2	1.4	8.4	14.1	0.7	1.3	53.7	180
Scheduled tribe	4.8	21.3	16.8	4.5	2.3	0.0	15.3	0.8	3.5	59.6	82
Other backward class	8.0	23.1	18.8	6.5	0.9	9.1	20.0	1.3	2.0	49.6	605
Other	12.5	29.9	26.1	8.7	3.1	15.5	29.2	1.4	4.2	36.9	705
Standard of living index											
Low	5.4	8.4	10.2	5.7	1.1	5.4	9.2	0.0	1.2	72.8	131
Medium	9.4	23.3	17.9	5.3	1.1	7.6	21.2	0.9	3.5	51.7	643
High	11.4	32.0	26.6	8.8	2.9	15.6	27.1	1.8	2.8	34.8	793
Exposure to mass media											
Exposed to any media	10.3	27.6	22.4	7.6	2.1	11.8	23.9	1.3	3.0	43.4	1,478
Listens to radio weekly	9.8	27.4	25.3	6.9	2.6	13.5	24.4	1.0	3.4	40.5	742
Watches television weekly	10.3	28.3	22.8	7.8	2.1	12.3	24.5	1.2	2.9	42.4	1,403
Goes to cinema/theatre monthly	11.3	33.0	24.5	8.8	1.9	11.3	22.7	0.9	2.5	40.2	273
Reads newspaper/magazine weekly	11.5	33.0	27.5	10.2	2.1	15.4	29.2	1.4	2.9	33.7	818
Not regularly exposed to any media	7.0	7.5	8.2	2.4	0.8	5.7	12.7	0.8	3.4	68.9	94
Total	10.1	26.4	21.6	7.3	2.0	11.4	23.2	1.2	3.0	44.9	1573

Note: Total includes 6 women with missing information on the standard of living index, who are not shown separately.
( ) Based on 25–49 unweighted cases

have heard of AIDS from health workers. While the use of condoms as a means of avoiding AIDS is the method most well known by women who know of even one method of avoiding AIDS, the total percentage of ever-married women mentioning this means of avoiding AIDS is only 6. Similarly, having only one sex partner is mentioned only by 5 percent of all ever-married women as a means of avoiding AIDS.