# 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 infection, fever, and diarrhoea among children and the treatment of these illnesses; and mothers' knowledge of oral rehydration therapy.

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, Punjab

| | NFHS-1 (1992–93) | NFHS-2 (1997–98) | | | SRS (1997) | | |
|---|---|---|---|---|---|---|---|
| Age | Total | Male | Female | Total | Male | Female | Total |
| < 5 | 14.9 | 11.8 | 20.4 | 15.6 | 12.6 | 17.6 | 14.9 |
| 5–14 | 1.1 | 0.6 | 0.3 | 0.5 | 0.3 | 1.2 | 0.7 |
| 15–49 | 2.4 | 4.6 | 2.7 | 3.7 | 3.6 | 1.9 | 2.8 |
| 50–59 | 8.1 | 7.5 | 8.2 | 7.9 | 13.7 | 11.0 | 12.5 |
| 60+ | 36.8 | 37.9 | 42.5 | 40.0 | 49.4 | 36.6 | 42.8 |
| CDR | 7.1 | 8.4 | 8.5 | 8.4 | 8.0 | 6.8 | 7.4 |

Note: Age-specific death rates and crude death rates 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

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 Punjab 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 1992–93 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 substantial underreporting of deaths. The Sample Registration System (SRS), maintained by the Office of the Registrar General of India, provides a useful comparison. The most recent report on mortality estimates by age for Punjab is for 1997 (Office of the Registrar General, 1999a).

Table 6.1 shows an estimated average annual CDR for Punjab of 8.4 deaths per 1,000 population based on NFHS-2 data (covering roughly 1997–98), compared with 7.4 from the 1997 SRS. Thus, contrary to expectations, the CDR estimated from NFHS-2 is marginally higher than the corresponding SRS estimate. This suggests that the completeness of reporting of deaths in NFHS-2 is about the same, if not better, than in the SRS. NFHS-2 and SRS age-specific death

rates are also similar for most age groups except that the SRS estimate for the age group 50–59 is moderately higher than the NFHS-2 estimate. The NFHS-2 CDR estimate for Punjab (8.4) is lower than the all-India CDR of 9.7, but is higher than the NFHS-1 CDR of 7.1 for Punjab (covering roughly 1992–93). The difference in CDR between NFHS-1 and NFHS-2 is not likely to be statistically significant (see Appendix Table A.2 for NFHS-1 and NFHS-2). The increase in the estimates of CDR between NFHS-1 and NFHS-2 results from increases in age-specific death rates for all age groups, except the age groups 5–14 and 50–59, during the five and a half years between the two surveys.

In most countries, male death rates are higher than female death rates at nearly all ages. South Asia generally has been an exception in this respect, with higher death rates for females over much of the age span (Tabutin and Willems, 1995; Preston, 1989; Ghosh, 1987). In Punjab, according to both NFHS-2 and the SRS, death rates are higher for females than for males during early childhood (age 0–4). According to the SRS, but not NFHS-2, females also have much higher death rates during childhood (age 5–14). While the SRS and NFHS-2 estimates both show higher death rates for males than for females during the reproductive ages (15–49), the two estimates again give opposing results with regard to sex differences in mortality for ages 50 and above. For these ages, the SRS shows much higher male mortality than female mortality, whereas the NFHS-2 shows higher female than male mortality with the differential being greater for ages 60 and above.

## 6.2 Infant and Child Mortality

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

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

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

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

## Assessment of Data Quality

The reliability of mortality estimates calculated from retrospective birth histories depends upon the completeness with which deaths of children are reported and the extent to which birth dates and ages at death are accurately reported and recorded. Estimated rates of infant and child mortality are subject to both sampling and nonsampling errors. While sampling errors for various mortality estimates are provided in Appendix A, this section describes the results of various checks for nonsampling errors—in particular, underreporting of deaths in early childhood (which would result in an underestimate of mortality) and misreporting of the date of birth or age at death (which could distort the age pattern of under-five mortality). Both problems are likely to be more pronounced for children born further in the past than for children born recently. Underreporting of infant deaths is usually most serious for deaths that occur very early in infancy. If deaths in the early neonatal period are selectively underreported, there will be an abnormally low ratio of deaths under seven days to all neonatal deaths and an abnormally low ratio of neonatal to infant deaths. Changes in these ratios over time can be examined to test the hypothesis that underreporting of early infant deaths is more common for births that occurred further in the past than for births that occurred more recently. Failure to report deaths will result in mortality figures that are too low, and if underreporting is more severe for children born 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 Punjab NFHS-2, since the ratios of deaths under seven days to all neonatal deaths are consistently high (between 64 and 73 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 64 and 65 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 numbers, e.g., 6, 12, and 18 months. If the net result of 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 Punjab NFHS-2, there appears to be a preference for reporting age at death at 8, 10, 13, 15, 18, and 22 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 some heaping of deaths at 6, 8, 9, 11, and 12 months, especially for deaths occurring further back in time. The strong emphasis during the training of interviewers for the NFHS-2 fieldwork on the problem of age heaping at one year or 12 months has only partially succeeded in mitigating the problem: almost no deaths were reported at age 1 year, and there is

less heaping at age 12 months in the recent period than in the periods further back in time.[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 reported for the entire 15-year period would be underestimated by less than 3 percent and the rate reported for the most recent 5-year period would be underestimated by only 1 percent.

