CHAPTER 6

MORTALITY, MORBIDITY, AND IMMUNIZATION

This chapter presents mortality rates, particularly for infants and young children, 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 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 that was 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 on 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 that period, 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 for the usual resident (*de jure*) population of Haryana 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 1991–92 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 midpoint of the time period on the basis of the intercensal population growth rate in the state. 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 (Office of the Registrar General, 1999a).

Table 6.1 shows an estimated average annual CDR for Haryana of 8.2 deaths per 1,000 population based on NFHS-2 data (covering roughly 1997–98), almost the same as the 1997 SRS rate of 8.0. This suggests that the completeness of reporting of deaths in NFHS-2 is about the same as in the SRS. NFHS-2 age-specific death rates are lower than the SRS rates below age 5 and higher than the SRS rates at ages 60 and above.

The NFHS-2 CDR estimate of 8.2 is lower than the all-India NFHS-2 rate of 9.7 and somewhat lower than the corresponding NFHS-1 estimate of 9.0 for Haryana (covering roughly 1991–92). Between NFHS-1 and NFHS-2, death rates declined substantially in the youngest age group (less than five years old) and in the 50–59 age group. During this time, death rates increased in the age group 60 and above.

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). In Haryana, according to both NFHS-2 and the SRS, death rates are higher for females than for males among children under age 15. At all other ages (15 and above), males have higher death rates than females according to both NFHS-2 and the SRS, more so in the SRS than in NFHS-2.

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, Haryana

	NFHS-1 (1991–92)	NFHS-2 (1997–98)			SRS (1997)		
Age	Total	Male	Female	Total	Male	Female	Total
< 5	22.1	16.7	21.5	18.9	19.7	25.1	22.2
5–14	1.2	0.7	1.4	1.0	1.0	1.7	1.3
15–49	3.5	3.7	3.6	3.6	3.1	2.6	2.9
50–59	12.3	4.3	3.8	4.1	12.3	5.2	8.9
60+	39.3	47.1	45.6	46.4	46.5	40.6	43.3
CDR	9.0	8.0	8.3	8.2	8.0	8.0	8.0

Note: Age-specific death rates and crude death rates by sex 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

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

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

[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:

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

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 further in the past 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 the Haryana NFHS-2, since the ratios of deaths under seven days to all neonatal deaths are consistently high (between 67 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 54 and 64 percent) for the different time periods preceding the survey.

Another problem inherent in most retrospective surveys is heaping of the 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 the Haryana NFHS-2, there appears to be a slight preference for reporting age at death at 3, 6, 8, 15, 20, and 25 days (Appendix Table B.5). 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 a slight heaping of deaths at 6, 9, 12, and 18 months of age. The amount of heaping on 12 months is particularly pronounced, 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 mortality rate for the five years before the survey would be underestimated by only 2 percent.

An examination of the distribution of births and deaths since 1988 (Appendix Table B.4) suggests that there may be some underreporting of deaths in the most recent five-year period. The proportion of deaths to births decreases from 9 percent in 1988–1994 to 6 percent in 1995–1998. 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.

[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'.

However, the sharp disjuncture in the proportion of deaths between 1994 and 1995 may be due partly 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 since these women were over age 50 at the time of the 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 3 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 Haryana declined from 74 deaths per 1,000 live births during 1984–88 (10–14 years before the survey) to 57 deaths per 1,000 live births during 1994–98 (0–4 years before the survey), an average rate of decline of 1.7 infant deaths per 1,000 live births per year. A comparison of the infant mortality rate 0–4 years before NFHS–1 (73) suggests a much faster decline of 2.7 infant deaths per 1,000 live births over the six years between the two surveys.

All other measures of infant and child mortality presented in Table 6.2 have also declined during the past 15 years. As in the case of the infant mortality rate, a comparison with the corresponding rates derived from NFHS-1 suggests that the declines may have been faster than indicated by NFHS–2 data alone. Despite the overall decline in the infant and child mortality rates, however, 1 in every 18 children born during the five years before NFHS-2 died within the first year of life, and 1 in every 13 children died before reaching age five. Although, the infant mortality rate in Haryana (57) is considerably lower than the national IMR of 68, child survival programmes in Haryana need to be intensified to achieve further reductions in infant and child mortality.

Rural mortality rates are considerably higher than urban mortality rates. Infant mortality rate is 48 percent higher in rural areas than in urban areas. The much higher IMR in rural areas is mainly due to a much higher postneonatal mortality rate in rural areas (26) than in urban areas (9). Neonatal and child mortality rates are only slightly higher in rural areas than in urban areas. Overall, the under-five mortality rate is 36 percent higher in rural areas than in urban areas.

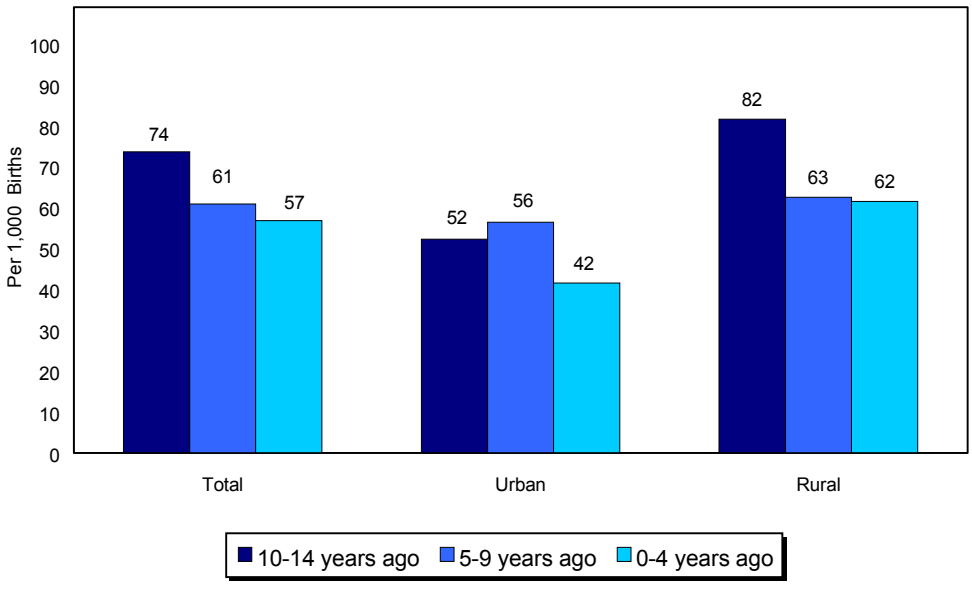
Table 6.2 Infant and child mortality

Neonatal, postneonatal, infant, child, and under-five mortality rates for five-year periods preceding the survey by residence, Haryana, 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	(32.6)	(9.1)	(41.6)	(19.6)	(60.4)
5–9	28.2	28.2	56.4	11.9	67.6
10–14	34.0	18.4	52.3	(16.8)	68.3
RURAL					
0–4	35.6	25.9	61.5	21.7	81.9
5–9	34.9	27.6	62.5	25.0	85.9
10–14	41.4	40.2	81.6	31.7	110.7
TOTAL					
0–4	34.9	21.9	56.8	21.2	76.8
5–9	33.2	27.7	60.9	21.6	81.2
10–14	39.4	34.3	73.6	27.5	99.1

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.
( ) 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

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



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

NFHS-2, Haryana, 1998–99

During the period covered in Table 6.2, all mortality rates declined steadily in rural Haryana, except the neonatal mortality rate, which was slightly higher during the latest five-year period than during the middle five-year period. In the case of urban areas, however, there is no consistent pattern of mortality decline for most indicators of infant and child mortality. Between 1984–88 and 1994–98, the infant mortality rate declined by 25 percent in rural areas and by 20 percent in urban areas. During the same period, the under-five mortality rate declined by 26 percent in rural areas and by 12 percent in urban areas. A comparison with corresponding figures from NFHS-1 shows a decline in all rural estimates and most urban estimates of infant and child mortality rates during the last six years.

The estimated NFHS-2 infant mortality rate of 57 deaths per 1,000 live births during 1994–98 is considerably lower than the SRS value of 69 deaths per 1,000 live births averaged for the period 1994–98. The NFHS-2 estimates of the infant mortality rate for urban and rural areas over the same period are also considerably lower than the corresponding average SRS estimates (42 and 62 from NFHS-2, compared with 62 and 70 from the SRS, respectively).

Socioeconomic Differentials in Infant and Child Mortality

The probability of dying in early childhood is higher in some population groups than in others. Table 6.3 presents differentials in infant and child mortality rates for the 10-year period preceding the survey by selected background characteristics. Children in rural areas of Haryana experience a 30 percent higher probability of dying before their fifth birthday than urban children, only slightly less than the 36 percent differential in the most recent five-year period shown in Table 6.2.

The overall infant mortality rate declines sharply with increasing education of mothers, from 70 deaths per 1,000 live births for illiterate mothers to 40 deaths per 1,000 live births for mothers who have at least completed high school. Other mortality indicators shown in the table vary similarly with the education of the mother.

The under-five mortality rate ranges from 90 among Muslims to 80 among Hindus and 61 among Sikhs. Mortality differentials by religion presumably reflect influences other than religion alone (for example, a larger proportion of Muslims than Hindus in Haryana live in rural areas, where mortality rates are generally high). This is confirmed by a study based on NFHS–1 data, which noted that the difference in infant and child mortality rates between Hindu and Muslim children is reduced considerably when other demographic and socioeconomic variables are controlled statistically (Pandey et al., 1998).

Children of women belonging to scheduled castes have higher rates of infant and child mortality than children of women belonging to other backward classes or ‘other’ women. All indicators of infant and child mortality decline substantially with increases in the household standard of living. For example, for children in households with a high standard of living the under-five mortality rate is 45 deaths per 1,000 live births; the corresponding rate for children in households with a low standard of living (145) is more than three times as high. The child mortality rate is more than six times higher in households with a low standard of living than in households with a high standard of living.

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, Haryana, 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	30.1	19.6	49.7	15.5	64.4
Rural	35.2	26.8	62.0	23.4	84.0
Mother's education					
Illiterate	38.7	31.6	70.3	26.2	94.6
Literate, < middle complete	34.2	14.5	48.8	19.0	66.9
Middle school complete	(17.5)	(11.4)	(29.0)	(20.8)	(49.2)
High school complete and above	23.1	16.7	39.8	2.8	42.5
Religion					
Hindu	36.8	24.5	61.3	19.8	79.9
Muslim	(14.6)	(37.1)	(51.8)	(40.3)	(90.0)
Sikh	(19.1)	(19.5)	(38.6)	(23.6)	(61.3)
Caste/tribe					
Scheduled caste	36.8	30.6	67.5	26.4	92.1
Other backward class	30.3	25.0	55.3	20.5	74.7
Other[2]	34.3	22.2	56.5	19.4	74.8
Standard of living index					
Low	59.8	41.0	100.8	49.5	145.3
Medium	35.8	26.4	62.2	23.4	84.2
High	21.4	16.0	37.4	7.7	44.8
Total	34.0	25.0	59.0	21.4	79.1

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
[2]Not belonging to a scheduled caste, a schedule tribe, or an other backward class

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 childbirth, birth order, length of the previous birth interval, and medical care received by the mother during pregnancy, delivery, and the early postpartum period.

NFHS-2 data on household deaths (Table 6.1) indicate that the female death rate for the age group 0–4 is 29 percent higher than the corresponding male death rate. Table 6.4 shows that the mortality rate is considerably higher for girls than for boys in every age group below age five years. The neonatal mortality rate is slightly higher for girls than for boys, but the postneonatal and child mortality rates are much higher for girls than for boys. A slightly higher neonatal mortality rate for girls than for boys is unexpected, because neonatal mortality (which largely reflects mortality due to congenital conditions) tends to be higher for boys than for girls in most populations. The neonatal mortality rate is only 12 percent higher for girls than for boys, but the postneonatal mortality rate is 46 percent higher and the child mortality rate is 119 percent higher for girls than for boys. This pattern of increase in female disadvantage in mortality with increasing age has been

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, Haryana, 1998–99

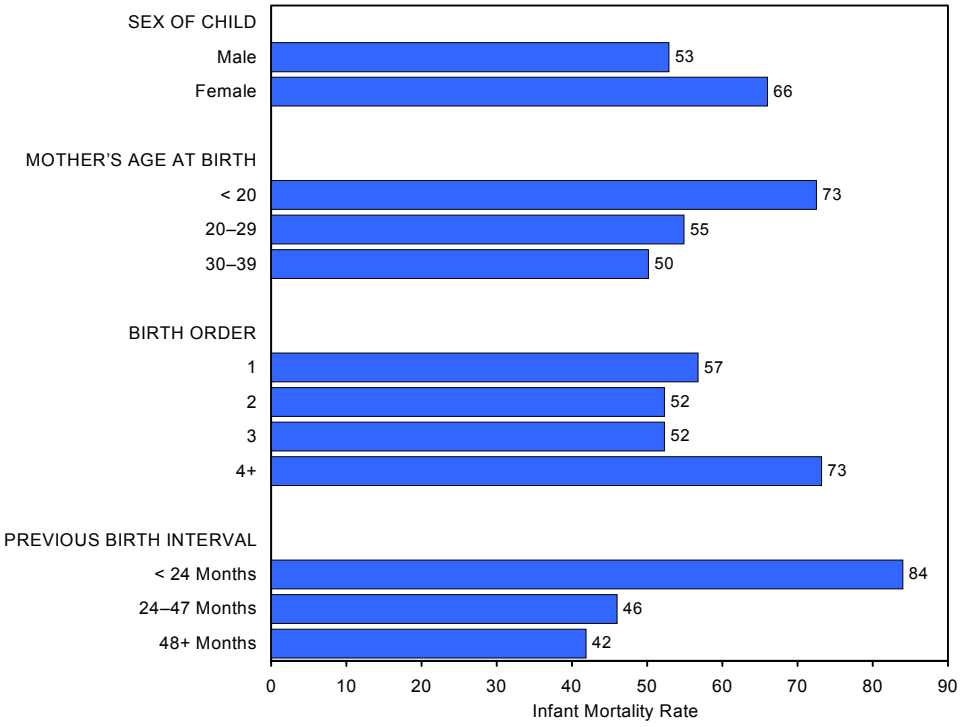
Demographic characteristic	Neonatal mortality (NN)	Postneonatal mortality[1] (PNN)	Infant mortality ($_1q_0$)	Child mortality ($_4q_1$)	Under-five mortality ($_5q_0$)
Sex of child					
Male	32.2	20.6	52.9	13.8	66.0
Female	36.0	30.0	66.0	30.2	94.2
Mother's age at birth					
< 20	52.8	19.8	72.5	23.8	94.6
20–29	28.7	26.2	54.9	17.7	71.7
30–39	(28.2)	(22.0)	(50.2)	(32.9)	(81.4)
Birth order					
1	38.0	18.8	56.8	14.5	70.4
2	31.0	21.4	52.3	16.3	67.8
3	32.9	19.4	52.3	23.5	74.5
4+	33.7	39.6	73.2	32.5	103.4
Previous birth interval					
< 24 months	45.6	38.4	84.0	30.6	112.0
24–47 months	24.3	21.7	46.0	23.2	68.1
48+ months	(26.2)	(15.6)	(41.9)	(8.9)	(50.4)
Medical care[2]					
No care	(25.2)	(38.7)	(63.9)	U	U
One or two types of care	(40.4)	(26.2)	(66.6)	U	U

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.
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 rate
[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.

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).

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 their prime reproductive ages. Children born to young mothers are more likely to be of low birth weight, which is an important factor contributing to their higher neonatal mortality rate. Similarly, children born to mothers above age 30 are at a relatively high risk of experiencing congenital problems. Haryana exhibits the expected U-shaped pattern of mortality by mother's age for child mortality and for under-five mortality. The child mortality rate is much higher among children of mothers under age 20 (24 deaths per 1,000) and age 30–39 (33 deaths per 1,000) than among children of mothers age 20–29 (18 deaths per 1,000). The U-shaped relationship is not observed in the case of infant mortality. The infant mortality rate declines with mother's age at childbirth, from 73 for mothers under age 20 to 55 for mothers age 20–29 and 50 for mothers age 30–39.

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, Haryana, 1998–99

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 neonatal, infant, and under-five mortality rates. This association is likely to reflect not only the effect of birth order but also the effect of the age of the mother at childbirth. The child mortality rate (age 1–4 years) increases steadily with birth order. The increase in the child mortality rate with birth order 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 Haryana. All the mortality rates decrease sharply as the length of the previous birth interval increases, and all the measures are especially high for children born less than 24 months after a previous birth. The infant mortality rate is twice 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 (84 deaths compared with 42 deaths per 1,000 live births). The previous birth interval has a similar effect on all other indicators of infant and child mortality shown in Table 6.4. 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 rates. Table 6.4 shows that children of women who receive one or two types of care have about the same level of infant mortality as those who do not receive any care. However, these estimates should be interpreted with caution because of the small number of cases on which the estimates are based.