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 who were age 40–49 at that time, 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 2 percent of the children born in the three years before the survey were born to women age 35 and above. Given the very 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 Punjab declined from 64 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 less than one infant death per 1,000 live births per year. A comparison of the infant mortality rate for the period 0–4 years before NFHS-2 (57) with the infant mortality rate 0–4 years before NFHS-1 (54), however, shows a non-statistically significant increase in infant mortality in Punjab over the five and a half years between the two surveys. The infant mortality rate in Punjab (57) is lower than the all-India infant mortality rate (68), but Punjab continues to lag behind about half of the states in India in terms of this important indicator of development, health, and family welfare.

All other measures of infant and child mortality presented in Table 6.2 have also either declined over the three five-year time periods (neonatal mortality) or show a decline overall despite a recent increase (all other measures). The magnitude of decline, at 10–15 percent between the periods 10–14 years and 0–4 years before the survey, is small, however, for most of the mortality rates, and is even smaller for the postneonatal mortality rate (4 percent). Thus,

[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'.

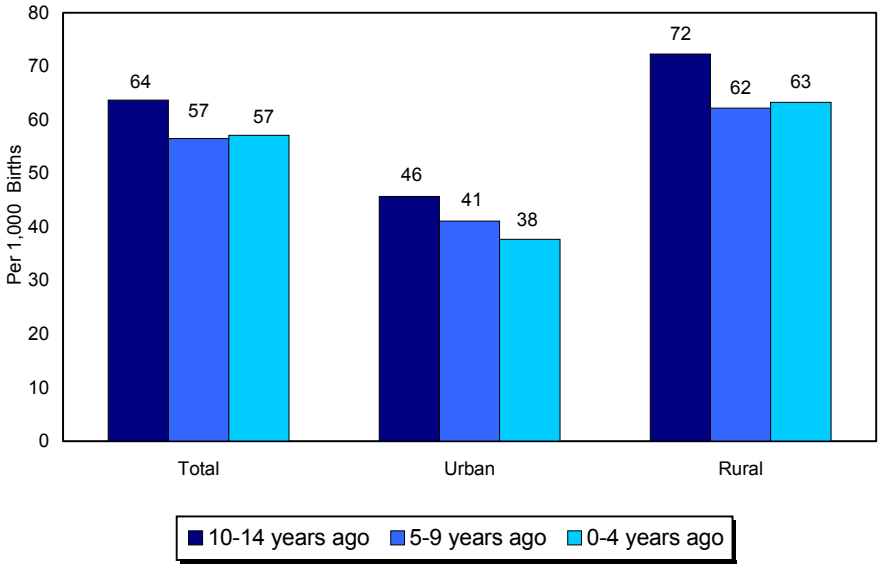
Table 6.2 Infant and child mortality

Neonatal, postneonatal, infant, child, and under-five mortality rates for five-year periods preceding the survey by residence, Punjab, 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 | (18.6) | (19.1) | (37.7) | (12.4) | (49.7) |
| 5–9 | 27.7 | 13.4 | 41.1 | 4.6 | 45.5 |
| 10–14 | 25.1 | 20.6 | 45.7 | 14.1 | 59.2 |
| **RURAL** | | | | | |
| 0–4 | 39.3 | 24.0 | 63.3 | 17.2 | 79.4 |
| 5–9 | 41.1 | 21.1 | 62.2 | 14.7 | 76.0 |
| 10–14 | 47.0 | 25.3 | 72.3 | 21.0 | 91.8 |
| **TOTAL** | | | | | |
| 0–4 | 34.3 | 22.8 | 57.1 | 15.9 | 72.1 |
| 5–9 | 37.5 | 19.0 | 56.5 | 11.7 | 67.5 |
| 10–14 | 40.0 | 23.8 | 63.7 | 18.8 | 81.3 |

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, Punjab, 1998–99

overall, these data suggest that there has been very little change in infant and child mortality in Punjab in recent years and more than 1 in every 18 children born during the five years before NFHS-2 died within the first year of life and 1 in every 14 children died before reaching age five. Clearly, child survival programmes in Punjab need to be intensified to achieve further reductions in infant and child mortality.

Rural mortality rates are considerably higher than urban mortality rates. For example, in the five years before the survey, the infant mortality rate is 68 percent higher and the under-five mortality rate is 60 percent higher in rural areas than in urban areas. Mortality rates are all lower in the period 1994–98 than in 1984–88 in both the urban and rural areas of Punjab. While the postneonatal and under-five mortality rates have declined at fairly similar rates in both urban and rural areas, the neonatal and infant mortality rates have both declined more slowly in rural areas than in urban areas and the child mortality rate has declined faster in rural areas than in urban areas. A comparison of the NFHS-2 urban and rural mortality rates with the corresponding rates from NFHS-1 for the periods 0–4 years before the two surveys shows an increase in most rates for the rural areas and a decline in most rates for the urban areas between the two surveys. However, these changes are small in most cases and are unlikely to be statistically significant, suggesting that there has been little or no change in mortality since NFHS-1 in both urban and rural areas of Punjab.

The estimated NFHS-2 infant mortality rate of 57 deaths per 1,000 live births during 1994–98 is slightly higher than the SRS value of 53 deaths per 1,000 live births averaged for the period 1994–98. However, this small difference in the two rates is not statistically significant (the lower and upper confidence limits for the NFHS-2 estimate, shown in Appendix Table A.2, are 45 and 69, respectively). Similarly, the average SRS estimate for the infant mortality rate for rural areas for the same period (57 deaths per 1,000 live births) is also lower than the corresponding NFHS-2 estimate (63 deaths per 1,000 live births), though not significantly so. The NFHS-2 estimate for urban areas (38 deaths per 1,000 live births) is, however, in close agreement with the average SRS estimate for urban areas (39 deaths per 1,000 live births).

**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 Punjab experience a 64 percent higher probability of dying before their fifth birthday than urban children, only slightly higher than the 60 percent differential in the most recent five-year period shown in Table 6.2. This comparison confirms that the under-five mortality rate has been falling at about the same rate in rural areas and urban areas. The probability of dying in the first month of life is 70 percent higher and that of dying between ages one and five is 96 percent higher in rural areas than in urban areas in the 10-year period before NFHS-2.

The infant mortality rate declines sharply with increasing education of mothers, ranging from a high of 73 deaths per 1,000 live births for illiterate mothers to a low of 35 deaths per 1,000 live births for mothers who have at least completed high school. In the case of most of the other infant and child mortality rates too, children of mothers who are illiterate are at least twice as likely to die as children of mothers who have completed at least high school.

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, Punjab, 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 | 23.7 | 15.9 | 39.6 | 8.2 | 47.5 |
| Rural | 40.2 | 22.5 | 62.7 | 16.1 | 77.8 |
| **Mother's education** | | | | | |
| Illiterate | 44.3 | 28.7 | 73.0 | 19.5 | 91.0 |
| Literate, < middle school complete | 40.3 | 17.4 | 57.8 | 15.5 | 72.3 |
| Middle school complete | (23.4) | (15.1) | (38.5) | (3.7) | (42.1) |
| High school complete and above | 23.0 | 11.8 | 34.8 | 6.3 | 40.8 |
| **Religion** | | | | | |
| Hindu | 33.0 | 24.0 | 57.0 | 14.9 | 71.0 |
| Sikh | 36.2 | 15.3 | 51.5 | 12.7 | 63.6 |
| **Caste/tribe** | | | | | |
| Scheduled caste | 44.9 | 28.9 | 73.7 | 22.5 | 94.6 |
| Other backward class | 34.6 | 23.0 | 57.6 | 15.8 | 72.5 |
| Other[2] | 30.2 | 14.1 | 44.3 | 7.4 | 51.4 |
| **Standard of living index** | | | | | |
| Medium | 41.5 | 32.5 | 74.0 | 15.6 | 88.4 |
| High | 29.1 | 9.4 | 38.5 | 7.9 | 46.2 |
| Total | 36.0 | 20.8 | 56.8 | 13.9 | 69.9 |

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 scheduled tribe, or an other backward class

Sikh children consistently have somewhat lower mortality rates than Hindu children after the neonatal stage, with the absolute difference in the rates being least in the case of the child mortality rate. NFHS-1 had also found higher infant and under-five mortality rates for Hindu children compared with Sikh children, but had found the child mortality rate to be higher among Sikhs than Hindus. Children belonging to the scheduled castes and to the other backward classes have higher rates of infant and child mortality than children not belonging to the scheduled castes, scheduled tribes, and other backward classes. As expected, all indicators of infant and child mortality decline substantially with increases in the household standard of living. For example, the infant mortality rate is almost twice as high for children in households with a medium standard of living as for children in households with a high standard of living (74 and 39 deaths per 1,000 live births, respectively).