6.3 Morbidity

There is only limited experience in collecting morbidity data from 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 sample 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 another knowledgeable adult in the household reported 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. 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 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 Haryana, about 2 percent of the population was reported to be suffering from asthma at the time of the survey. The reported level of asthma (1,922 per 100,000 population) in Haryana is considerably lower than the level reported for India as a whole (2,468 per 100,000 population). The prevalence of asthma in Haryana is higher in rural areas (2,074 per 100,000 population) than in urban areas (1,545 per 100,000 population), and is somewhat higher among males (1,948 per 100,000) than among females (1,892 per 100,000). In urban areas, a much higher proportion of males than females suffer from asthma, whereas in rural areas a larger

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, Haryana, 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	459	64	64	1,120	1,388	1,525
15–59	1,308	333	333	860	1,122	2,686
60+	8,555	1,200	904	0	1,203	327
Sex						
Male	1,888	406	366	867	988	2,434
Female	1,148	188	188	906	1,481	2,103
Total	1,545	305	284	885	1,217	4,537
RURAL						
Age						
< 15	164	23	23	1,081	2,374	4,242
15–59	1,735	560	494	1,109	2,350	6,029
60+	12,452	813	610	404	3,363	978
Sex						
Male	1,972	396	330	1,175	2,135	6,020
Female	2,191	360	323	879	2,806	5,229
Total	2,074	379	327	1,037	2,447	11,249
TOTAL						
Age						
< 15	242	34	34	1,091	2,113	5,766
15–59	1,603	490	445	1,032	1,971	8,715
60+	11,475	910	683	302	2,821	1,305
Sex						
Male	1,948	399	340	1,086	1,805	8,454
Female	1,892	311	284	886	2,426	7,332
Total	1,922	358	314	993	2,093	15,786

[1]Includes medically treated tuberculosis

proportion of females than males suffer from asthma. Age differences are marked, with the prevalence of asthma increasing from 242 per 100,000 at age 0–14 to 11,475 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 Haryana is 358 per 100,000 population. The prevalence of tuberculosis in Haryana is higher than the prevalence recorded in NFHS-1 (330 per 100,000). The prevalence of tuberculosis is considerably higher in rural areas (379 per 100,000)

than in urban areas of Haryana (305 per 100,000). The prevalence rate is much higher for males (399 per 100,000) than for females (311 per 100,000). The sex differential in the prevalence of tuberculosis is much larger in urban areas than in rural areas. Probable reasons for the 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 Haryana smoke more than women. The prevalence of tuberculosis increases rapidly with age. It is substantially higher among persons age 60 and above (910 per 100,000) than among those age 15–59 (490 per 100,000) or age 0–14 (34 per 100,000).

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 (314 per 100,000) than the prevalence based on all reported cases (358 per 100,000). Differentials in the prevalence of medically treated tuberculosis by residence, age, and, sex are similar to the 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 Haryana, 993 persons per 100,000 population are reported to have suffered from jaundice during the 12 months preceding the survey, somewhat lower than the rate of 1,361 for India as a whole. People living in rural areas are more likely to have suffered from jaundice (1,037 per 100,000) than those living in urban areas (885 per 100,000). Males are 23 percent more likely to have suffered from jaundice than females. The prevalence of jaundice is highest for the age group 0–14 (1,091 per 100,000), followed by the age groups 15–59 (1,032 per 100,000) and 60 years and above (302 per 100,000). In urban areas the prevalence of jaundice is highest in the age group 0–14, whereas in rural areas it is highest in the age group 15–59. In urban areas the prevalence of jaundice is higher for females than for males, whereas in rural areas it is higher for males than for females.

Malaria

Malaria is characterized by recurrent high fever with shivering. NFHS-2 asked household respondents whether any member of their household suffered from malaria any time during the three months preceding the survey. In Haryana, 2,093 persons per 100,000 population are reported to have suffered from malaria during the three months preceding the survey, much lower than the national rate of 3,697 per 100,000 population. 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 twice as likely to have suffered from malaria (2,447 per 100,000) as urban residents (1,217 per 100,000). The reported prevalence of malaria is much higher for females than for males in both urban and rural areas. The prevalence of malaria during the past three months shows a U-shaped relationship with age 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. In 1985–86, immunization against measles was added to the programme (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 Haryana 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 vaccination 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

[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, Haryana, 1998–99

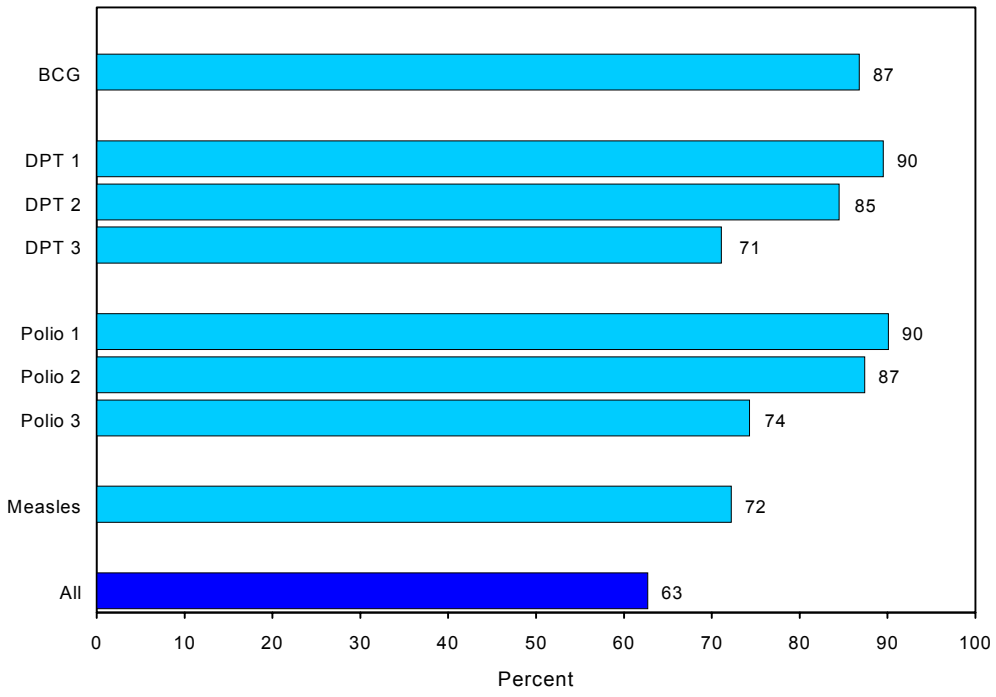
Source of information	Percentage vaccinated											Number of children
			DPT			Polio						
	BCG	Polio 0	1	2	3	1	2	3	Measles	All[1]	None	
URBAN												
Vaccinated at any time before the interview												
Vaccination card	(91.5)	(14.4)	(100.0)	(97.2)	(97.2)	(100.0)	(97.2)	(97.2)	(91.4)	(85.7)	(0.0)	36
Mother's report	(87.0)	(20.0)	(84.8)	(80.5)	(73.8)	(87.0)	(82.7)	(76.1)	(80.5)	(69.4)	(13.0)	47
Either source	89.0	17.6	91.4	87.7	84.0	92.7	89.0	85.2	85.2	76.5	7.3	83
Vaccinated by 12 months of age[2]	89.0	17.6	88.9	85.2	84.0	90.1	86.5	85.2	76.3	68.2	9.9	83
RURAL												
Vaccinated at any time before the interview												
Vaccination card	(100.0)	(2.2)	(100.0)	(95.7)	(89.3)	(100.0)	(95.7)	(89.3)	(80.6)	(80.6)	(0.0)	46
Mother's report	83.1	2.4	86.4	80.7	61.9	86.9	84.9	66.6	65.2	53.2	13.1	206
Either source	86.1	2.4	88.9	83.4	66.9	89.3	86.9	70.7	68.0	58.2	10.7	252
Vaccinated by 12 months of age[2]	86.1	2.4	88.9	81.4	65.1	89.3	84.8	68.8	56.6	49.8	10.7	252
TOTAL												
Vaccinated at any time before the interview												
Vaccination card	96.3	7.5	100.0	96.4	92.8	100.0	96.4	92.8	85.3	82.9	0.0	82
Mother's report	83.8	5.7	86.1	80.7	64.1	86.9	84.5	68.3	68.0	56.2	13.1	253
Either source	86.8	6.1	89.5	84.5	71.1	90.1	87.4	74.3	72.2	62.7	9.9	335
Vaccinated by 12 months of age[2]	86.8	6.1	88.4	82.3	70.1	89.0	85.1	73.3	62.4	54.8	11.0	335

Note: Table includes only surviving children from among the two most recent births in the three years preceding the survey.
( ) Based on 25–49 unweighted cases
[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 vaccinations.

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, the proportion of vaccinations given during the first year of life to children whose information is based on the mother's report is assumed to be the same as the proportion of vaccinations given during the first year of life to children with an exact date of vaccination on the card.

In NFHS-2, children who have 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'), 63 percent of children age 12–23 months are fully vaccinated, and 10 percent have not received any vaccinations. Coverage for each vaccination except Polio 0 is much higher than the percentage fully vaccinated. BCG, the first dose of DPT, and the first and second doses of polio vaccine have each been received by at least 87 percent of children (see Figure 6.3). Seventy-one percent of children have received three doses of DPT and 74 percent have received three doses of polio vaccine. Although DPT and polio vaccinations are given

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



NFHS-2, Haryana, 1998–99

at the same time as part of the routine immunization programme, the coverage rates are slightly higher for polio than for DPT, undoubtedly because of the Pulse Polio campaigns.

Not all children who begin with the DPT and polio vaccination series go on to complete them. The difference between the percentages of children receiving the first and third doses is 18 percentage points for DPT and 16 percentage points for polio. Seventy-two percent of children age 12–23 months have been vaccinated against measles. The relatively low percentages vaccinated against measles and receiving all three doses of DPT and polio vaccines are responsible for the fact that the percentage fully vaccinated is only 63 percent in Haryana.

There has been considerable improvement in full vaccination coverage in Haryana since the time of NFHS-1, when the proportion of children fully vaccinated was 54 percent. The proportion of children who did not receive any vaccinations declined substantially, from 18 percent in NFHS-1 to 10 percent in NFHS-2. The coverage of each specific vaccination has also improved considerably since NFHS-1, suggesting that many more children were brought into the programme in the six years between the two surveys. These data indicate that despite the progress that has been made in immunization coverage for children in Haryana, coverage levels are still inadequate and a considerable proportion of children who receive some early vaccinations drop out of the programme before receiving all of the recommended vaccinations.

Government statistics suggest a much higher level of vaccination coverage in Haryana than NFHS-2 estimates for all vaccinations. According to government statistics for 1997–98, 81 percent

of children age 12–23 months are fully vaccinated and coverage is 94 percent for BCG, 92 percent for the third dose of DPT vaccine, 93 percent for the third dose of polio vaccine, and 92 percent for measles vaccine (Ministry of Health and Family Welfare, 1999).

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 55 percent of all children (87 percent of fully vaccinated children) were fully vaccinated by age 12 months. The percentages of children who received the third dose of DPT and the third dose of polio by age 12 months are only slightly lower than the percentages who received these vaccines at any time before the survey. The percentage of children who received BCG vaccine by age 12 months is the same as the percentage who received it 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 wider (72 percent at any time before the survey, compared with 62 percent by age 12 months). Fourteen percent of children who were vaccinated against measles received the vaccination after their first birthday.

The analysis of vaccine-specific data indicates higher coverage for each type of vaccine in urban areas than in rural areas. Seventy-seven percent of children age 12–23 months in urban areas had received all the recommended vaccinations at the time of the survey, compared with 58 percent in rural areas. The proportion fully vaccinated during the first year of life is also higher in urban areas (68 percent) than in rural areas (50 percent). Dropout rates for DPT and polio (the proportion of children receiving the first dose but not the third dose) are much lower in urban areas than in rural areas.

Table 6.7 and Figure 6.4 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 showed vaccination cards for only 24 percent of children age 12–23 months. Vaccination cards were shown for 43 percent of children in urban areas and 18 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).

Boys and girls in Haryana are about equally likely to be fully vaccinated. However, girls are slightly less likely to have received each of the individual vaccinations except measles. Mothers showed vaccination cards for 26 percent of boys and 22 percent of girls. In NFHS-1, vaccination coverage was higher for boys than for girls and vaccination cards were shown for a higher proportion of boys than girls. The relationship between vaccination coverage and birth order is consistently negative for all vaccinations except Polio 0. This is at least partially because lower order births are more likely to occur to younger women who are more likely than older women to utilize maternal and child health care services.

Vaccination coverage has a strong positive relationship with mother's education and household standard of living. Only 51 percent of children of illiterate mothers are fully vaccinated, compared with 84 percent of children whose mothers have at least completed high school; and only 33 percent of children from households with a low standard of living are fully vaccinated, compared with 75 percent of children from households with a high standard of living. Children belonging to scheduled castes or other backward classes are less likely to be fully vaccinated (56–60 percent) than other children (68 percent). Differentials in immunization coverage by religion are not shown due to the small sample size for Muslims and Sikhs.

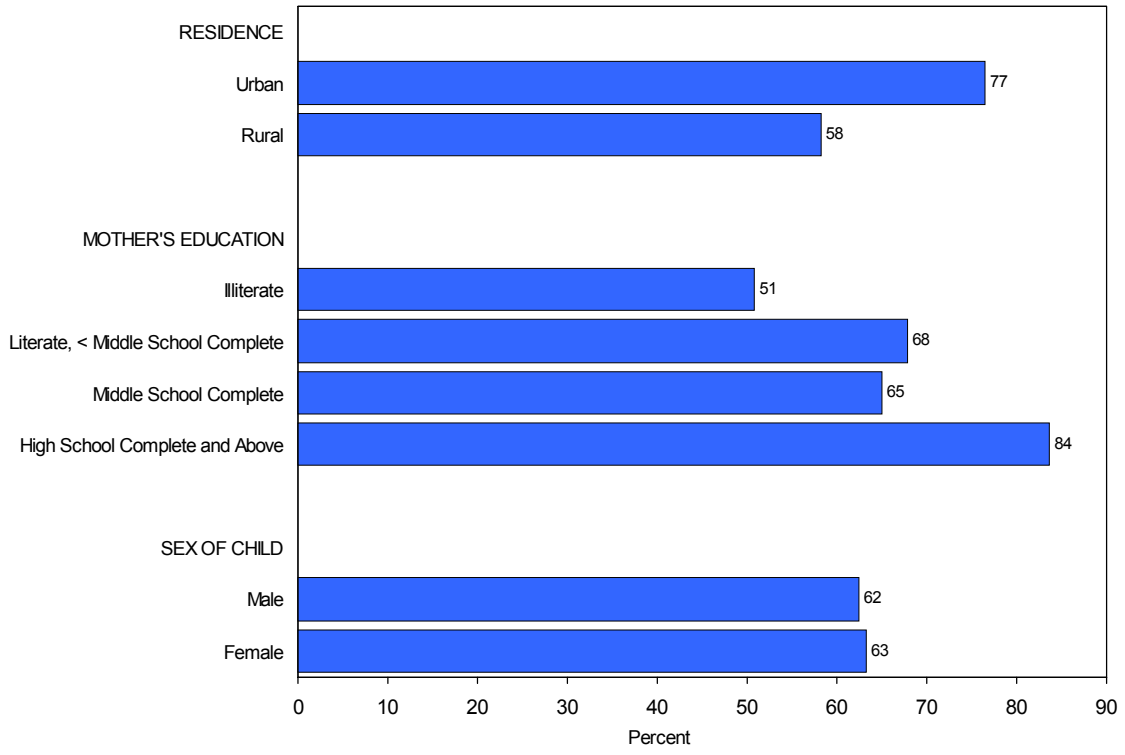
Table 6.7 Childhood vaccinations by background characteristics

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, Haryana, 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	87.6	7.2	90.3	86.0	71.6	90.8	89.7	75.3	71.5	62.4	9.2	26.2	186
Female	85.9	4.8	88.6	82.6	70.5	89.2	84.5	73.1	73.2	63.2	10.8	22.2	149
Birth order													
1	93.3	5.8	97.8	93.3	81.9	97.8	94.3	83.0	82.0	74.0	2.2	20.7	88
2	90.5	5.9	90.5	88.6	76.2	92.4	90.4	78.1	74.3	66.6	7.6	31.4	105
3	85.6	7.2	89.2	82.3	66.5	89.2	85.8	73.4	68.0	55.7	10.8	30.9	56
4+	76.5	6.0	80.0	71.8	56.6	80.0	77.6	61.3	62.5	50.8	20.0	15.5	85
Residence													
Urban	89.0	17.6	91.4	87.7	84.0	92.7	89.0	85.2	85.2	76.5	7.3	43.3	83
Rural	86.1	2.4	88.9	83.4	66.9	89.3	86.9	70.7	68.0	58.2	10.7	18.2	252
Mother's education													
Illiterate	77.8	5.6	82.0	75.4	59.3	82.6	79.0	63.6	60.7	50.8	17.4	14.9	162
Literate, < middle school complete	90.3	3.4	93.5	88.7	74.3	93.5	91.9	77.5	77.4	67.8	6.5	24.3	62
Middle school complete	(97.3)	(2.8)	(97.3)	(89.4)	(75.9)	(97.3)	(94.6)	(78.6)	(81.0)	(65.0)	(2.7)	(32.7)	37
High school complete and above	98.6	11.3	98.6	98.6	91.8	100.0	98.6	93.2	89.1	83.6	0.0	41.2	74
Caste/tribe													
Scheduled caste	83.1	2.3	85.3	77.6	62.0	85.3	80.9	67.4	64.1	56.4	14.7	27.1	89
Other backward class	84.0	5.8	88.4	84.0	71.2	88.4	87.3	73.5	71.2	59.8	11.6	20.8	87
Other[2]	90.5	8.5	92.4	88.6	76.0	93.7	91.1	78.5	77.3	67.7	6.3	25.0	157
Standard of living index													
Low	(68.5)	(2.1)	(74.7)	(64.4)	(45.7)	(74.7)	(70.5)	(45.7)	(53.9)	(33.4)	(25.3)	(16.5)	48
Medium	88.3	5.2	90.2	83.9	68.3	90.9	87.7	74.7	71.5	61.8	9.1	21.0	154
High	91.6	8.7	93.9	92.3	84.0	94.7	93.1	84.7	80.2	74.8	5.3	31.7	131
Total	86.8	6.1	89.5	84.5	71.1	90.1	87.4	74.3	72.2	62.7	9.9	24.4	335

Note: Table includes only surviving children from among the two most recent births in the three years preceding the survey. Total includes 1 scheduled-tribe child and 2 children with missing information on the standard of living index, who are not shown separately.
( ) Based on 25–49 unweighted cases
[1]BCG, measles, and three doses each of DPT and polio vaccines (excluding Polio 0)
[2]Not belonging to a scheduled caste, a scheduled tribe, or an other backward class

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



NFHS-2, Haryana, 1998–99

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 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 that 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 may have been lost or discarded, especially for older children who have received all their vaccinations. The proportion of children fully vaccinated by age 12 months has unexpectedly declined very slightly from 56 percent for children age 24–35 months to 55 percent for children age 12–23 months. This reverse pattern in overall vaccination coverage is due to a decline in the proportion fully vaccinated in rural areas. The main reason for this decline in vaccination coverage in rural areas has been a decline in measles coverage and an increase in dropout rates for DPT and polio vaccines. In urban areas, the proportion of children fully vaccinated has increased from 65 percent for children age 24–35 months to 68 percent for children age 12–23 months.