## 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.

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, Punjab, 1998–99

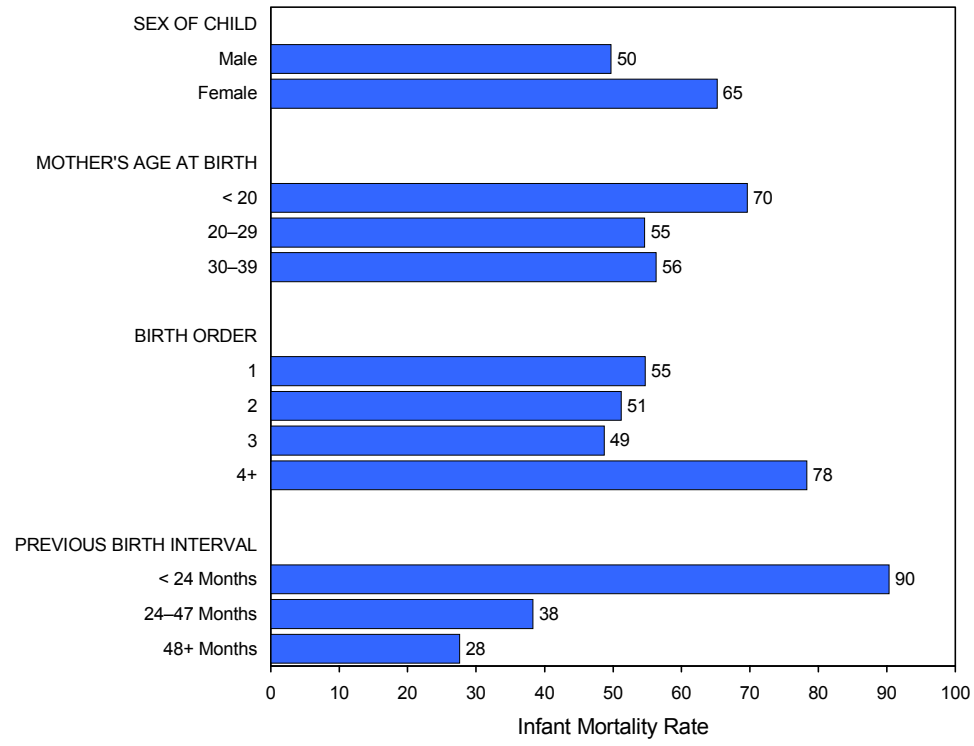
| Demographic characteristic | Neonatal mortality (NN) | Postneonatal mortality[1] (PNN) | Infant mortality ($_1q_0$) | Child mortality ($_4q_1$) | Under-five mortality ($_5q_0$) |
|---|---|---|---|---|---|
| **Sex of child** | | | | | |
| Male | 34.4 | 15.3 | 49.7 | 5.9 | 55.4 |
| Female | 37.9 | 27.3 | 65.2 | 23.8 | 87.4 |
| **Mother's age at birth** | | | | | |
| < 20 | (44.5) | (25.1) | (69.6) | (24.1) | (92.1) |
| 20–29 | 33.6 | 21.1 | 54.6 | 12.1 | 66.0 |
| 30–39 | (42.5) | (13.8) | (56.3) | (12.0) | (67.6) |
| **Birth order** | | | | | |
| 1 | 41.0 | 13.7 | 54.7 | 11.7 | 65.7 |
| 2 | 30.1 | 21.1 | 51.2 | 9.0 | 59.8 |
| 3 | 24.2 | 24.5 | 48.7 | 25.1 | 72.6 |
| 4+ | 50.1 | 28.2 | 78.3 | 12.9 | 90.1 |
| **Previous birth interval** | | | | | |
| < 24 months | 52.6 | 37.7 | 90.3 | 22.2 | 110.5 |
| 24–47 months | 20.7 | 17.6 | 38.3 | 13.3 | 51.1 |
| 48+ months | (18.3) | (9.3) | (27.6) | (0.0) | (27.6) |
| **Medical care**[2] | | | | | |
| One or two types of care | (27.8) | (23.0) | (50.8) | U | U |
| All types of care | (28.2) | (24.8) | (53.0) | 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 rates
[2]Medical care includes (i) antenatal care received from a health worker, (ii) delivery assistance given by a doctor, nurse, trained midwife, or other health professional, and (iii) postnatal care received in a health facility or at home within two months of delivery; rates are for the three-year period preceding the survey.

Table 6.4 shows that the mortality rate below five years of age is considerably higher for girls than for boys. Excess female mortality occurs in every age group. The infant mortality rate during the 10-year period before the survey is 31 percent higher for girls (65 deaths per 1,000 live births) than for boys (50 deaths per 1,000 live births). The much lower male than female infant mortality rate results from considerably higher postneonatal mortality among girls than among boys. The child mortality rate for girls is four times as high as the corresponding rate for boys. As a consequence of the much higher infant and child mortality rates for girls than for boys, the under-five mortality rate for boys is 58 percent higher for girls (87 per 1,000 live births) than for boys (55 per 1,000 live births). The mortality rate showing the lowest sex differential is the neonatal mortality rate, which largely reflects mortality due to congenital conditions. Higher mortality rates for females have been observed in other studies in South Asia and are thought to reflect the relative nutritional and medical 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 the prime reproductive ages. Children born to young mothers are more likely to be of low birth weight, which is an important factor contributing to higher neonatal mortality. Similarly,

**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, Punjab, 1998–99

children born to older mothers are at a relatively high risk of experiencing congenital problems. The small number of births to the youngest and oldest mothers makes this comparison in Punjab difficult. Nonetheless, the data suggest that while the youngest mothers do have much higher mortality rates than mothers age 20–29, mothers age 30–39 do not always have higher rates than mothers age 20–29.

Birth order also tends to have a U-shaped relationship to infant deaths, with first births and high-order births having elevated 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. In Table 6.4, birth order shows the expected U-shaped pattern for neonatal, infant, and under-five mortality rates only. The postneonatal mortality rate increases steadily with birth order, even though it declines with mother's age at childbirth. The higher mortality of children at high birth orders may reflect a more intense competition faced by higher birth-order children for the caregiver's time, for medical resources, and for nutritious food. 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 Punjab. 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. For example, the infant mortality rate is more than twice as high for children with a previous birth interval of less than 24 months than for children with a previous interval of 24 to

47 months (90 deaths compared with 38 deaths per 1,000 live births) and is three times as high as for children with a previous birth interval of 48 or more months (90 deaths compared with 28 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. Due to the relatively small sample size in Punjab, it is not possible to meaningfully compare mortality rates for children by whether their mothers received medical care.

## 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 these reasons, it was decided to include similar morbidity questions in NFHS-2. In NFHS-2, questions on blindness, leprosy, and physical impairment of the limbs were replaced by questions on asthma and jaundice. The questions on tuberculosis and malaria were retained, and a question on medical treatment of tuberculosis was added to get a better measure of the prevalence of tuberculosis. The household head or other knowledgeable adult in the household reported on morbidity for all household members, and no effort was made to conduct 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

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, Punjab, 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 | 188 | 62 | 62 | 1,375 | 1,193 | 1,397 |
| 15–59 | 866 | 239 | 179 | 1,075 | 776 | 2,919 |
| 60+ | 5,385 | 372 | 372 | 0 | 1,291 | 470 |
| **Sex** | | | | | | |
| Male | 1,061 | 353 | 282 | 1,058 | 815 | 2,470 |
| Female | 1,168 | 38 | 38 | 1,056 | 1,091 | 2,317 |
| Total | 1,112 | 200 | 164 | 1,057 | 949 | 4,786 |
| **RURAL** | | | | | | |
| **Age** | | | | | | |
| < 15 | 297 | 29 | 29 | 1,078 | 894 | 3,586 |
| 15–59 | 976 | 239 | 239 | 892 | 1,229 | 6,265 |
| 60+ | 6,338 | 568 | 568 | 809 | 1,383 | 1,319 |
| **Sex** | | | | | | |
| Male | 1,278 | 143 | 143 | 939 | 918 | 5,947 |
| Female | 1,520 | 287 | 287 | 945 | 1,392 | 5,223 |
| Total | 1,391 | 210 | 210 | 942 | 1,140 | 11,170 |
| **TOTAL** | | | | | | |
| **Age** | | | | | | |
| < 15 | 267 | 38 | 38 | 1,161 | 978 | 4,983 |
| 15–59 | 941 | 239 | 220 | 950 | 1,085 | 9,184 |
| 60+ | 6,088 | 517 | 517 | 596 | 1,359 | 1,789 |
| **Sex** | | | | | | |
| Male | 1,214 | 205 | 184 | 974 | 888 | 8,416 |
| Female | 1,412 | 211 | 211 | 979 | 1,300 | 7,540 |
| Total | 1,308 | 207 | 197 | 976 | 1,082 | 15,956 |

[1]Includes medically treated tuberculosis

in many parts of the world. In Punjab, 1.3 percent of the population was reported to be suffering from asthma at the time of NFHS-2. The reported level of asthma (1,308 per 100,000 population) in Punjab is lower than the level reported for India as a whole (2,468 per 100,000 population). The prevalence of asthma is slightly higher in rural areas (1,391 per 100,000 population) than in urban areas (1,112 per 100,000 population) and is also slightly higher among females (1,412 per 100,000) than among males (1,214 per 100,000). Age differences are marked, with the prevalence of asthma increasing from 267 per 100,000 at age 0–14 to 6,088 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 Punjab is 207 per 100,000 population, less than half the national estimate of 544. The prevalence of tuberculosis in Punjab recorded in NFHS-2 is slightly lower than the prevalence recorded in NFHS-1 (240 per 100,000). The prevalence rates in rural and urban areas do not vary significantly. In urban areas, the prevalence rate of tuberculosis is almost 10 times higher for males (353 per 100,000) than for females (38 per 100,000). In rural areas, however, the prevalence rate for males (143 per 100,000) is half the female rate (287 per 100,000). Probable reasons for the higher prevalence of tuberculosis among males than females in urban areas are that men are more likely than women to come in contact with people who suffer from active tuberculosis. One probable cause of the higher prevalence of tuberculosis among females in rural areas may be that they are more likely to cook food on indigenous *chullahs* (with firewood and cowdung cakes, etc., as fuel). Exposure to smoke from biomass fuels has been identified as a significant cause of tuberculosis in India (Mishra et al., 1999). The prevalence of tuberculosis increases rapidly with age. It is substantially higher among persons age 60 and above (517 per 100,000) than among those age 15–59 (239 per 100,000) or age 0–14 (38 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. The prevalence of medically treated tuberculosis is only slightly lower (197 per 100,000) than the prevalence based on all reported cases (207 per 100,000). While there is no difference in the prevalence of reported cases of tuberculosis and prevalence of medically treated tuberculosis in rural areas of Punjab, in urban areas, only 82 percent of the reported cases are medically treated cases. The difference between reported and medically treated rates for tuberculosis is evident even in urban areas only for the age group 15–59 and only for males.

## 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 Punjab, 976 persons per 100,000 population were reported to have suffered from jaundice during the 12 months preceding the survey, considerably lower than the rate of 1,361 for India as a whole. People living in urban areas are slightly more likely to have suffered from jaundice (1,057 per 100,000) than those living in rural areas (942 per 100,000). There is no sex differential in the prevalence of jaundice. Jaundice is the only condition measured the prevalence of which decreases with age. The prevalence of jaundice is highest for the age group 0–14 (1,161 per 100,000) and lowest for those 60 years and above (596 per 100,000). Indeed, in urban areas, no case of jaundice was reported for persons age 60 and above.