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, Haryana, 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	43.3	22.1	18.2	20.4	24.4	20.8
Percentage vaccinated by 12 months of age[1]						
BCG	89.0	79.5	86.1	88.0	86.8	85.9
Polio 0	17.6	15.4	2.4	2.8	6.1	5.9
DPT						
1	88.9	80.1	88.9	86.2	88.4	84.7
2	85.2	79.5	81.4	82.4	82.3	81.7
3	84.0	69.7	65.1	72.5	70.1	71.7
Polio						
1	90.1	81.3	89.3	88.5	89.0	86.7
2	86.5	80.6	84.8	84.7	85.1	83.7
3	85.2	69.7	68.8	75.8	73.3	74.1
Measles	76.3	66.9	56.6	59.2	62.4	61.2
All vaccinations[2]	68.2	64.8	49.8	52.7	54.8	55.7
No vaccinations	9.9	18.7	10.7	7.4	11.0	10.3
Number of children	83	79	252	248	335	327

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)

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 Haryana. Ninety-three percent of all children who have received vaccinations received most of them from a public sector source and only 7 percent received them from a private sector medical source (the corresponding percentages are 82 percent and 13 percent at the national level). The percentage of vaccinated children receiving vaccinations from the private medical sector is much higher in urban areas (18 percent), where private-sector services tend to be concentrated, than in rural areas (3 percent). Even in urban areas, however, 80 percent of children received most of their vaccinations from the public sector.

Children of more educated mothers and those belonging to households with a high standard of living are more likely than other children to receive vaccinations from the private medical sector. Sikh children are much more likely to receive vaccinations from the private medical sector than Hindu children, perhaps because Sikhs are economically better off and more

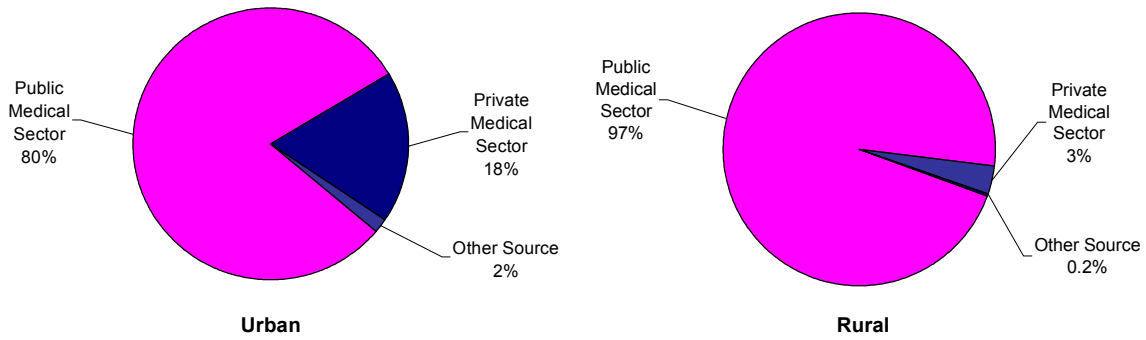
Table 6.9 Source of childhood vaccinations

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

Background characteristic	Source: Public medical sector	Source: Private medical sector	Source: Other	Total percent	Number of children
Child's age					
< 12 months	91.5	8.5	0.0	100.0	225
12–23 months	92.6	6.7	0.7	100.0	301
24–35 months	93.7	5.6	0.7	100.0	307
Sex of child					
Male	92.3	7.5	0.2	100.0	459
Female	93.3	5.9	0.8	100.0	374
Birth order					
1	88.7	10.9	0.4	100.0	261
2	94.0	6.0	0.0	100.0	252
3	96.4	3.6	0.0	100.0	140
4+	93.9	4.4	1.7	100.0	181
Residence					
Urban	80.4	18.1	1.6	100.0	197
Rural	96.6	3.3	0.2	100.0	636
Mother's education					
Illiterate	95.6	3.6	0.8	100.0	387
Literate, < middle school complete	97.7	1.7	0.6	100.0	174
Middle school complete	90.7	9.3	0.0	100.0	86
High school complete and above	83.1	16.9	0.0	100.0	186
Religion					
Hindu	93.8	6.1	0.1	100.0	729
Muslim	(97.5)	(0.0)	(2.5)	100.0	43
Sikh	80.6	15.8	3.6	100.0	57
Caste/tribe					
Scheduled caste	96.0	3.5	0.5	100.0	196
Other backward class	92.4	6.5	1.0	100.0	200
Other[1]	91.4	8.4	0.2	100.0	436
Standard of living index					
Low	92.3	5.4	2.2	100.0	91
Medium	97.0	2.5	0.5	100.0	402
High	87.5	12.5	0.0	100.0	334
Total	92.7	6.8	0.5	100.0	833

Note: Table includes only surviving children from among the two most recent births in the three years preceding the survey. Total includes 4 children of mothers belonging to other religions, 1 scheduled-tribe child, and 1 and 6 children with missing information on religion and the standard of living index, respectively, who are not shown separately.
( ) Based on 25–49 unweighted cases
[1]Not belonging to a scheduled caste, a scheduled tribe, or an other backward class

Figure 6.5
Source of Childhood Vaccinations by Residence



Note: Percents for rural areas add to more than 100.0 due to rounding

NFHS-2, Haryana, 1998–99

concentrated in urban areas. Children from scheduled castes are much less likely than other children to receive vaccinations from the private medical sector. Boys, younger children, and lower birth order children are more likely to receive vaccinations from the private medical sector than other children.

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, only 45 percent of children age 12–35 months received at least one dose of vitamin A, and only 21 percent received a dose within the past six months. This indicates that a majority of children in Haryana have not received vitamin A supplementation at all and even fewer children receive vitamin A supplementation regularly.

Children living in urban areas, children whose mothers have at least completed high school education, Sikh children, and children living in households with a high standard of living are considerably more likely than other children to receive vitamin A supplementation. The percentage receiving vitamin A supplementation is particularly low among Muslim children, scheduled-caste children, and children living in households with a low standard of living. Children of birth order four or higher are also less likely than children of lower birth order to have received any vitamin A supplementation. 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, Haryana, 1998–99

Background characteristic	Percentage who received vitamin A		Number of children
	At least one dose	At least one dose within past six months	
Age of Child			
12–23 months	41.7	28.2	335
24–35 months	48.7	14.4	327
Sex of child			
Male	45.8	21.4	370
Female	44.4	21.4	291
Birth order			
1	50.2	27.9	184
2	47.0	19.8	202
3	46.5	20.6	108
4+	36.6	16.7	168
Residence			
Urban	54.4	25.4	162
Rural	42.2	20.1	500
Mother's education			
Illiterate	40.0	16.9	331
Literate, < middle school complete	44.9	23.7	127
Middle school complete	49.3	26.2	65
High school complete and above	55.9	27.7	138
Religion			
Hindu	45.2	20.8	572
Muslim	(28.6)	(14.2)	42
Sikh	(61.9)	(36.8)	44
Caste/tribe			
Scheduled caste	37.2	15.9	164
Other backward class	49.2	25.1	167
Other[1]	47.3	22.3	329
Standard of living index			
Low	20.0	11.7	85
Medium	44.2	19.1	323
High	54.4	26.9	248
Total	45.2	21.4	661

Note: Table includes only surviving children from among the two most recent births in the three years preceding the survey. Total includes 3 children to mothers belonging to other religions, 1 scheduled-tribe child, and 5 children with missing information on the standard of living index, who are not shown separately.
( ) Based on 25–49 unweighted cases
[1]Not belonging to a scheduled caste, a scheduled tribe, or an other backward class

6.6 Child Morbidity and Treatment

This section discusses the prevalence and treatment of acute respiratory infection (ARI), fever, and diarrhoea. Mothers of children less than three years old 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, 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 12 percent of children under age three in Haryana suffered from acute respiratory infection (cough accompanied by short, rapid breathing) at some time during the two-week period before the survey. 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 information is collected.

Table 6.11 shows that the prevalence of ARI does not vary by sex of child or by urban-rural residence. ARI was somewhat more common among children 12–23 months of age, children of birth order four or higher, children of illiterate mothers, Sikh children, children from other backward classes, and children from low standard of living households. The prevalence of ARI was particularly low among Muslim children. The relatively small variations in the prevalence of ARI by most socioeconomic characteristics indicate that respiratory infections are widespread and affect children of all strata in the state.

Table 6.11 also shows the percentage of children suffering from ARI symptoms in the two weeks before the survey for whom advice or treatment was sought from a health facility or health provider. Eighty-eight percent of children received advice or treatment from a health facility or health provider when ill with ARI. The results indicate that treatment seeking for ARI is universally high (80 percent or more) across all socioeconomic groups for which estimates are shown.

Fever

Fever is the most common of the three conditions examined in Table 6.11, with 24 percent of children suffering from fever during the two weeks preceding the survey. The prevalence of fever does not vary much by most background characteristics shown in Table 6.11. The prevalence of fever is relatively high among children age 12–23 months, Sikh children, scheduled-caste children, and children from low standard of living households. As with acute respiratory infection, fever tends to strike young children irrespective of their demographic and socioeconomic background.

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, Haryana, 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	8.9	21.6	15.6	0.5	179	*	16
6–11 months	10.7	23.5	16.4	3.6	140	*	15
12–23 months	14.9	28.4	16.5	1.8	335	80.0	50
24–35 months	10.6	20.1	9.2	1.8	327	(94.3)	35
Sex of child							
Male	11.9	23.5	12.9	2.2	542	87.8	65
Female	11.6	23.9	15.1	1.4	438	88.0	51
Birth order							
1	10.2	26.9	14.7	1.8	285	(96.5)	29
2	11.6	19.8	13.3	2.4	292	(82.4)	34
3	9.1	22.6	10.4	0.6	163	*	15
4+	15.8	25.4	15.9	2.1	241	(84.2)	38
Residence							
Urban	11.6	25.9	12.7	1.3	234	(92.8)	27
Rural	11.9	23.0	14.2	2.0	747	86.4	88
Mother's education							
Illiterate	13.2	24.8	12.6	2.0	492	87.6	65
Literate, < middle school complete	8.7	23.9	15.4	1.0	196	*	17
Middle school complete	12.1	24.0	14.3	2.2	91	*	11
High school complete and above	11.4	20.7	15.3	1.9	202	*	23
Religion							
Hindu	11.9	23.6	13.6	1.5	843	87.1	101
Muslim	5.9	17.6	13.4	4.5	69	*	4
Sikh	14.0	28.4	15.4	3.0	64	*	9
Caste/tribe							
Scheduled caste	12.0	27.0	15.4	1.2	240	(86.2)	29
Other backward class	14.8	25.1	12.8	1.7	236	(91.4)	35
Other[2]	10.3	21.3	13.7	2.2	504	86.5	52
Standard of living index							
Low	15.0	28.7	16.9	2.5	125	*	19
Medium	13.6	24.8	13.7	1.8	482	90.9	66
High	8.5	20.9	12.8	1.6	367	(80.7)	31
Source of drinking water							
Piped water	13.8	23.0	14.7	1.5	397	85.6	55
Hand pump	10.4	23.7	13.3	1.5	457	(91.5)	48
Well water	10.5	25.6	13.6	4.1	124	*	13
Total	11.8	23.7	13.9	1.8	980	87.9	116

Note: Table includes only surviving children age 1–35 months old from among the two most recent births in the three years preceding the survey. Total includes a small number of children to mothers belonging to other religions and scheduled tribes, children in households having an other source of drinking water, and children with missing information on religion 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]Not belonging to a scheduled caste, a scheduled tribe, or an other backward class

Diarrhoea

Diarrhoea is the second most important killer of children under age five worldwide, 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 less than three years old 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, the treatment of diarrhoea, and their knowledge and use of ORS.

Table 6.11 shows that 14 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.

Among children age 1–35 months, those age 24–35 months are least susceptible to diarrhoea. Boys (13 percent) are somewhat less likely to have suffered from diarrhoea than girls (15 percent). Differentials by birth order, place of residence, mother's education, religion, or caste/tribe are generally small. As expected, the prevalence of diarrhoea is negatively related to the household standard of living. Contrary to expectations, however, diarrhoea is slightly more prevalent among children living in households that use piped water for drinking than among children living in households that use water from a hand pump or well for drinking.

Two percent of children age 1–35 months (13 percent of children who suffered from diarrhoea in the two weeks preceding the survey) had diarrhoea with blood, a symptom of dysentery. Children age 1–5 months and children of birth order three had the lowest prevalence of diarrhoea with blood (less than 1 percent). Diarrhoea with blood was most prevalent among children age 6–11 months, Muslim children, and children living in households that use well water for drinking. Sikh children and children from low standard of living households also had a relatively high prevalence of diarrhoea with blood.

Table 6.12 shows that 72 percent of mothers with births during the three years preceding the survey know about ORS packets, up sharply from 53 percent among women who gave birth during the three years before NFHS-1. This comparison suggests that awareness about ORS has increased substantially during the six years between NFHS-1 and NFHS-2. Knowledge of ORS packets in Haryana in NFHS-2 is also considerably higher than the national average of 62 percent. Knowledge of ORS packets shows an inverted U-shaped pattern with the current age of mothers, with particularly low knowledge among mothers age 35–49 years. As expected, knowledge is considerably higher among urban mothers (88 percent) than among rural mothers (66 percent). Knowledge of ORS packets has a strong positive relationship with mother's level of education; only 62 percent of illiterate mothers know about ORS packets, compared with 94 percent of mothers with high school or higher education. Knowledge of ORS packets is much lower among Muslim mothers (47 percent) than among Hindu (73 percent) or Sikh (78 percent) mothers. Knowledge of ORS

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 of 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, Haryana, 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	70.8	18.5	29.5	44.1	7.9	100.0	29.5	74
20–24	72.3	21.9	25.7	46.5	5.9	100.0	33.1	368
25–29	74.6	18.7	23.7	54.2	3.4	100.0	31.5	294
30–34	69.0	19.2	23.7	52.6	4.5	100.0	33.4	136
35–49	(53.9)	(23.0)	(20.8)	(45.9)	(10.3)	100.0	(23.1)	39
Residence								
Urban	88.3	19.9	21.0	57.8	1.4	100.0	34.1	223
Rural	66.3	20.3	26.1	47.0	6.5	100.0	31.1	688
Education								
Illiterate	62.2	21.8	23.1	49.1	6.0	100.0	30.5	462
Literate, < middle school complete	69.3	22.2	29.2	41.8	6.8	100.0	31.5	178
Middle school complete	79.1	19.7	37.2	37.0	6.1	100.0	24.8	81
High school complete and above	93.8	14.8	19.8	63.9	1.6	100.0	38.5	191
Religion								
Hindu	73.1	20.5	24.6	49.3	5.5	100.0	31.4	789
Muslim	46.8	19.2	29.1	48.5	3.2	100.0	37.3	63
Sikh	78.3	16.6	25.1	54.7	3.6	100.0	29.1	55
Caste/tribe								
Scheduled caste	67.8	23.2	22.8	47.9	6.1	100.0	29.5	227
Other backward class	69.9	19.5	24.6	50.8	5.1	100.0	25.2	215
Other[2]	74.3	19.2	26.1	49.9	4.9	100.0	35.9	468
Exposure to media								
Exposed to any media	80.1	18.2	26.3	51.8	3.7	100.0	33.6	616
Watches television weekly	81.7	17.8	26.3	51.7	4.2	100.0	33.2	544
Listens to radio weekly	77.8	19.7	25.0	52.2	3.1	100.0	38.2	284
Reads newspaper/magazine weekly	87.2	13.6	20.3	63.4	2.7	100.0	47.2	186
Not regularly exposed to any media	54.1	24.5	21.9	45.2	8.4	100.0	28.3	296
Total	71.7	20.2	24.9	49.7	5.2	100.0	31.9	911

Note: Total includes 3 mothers belonging to other religions, 1 scheduled-tribe mother, 24 mothers who go to the cinema or theatre at least once a month, and 1 mother with missing information on religion, who are not shown separately.
( ) Based on 25–49 unweighted cases
[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
[2]Not belonging to a scheduled caste, a scheduled tribe, or an other backward class

packets is also much lower among mothers who are not regularly exposed to any mass media (54 percent) than among mothers who are regularly exposed to at least one type of mass media (80 percent). Mothers belonging to scheduled castes or other backward classes are somewhat less likely to know about ORS packets (68–70 percent) than mothers from other caste groups (74 percent).