## Malaria

Malaria is characterized by recurrent high fever with shivering. NFHS-2 asked household respondents whether any member of their household suffered from malaria at any time during the three months preceding the survey. In Punjab, 1,082 persons per 100,000 population were

reported to have suffered from malaria during the three months preceding the survey, less than a third of 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 higher 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 slightly more likely to suffer from malaria (1,140 per 100,000) than urban residents (949 per 100,000). The reported prevalence of malaria is higher for females than for males in both urban and rural areas. The prevalence of malaria increases with age, from 978 per 100,000 in the population age 0–14 to 1,359 per 100,000 in the population age 60 years and over. The steady increase with age occurs in rural areas but not in 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 Punjab 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 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'), 72 percent of children age 12–23 months are fully vaccinated, and 9 percent have received no vaccinations at all. 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 each have been received by at least 88 percent of children (see Figure 6.3). Eighty-two percent of children have received three doses of DPT and 84 percent have received three doses of the polio vaccine. Although DPT and polio vaccinations are given at the same time as part of the routine immunization programme, the coverage rates are slightly higher for polio than DPT, undoubtedly because of the Pulse Polio campaigns.

In Punjab, most children who begin 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 just 6 percentage points for DPT and 7 percentage points for polio. Seventy-seven percent of children 12–23 months have been vaccinated against measles. The relatively low percentage vaccinated against measles is largely responsible for the fact that the percentage fully vaccinated is less than three-fourths of the children surveyed.

There has been considerable improvement in vaccination coverage in Punjab since the time of NFHS-1, when the proportion of children fully vaccinated was 62 percent and the proportion who had received no vaccinations was 18 percent. The coverage of each specific vaccination has also improved considerably since NFHS-1. Nonetheless, these data indicate that the goal of universal immunization coverage for children has yet to be met.

[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 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, Punjab, 1998–99

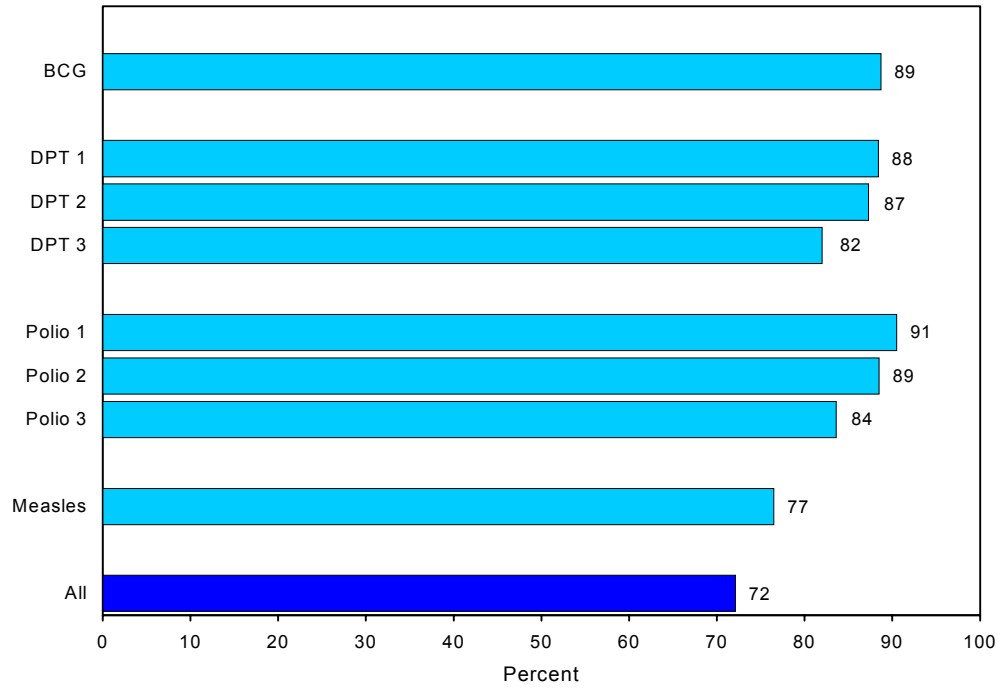
| Source of information | Percentage vaccinated | | | | | | | | | | | Number of children |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | DPT | | | Polio | | | | | | |
| | BCG | Polio 0 | 1 | 2 | 3 | 1 | 2 | 3 | Measles | All[1] | None | |
| **URBAN** | | | | | | | | | | | | |
| **Vaccinated at any time before the interview** | | | | | | | | | | | | |
| Vaccination card | 100.0 | 5.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 98.0 | 98.0 | 0.0 | 44 |
| Mother's report | (86.1) | (33.4) | (94.4) | (91.5) | (86.1) | (94.4) | (91.5) | (88.8) | (77.7) | (69.5) | (5.6) | 31 |
| Either source | 94.2 | 17.3 | 97.7 | 96.5 | 94.2 | 97.7 | 96.5 | 95.4 | 89.6 | 86.2 | 2.3 | 76 |
| Vaccinated by 12 months of age[2] | 94.2 | 17.3 | 97.7 | 96.5 | 92.2 | 97.7 | 96.5 | 93.3 | 72.6 | 69.1 | 2.3 | 76 |
| **RURAL** | | | | | | | | | | | | |
| **Vaccinated at any time before the interview** | | | | | | | | | | | | |
| Vaccination card | 100.0 | 8.1 | 100.0 | 100.0 | 98.4 | 100.0 | 100.0 | 98.4 | 82.2 | 82.2 | 0.0 | 67 |
| Mother's report | 78.5 | 9.1 | 75.7 | 74.0 | 64.7 | 80.4 | 76.8 | 67.4 | 64.7 | 57.2 | 17.8 | 116 |
| Either source | 86.4 | 8.7 | 84.6 | 83.5 | 77.0 | 87.6 | 85.3 | 78.7 | 71.1 | 66.3 | 11.3 | 183 |
| Vaccinated by 12 months of age[2] | 86.4 | 8.7 | 81.9 | 80.8 | 74.4 | 84.7 | 82.5 | 76.1 | 60.5 | 56.4 | 12.7 | 183 |
| **TOTAL** | | | | | | | | | | | | |
| **Vaccinated at any time before the interview** | | | | | | | | | | | | |
| Vaccination card | 100.0 | 7.2 | 100.0 | 100.0 | 99.0 | 100.0 | 100.0 | 99.0 | 88.5 | 88.5 | 0.0 | 111 |
| Mother's report | 80.2 | 14.2 | 79.7 | 77.7 | 69.2 | 83.4 | 79.9 | 72.0 | 67.4 | 59.8 | 15.2 | 148 |
| Either source | 88.7 | 11.2 | 88.4 | 87.3 | 82.0 | 90.5 | 88.5 | 83.6 | 76.5 | 72.1 | 8.7 | 259 |
| Vaccinated by 12 months of age[2] | 88.7 | 11.2 | 86.7 | 85.5 | 79.7 | 88.7 | 86.8 | 81.2 | 63.7 | 59.9 | 9.6 | 259 |