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 has diarrhoea, should he/she be given less to drink than usual, about the same amount, or more than usual?' Table 6.12 shows the responses of mothers to this question by selected background characteristics. In Haryana, only 50 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, 20 percent report that children should be given less to drink. This suggests that mothers in Haryana need more education in the proper management of diarrhoea. The proportion reporting incorrectly that children with diarrhoea should be given less to drink is particularly high among older mothers (age 35–49 years), less-educated mothers, scheduled-caste mothers, and mothers who are not regularly exposed to any mass media. The proportion reporting correctly that children with diarrhoea should be given more to drink is relatively high among mothers who have completed high school or higher education and among mothers who read a newspaper or magazine at least once a week.

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 drinking well, getting sicker or very sick, and not getting better. Table 6.12 shows that only 32 percent of mothers were able to name two or more signs that indicate that a child with diarrhoea should be given medical treatment. The percentage is lower among mothers age 35–49 years (23 percent) than among younger mothers (30–33 percent), and slightly lower among rural mothers (31 percent) than among urban mothers (34 percent). Mothers with at least a high school education, Muslim mothers, mothers not belonging to a scheduled caste or other backward class, and mothers who listen to the radio or read a newspaper or magazine at least once a week are particularly more likely than other women to know two or more danger signs of diarrhoea. In fact, knowledge of two or more signs of diarrhoea that suggest the need for medical treatment is universally low across all demographic and socioeconomic groups. This lack of knowledge suggests a need for further educating mothers about 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 for whom advice or treatment was sought from 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. For 93 percent of children in Haryana who suffered from diarrhoea during the two weeks preceding the survey medical advice or treatment was sought from a health facility or provider (a much higher percentage than the national level of 63 percent). Seven percent of children with diarrhoea did not receive any treatment at all. The percentage of children with diarrhoea who received medical advice or treatment is universally high across all demographic and socioeconomic groups shown in Table 6.13. The likelihood of seeking advice or treatment increases with the age of the child. Boys with diarrhoea were slightly more likely than girls to receive medical advice or treatment. Also, children from high standard of living households were more likely to receive advice or treatment when ill with diarrhoea than children from medium standard of living households.

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, Haryana, 1998–99

Background characteristic	Taken to a health facility or provider	Oral rehydration					Other treatment					Number of children with diarrhoea
		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	
Age of child												
1–11 months	86.2	23.6	11.7	1.9	46.9	39.5	78.1	37.3	5.8	8.1	7.9	51
12–23 months	94.4	23.7	14.7	1.9	32.8	50.8	81.7	27.1	1.9	3.7	7.3	55
24–35 months	(100.0)	(33.2)	(16.5)	(6.9)	(46.5)	(29.9)	(90.1)	(26.7)	(3.2)	(0.0)	(3.2)	30
Sex of child												
Male	94.3	21.3	15.8	3.0	39.7	44.5	82.8	30.0	4.3	5.9	7.1	70
Female	90.7	30.5	12.1	3.0	42.7	39.2	81.6	31.8	3.0	3.1	6.1	66
Residence												
Urban	(89.6)	(37.4)	(17.2)	(7.1)	(41.4)	(31.3)	(75.8)	(20.8)	(7.0)	(7.2)	(6.8)	30
Rural	93.4	22.5	13.1	1.8	41.0	44.9	84.0	33.7	2.7	3.8	6.6	106
Mother's education												
Illiterate	92.0	18.0	9.8	0.0	46.5	40.4	85.6	34.1	4.7	5.0	6.3	62
Literate, < middle school complete	(96.6)	(29.8)	(10.0)	(6.9)	(19.9)	(60.0)	(83.1)	(32.9)	(6.9)	(0.0)	(3.4)	30
High school complete and above	(90.1)	(35.4)	(19.3)	(6.5)	(58.4)	(22.6)	(73.9)	(22.4)	(0.0)	(3.1)	(13.0)	31
Caste/tribe												
Scheduled caste	(91.9)	(24.4)	(13.5)	(0.0)	(43.1)	(40.5)	(83.8)	(29.8)	(5.4)	(2.7)	(5.4)	37
Other backward class	(90.1)	(20.1)	(6.7)	(0.0)	(29.9)	(56.7)	(83.2)	(26.9)	(3.2)	(6.9)	(10.1)	30
Other[1]	94.0	28.9	17.4	5.9	45.0	36.3	81.0	33.1	2.9	4.4	5.7	69
Standard of living index												
Medium	89.3	25.8	7.6	4.6	46.9	37.9	77.1	27.0	6.0	3.2	10.6	66
High	(100.0)	(27.6)	(21.3)	(2.2)	(40.4)	(42.6)	(87.2)	(36.3)	(2.2)	(4.2)	(2.1)	47
Total	92.6	25.7	14.0	3.0	41.1	41.9	82.2	30.9	3.7	4.5	6.6	136

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 13 chlidren whose mother's education is middle school complete, 21 children from households with a low standard of living index, and 2 children with missing information on the standard of living index, who are not shown separately.

( ) Based on 25–49 unweighted cases

[1]Not belonging to a scheduled caste, a scheduled tribe, or an other backward class

Only 26 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 just 8 percent in NFHS-1, indicating considerable improvement in the use of ORS packets in Haryana for the treatment of childhood diarrhoea. The level of ORS use in Haryana (26 percent) is about the same as the NFHS-2 national average of 27 percent. Forty-two percent of children with diarrhoea did not receive any of the various types of oral rehydration therapy (ORT). Only 41 percent of children with diarrhoea received increased fluids when sick with diarrhoea, and only 14 percent received gruel.

Rural children, boys, children age 12–23 months, and children from other backward classes are less likely than other children to receive oral rehydration therapy (ORT). The use of oral rehydration is most common for children of mothers with high school or higher education.

The use of antibiotics and other antidiarrhoeal drugs is not generally recommended for the treatment of childhood diarrhoea. Yet 82 percent of the children who had diarrhoea in the two weeks before NFHS-2 were treated with pills or syrup, and 31 percent received an injection. 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. The use of antidiarrhoeal drugs is widespread across all socioeconomic groups.

Table 6.14 shows the percent distribution of children who were treated with ORS for diarrhoea in the two weeks before NFHS-2 by source of the ORS packets. Only 35 children in the NFHS-2 Haryana sample were treated with ORS packets, so the results in this table should be interpreted with caution. For 20 percent of children who were treated with ORS, the packets were obtained from public-sector medical sources, for 66 percent the packets were obtained from private-sector medical sources, and for 14 percent the packets were obtained from shops. Among the public-sector medical sources, government or municipal hospitals are mentioned most often, followed by government dispensaries. Among the private-sector medical sources, ORS packets were usually obtained from a private doctor or a private hospital or clinic. The pharmacy or drugstore category accounts for 8 percent of all cases. If this category is added to the 'shop' category, the proportion purchasing ORS packets from shops, pharmacies, or drugstores becomes 23 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 Organisation (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).

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, Haryana, 1998–99

Source	Percent
Public medical sector	(19.9)
Government/municipal hospital	(14.1)
Government dispensary	(5.7)
Private medical sector	(65.7)
Private hospital/clinic	(25.7)
Private doctor	(31.7)
Pharmacy/drugstore	(8.4)
Shop	(14.4)
Total percent	100.0
Number of children treated with ORS	35

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.
( ) Based on 25–49 unweighted cases

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 selected background characteristics. A majority of women in Haryana (56 percent) have never heard of AIDS, slightly lower than the national level of 60 percent. NFHS-1 did not include AIDS-awareness questions for Haryana so it is not possible to assess the trend in AIDS awareness in the state between NFHS-1 and NFHS-2.

There are substantial differences in the knowledge of AIDS for all background characteristics shown in Table 6.15. Knowledge of AIDS is much higher among younger women (age 15–24 years) than among older women (age 35–49 years). Almost three-quarters of women in urban areas have heard of AIDS, compared with less than one-third in rural areas. The differences in knowledge of AIDS are most dramatic by women's educational level, household living standard, and media exposure. Knowledge of AIDS increases from only 20 percent for illiterate women to 95 percent for women who have at least completed a high school education. Similarly, knowledge of AIDS increases from only 6 percent for women from low standard of living households to 67 percent for women from high standard of living households. By media exposure, knowledge of AIDS ranges from only 11 percent for women who are not regularly exposed to any mass media to more than 90 percent for women who read a newspaper or magazine at least once a week or who go to cinema or theatre at least once a month. Muslim women are much less likely to know about AIDS (13 percent) than are Hindu women (45

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, Haryana, 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	50.7	697	34.7	91.5	2.9	20.5	17.5	2.5	0.3	21.1	3.1	1.2	354
25–34	45.5	1,165	32.9	88.5	4.4	25.9	18.1	3.6	0.4	26.8	1.9	1.9	530
35–49	38.6	1,046	29.1	92.1	3.1	31.9	17.7	3.2	1.3	24.2	2.5	4.8	404
Residence													
Urban	73.9	837	34.3	96.9	5.8	39.2	18.9	2.5	1.3	25.3	3.1	4.3	618
Rural	32.3	2,071	30.4	84.5	1.5	14.4	16.8	3.8	0.0	23.6	1.8	1.0	669
Education													
Illiterate	20.2	1,605	25.9	80.3	0.0	1.0	6.7	4.0	0.0	28.3	0.6	1.5	325
Literate, < middle school complete	49.0	486	26.9	92.8	2.1	6.3	11.3	0.8	0.0	21.4	0.8	0.8	238
Middle school complete	73.2	234	34.6	87.9	1.7	23.0	25.1	2.3	0.0	23.8	1.2	0.6	172
High school complete and above	94.9	583	37.5	96.2	6.8	50.7	24.9	4.0	1.5	23.6	4.5	4.6	553
Religion													
Hindu	44.8	2,590	32.8	90.1	3.5	25.8	18.4	3.1	0.6	24.4	2.4	2.5	1,159
Muslim	12.9	118	*	*	*	*	*	*	*	*	*	*	15
Sikh	56.2	190	23.7	95.3	3.8	32.0	14.2	3.8	0.0	25.2	1.9	3.7	107
Caste/tribe													
Scheduled caste	26.7	597	25.0	85.5	0.6	7.0	12.0	2.5	0.0	26.5	1.2	0.6	160
Other backward class	37.7	629	32.9	87.0	1.3	14.0	13.5	5.4	0.0	26.8	0.8	0.8	237
Other[1]	53.0	1,679	33.4	92.3	4.7	33.0	20.0	2.7	0.9	23.4	3.1	3.4	891
Standard of living index													
Low	6.4	280	*	*	*	*	*	*	*	*	*	*	18
Medium	31.1	1,331	24.9	81.4	1.0	6.5	12.1	3.1	0.0	28.3	0.7	1.4	414
High	66.5	1,279	36.0	95.5	4.9	36.4	20.6	2.8	1.0	22.3	3.3	3.2	850
Exposure to mass media													
Exposed to any media	60.8	1,947	34.0	94.6	3.9	28.3	17.8	2.6	0.7	22.0	2.4	2.6	1,183
Listens to radio weekly	69.0	912	54.6	91.8	5.7	31.4	18.6	3.8	1.2	24.6	3.5	2.8	629
Watches television weekly	63.3	1,771	32.3	97.8	4.1	29.1	16.7	2.5	0.7	21.1	2.5	2.7	1,122
Goes to cinema/theatre monthly	100.0	116	49.7	97.3	16.0	62.3	28.4	4.5	4.5	22.9	9.6	9.8	116
Reads newspaper/magazine weekly	90.5	632	42.1	96.3	6.6	51.0	26.0	3.9	1.3	22.4	4.0	4.3	572
Not regularly exposed to any media	10.8	961	12.3	43.6	0.0	2.8	18.1	9.4	0.0	52.5	2.9	2.8	104
Total	44.3	2,908	32.2	90.5	3.6	26.3	17.8	3.2	0.6	24.4	2.4	2.6	1,288

Note: Total includes a small number of women belonging to other religions, scheduled-tribe women, and women with missing information on religion and the standard of living index, who are not shown separately.

*Percentage not shown; based on fewer than 25 unweighted cases

[1]Not belonging to a scheduled caste, a scheduled tribe, or an other backward class

percent) or Sikh women (56 percent). By caste/tribe, knowledge of AIDS is much lower among women belonging to scheduled castes (27 percent) and other backward classes (38 percent) than among other women (53 percent).

Source of Knowledge about AIDS

As part of its AIDS prevention programme, the Government of India has been using mass media, especially electronic 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 by far the most important source of information about AIDS. Ninety-one percent of women who know about AIDS received information from that source. Other important sources of information about AIDS are radio (32 percent), newspapers or magazines (26 percent), friends or relatives (24 percent), and posters or hoardings (18 percent). Only 3 percent report that they received information about AIDS from a health worker.

Television is the most important source of information about AIDS in all of the groups shown in Table 6.15 and a considerable proportion of women in all groups received information about AIDS from the radio. The proportion of women who learned about AIDS from newspapers or magazines is strongly related to residence, education, caste/tribe status, and living standard. As might be expected, women who are not regularly exposed to any mass media are much more likely to have learned about AIDS from a friend or relative than from any other source.

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 can be done were asked what a person can 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, 29 percent do not know any way to avoid infection, compared with 33 percent for India as a whole. This percentage is higher among rural women than among urban women, and among women not regularly exposed to mass media than among other women. Lack of knowledge of ways to avoid becoming infected with AIDS decreases sharply with increasing levels of education and household standard of living. The percentage is slightly higher among Hindu women (29 percent) than among Sikh women (27 percent). Women from scheduled castes and other backward classes are more likely than other women not to know any way to avoid AIDS.

Among women who report that something can be done to prevent AIDS, the most commonly mentioned ways of avoiding AIDS are having only one sex partner (43 percent), using condoms (37 percent), and avoiding injections or using clean needles (32 percent). Substantial proportions of respondents also mention abstaining from sex (23 percent) and avoiding blood transfusion (21 percent). Eight percent of women mention avoiding sex with commercial sex workers. Only 2 percent of women mention avoiding intravenous drug use and even fewer women mention avoiding sex with homosexuals as a way of avoiding AIDS. The percentage reporting each of these specific ways of avoiding AIDS is lower among rural than

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, Haryana, 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	21.6	40.7	46.0	8.5	0.6	22.6	35.9	2.3	3.5	23.7	354
25–34	25.7	35.3	43.3	7.7	1.5	19.9	28.4	1.3	4.0	29.5	530
35–49	20.6	34.4	41.3	9.1	0.8	20.1	32.0	2.8	4.5	31.3	404
Residence											
Urban	26.9	45.9	46.4	11.1	2.0	24.3	36.1	2.8	4.8	22.0	618
Rural	19.3	27.9	40.6	5.8	0.1	17.3	27.4	1.3	3.3	34.4	669
Education											
Illiterate	13.6	16.4	36.9	8.3	0.3	12.3	21.0	0.0	1.9	45.4	325
Literate, < middle school complete	18.7	28.6	37.8	5.1	0.4	14.7	29.0	0.4	2.5	34.4	238
Middle school complete	25.2	37.6	41.8	5.8	0.6	18.8	33.4	1.8	5.3	26.3	172
High school complete and above	29.6	51.4	50.0	10.5	1.9	28.8	38.3	4.0	5.5	16.6	553
Religion											
Hindu	22.9	36.6	43.4	8.9	1.0	21.0	32.5	2.2	3.7	28.5	1,159
Sikh	22.6	34.6	45.1	2.9	1.9	20.0	21.6	0.9	8.4	26.9	107
Caste/tribe											
Scheduled caste	15.8	28.3	35.8	7.5	0.6	15.7	20.8	3.1	3.8	35.2	160
Other backward class	19.4	25.8	44.6	8.5	1.3	16.0	28.2	0.8	5.1	35.1	237
Other[1]	25.2	40.8	44.4	8.5	1.0	22.9	34.4	2.2	3.7	25.5	891
Standard of living index											
Medium	18.2	26.2	39.3	5.8	0.8	15.2	23.9	1.7	2.7	37.9	414
High	25.6	42.0	45.5	9.5	1.2	23.4	35.7	2.3	4.5	23.4	850
Exposure to mass media											
Exposed to any media	23.9	38.4	44.8	8.7	1.1	21.4	33.3	2.1	4.3	26.0	1,183
Listens to radio weekly	25.0	42.1	43.9	9.1	1.1	26.4	38.6	1.9	4.8	24.6	629
Watches television weekly	23.9	39.5	44.6	8.8	1.1	21.5	33.7	2.2	4.3	25.3	1,122
Goes to cinema/theatre monthly	32.9	53.3	54.0	10.7	2.7	44.2	54.3	4.4	6.2	9.6	116
Reads newspaper/magazine weekly	31.5	54.6	47.2	11.8	1.4	27.8	42.9	3.4	4.8	14.7	572
Not regularly exposed to any media	12.4	15.3	27.6	4.8	0.0	12.3	12.4	1.0	1.0	56.1	104
Total	23.0	36.5	43.4	8.4	1.0	20.7	31.6	2.0	4.0	28.5	1,288

Note: Total includes 15 Muslim women, 6 women belonging to 'other' religions, 18 women from households with a low standard of living index, and 6 women with missing information on the standard of living index, who are not shown separately.

[1]Not belonging to a scheduled caste, a scheduled tribe, or an other backward class

among urban women and among women not regularly exposed to mass media than among other women. The level of education and the household standard of living are strongly and positively associated with women mentioning each of these ways of avoiding AIDS. The use of condoms as a way of avoiding AIDS is mentioned most often by women who have at least completed high school and women who are regularly exposed to cinema and print media.

The lack of knowledge of AIDS, its modes of transmission, and ways to avoid infection among women in Haryana is a major challenge to efforts to avoid the spread of AIDS. A majority of ever-married women in their childbearing years have never heard of AIDS, and more than one-quarter of those who have heard of AIDS do not know even one way to avoid infection. It is clear that AIDS prevention organizations need to strengthen the educational components of their programmes, in addition to trying to reduce high-risk behaviour, since even basic information about AIDS is seriously deficient among women in Haryana.