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.

Government statistics suggest a much higher level of vaccination coverage than NFHS-2 estimates. According to government statistics for Punjab for 1997–98, 92 percent of children age 12–23 months are fully vaccinated and the coverage is 96 percent each for BCG, the third dose of DPT, and the third dose of polio vaccine, and 93 percent for measles (Ministry of Health and Family Welfare, 1999b).

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 60 percent of all children (or 83 percent of fully vaccinated children) were fully vaccinated by age 12 months. All children who received BCG were vaccinated by 12 months of age, and the percentages of children who received the third dose of DPT and the third dose of polio by age 12 months is only slightly lower than the percentages who received these vaccines at any time before the survey. For measles vaccination, however, which is supposed to be given when the child is nine months old, the gap is wider: 17 percent of children who were vaccinated against measles received the vaccination after their first birthday.

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




NFHS-2, Punjab, 1998–99

The analysis of vaccine-specific data indicates higher coverage for each type of vaccine in urban areas than in rural areas. Eighty-six percent of children age 12–23 months in urban areas were fully vaccinated at some time before the survey, compared with 66 percent in rural areas. The proportion fully vaccinated during the first year of life is also higher in urban areas (69 percent) than in rural areas (56 percent). Dropout rates for DPT and polio (the proportion of children receiving the first dose but not the third dose of the vaccine) are 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 43 percent of children age 12–23 months. Vaccination cards were shown for 59 percent of children in urban areas and 37 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 (75 percent) are somewhat more likely than girls (69 percent) to be fully vaccinated. Boys are also more likely than girls to have received each of the individual vaccinations except Polio 0. Mothers showed vaccination cards for 50 percent of boys and 35 percent of girls. In NFHS-1 also, vaccination coverage was higher for boys than girls and a vaccination card was shown for a higher proportion of boys than girls. The vaccination coverage for girls has improved considerably between NFHS-1 and NFHS-2, helping to reduce the gender differentials in coverage.

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, Punjab, 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 | 92.1 | 7.4 | 93.2 | 91.9 | 85.4 | 94.8 | 93.4 | 87.4 | 79.6 | 74.5 | 5.2 | 49.6 | 142 |
| Female | 84.5 | 15.9 | 82.5 | 81.6 | 77.9 | 85.3 | 82.6 | 78.9 | 72.7 | 69.2 | 12.9 | 34.9 | 116 |
| **Birth order** | | | | | | | | | | | | | |
| 1 | 95.4 | 15.2 | 92.6 | 91.4 | 87.6 | 95.1 | 92.7 | 87.6 | 84.4 | 79.7 | 3.7 | 48.9 | 88 |
| 2 | 92.8 | 11.8 | 94.0 | 92.6 | 85.9 | 97.0 | 95.6 | 88.5 | 81.3 | 76.1 | 3.0 | 46.2 | 73 |
| 3 | 89.2 | 7.9 | 89.2 | 89.2 | 82.8 | 89.2 | 89.2 | 87.1 | 76.9 | 70.5 | 8.7 | 40.1 | 51 |
| 4+ | (69.4) | (6.4) | (71.3) | (69.4) | (64.9) | (73.5) | (69.4) | (64.9) | (53.9) | (53.9) | (26.5) | (29.9) | 47 |
| **Residence** | | | | | | | | | | | | | |
| Urban | 94.2 | 17.3 | 97.7 | 96.5 | 94.2 | 97.7 | 96.5 | 95.4 | 89.6 | 86.2 | 2.3 | 58.5 | 76 |
| Rural | 86.4 | 8.7 | 84.6 | 83.5 | 77.0 | 87.6 | 85.3 | 78.7 | 71.1 | 66.3 | 11.3 | 36.5 | 183 |
| **Mother's education** | | | | | | | | | | | | | |
| Illiterate | 74.5 | 4.2 | 73.1 | 70.1 | 66.8 | 77.4 | 72.2 | 67.8 | 59.3 | 55.2 | 20.4 | 29.7 | 99 |
| Literate, < middle school complete | (95.5) | (16.7) | (97.8) | (97.8) | (88.6) | (97.8) | (97.8) | (93.2) | (80.8) | (76.2) | (2.2) | (30.2) | 47 |
| Middle school complete | (100.0) | (12.9) | (96.3) | (96.3) | (83.2) | (100.0) | (100.0) | (83.2) | (72.7) | (65.5) | (0.0) | (49.9) | 31 |
| High school complete and above | 97.6 | 15.9 | 98.6 | 98.6 | 96.3 | 98.6 | 98.6 | 97.3 | 96.2 | 92.8 | 1.4 | 63.7 | 82 |
| **Religion** | | | | | | | | | | | | | |
| Hindu | 91.4 | 9.9 | 92.9 | 90.9 | 85.8 | 95.0 | 90.9 | 86.9 | 78.9 | 75.1 | 5.0 | 36.7 | 100 |
| Sikh | 87.2 | 12.5 | 85.7 | 85.0 | 79.9 | 87.2 | 86.5 | 82.0 | 74.7 | 69.6 | 11.3 | 48.4 | 144 |
| **Caste/tribe** | | | | | | | | | | | | | |
| Scheduled caste | 77.1 | 7.6 | 80.1 | 80.1 | 71.0 | 81.3 | 80.1 | 72.2 | 61.1 | 54.6 | 17.6 | 30.5 | 93 |
| Other backward class | (95.9) | (11.2) | (93.7) | (89.4) | (84.9) | (98.2) | (91.6) | (84.9) | (83.0) | (80.9) | (1.8) | (44.1) | 48 |
| Other[2] | 94.8 | 14.1 | 92.8 | 92.0 | 89.5 | 94.6 | 93.9 | 92.0 | 85.9 | 82.3 | 4.4 | 52.3 | 118 |
| **Standard of living index** | | | | | | | | | | | | | |
| Medium | 81.2 | 5.4 | 81.9 | 79.2 | 72.6 | 85.7 | 81.1 | 74.5 | 63.7 | 57.2 | 13.3 | 27.9 | 112 |
| High | 97.8 | 16.1 | 97.6 | 97.6 | 94.4 | 98.4 | 98.4 | 95.9 | 91.8 | 88.8 | 1.6 | 59.1 | 130 |
| Total | 88.7 | 11.2 | 88.4 | 87.3 | 82.0 | 90.5 | 88.5 | 83.6 | 76.5 | 72.1 | 8.7 | 43.0 | 259 |

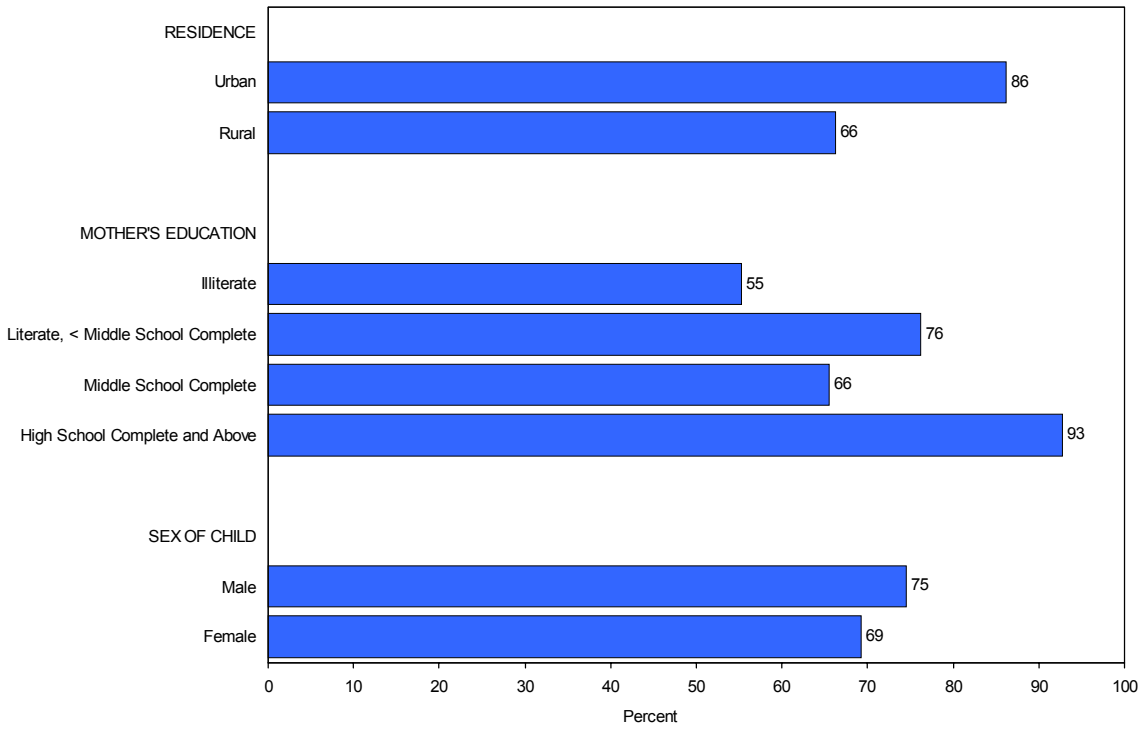
Note: Table includes only surviving children from among the two most recent births in the three years preceding the survey. Total includes 7 Muslim children, 6 children belonging to 'other' religions, 15 children from households with a low standard of living index, and 2 children with missing information on the standard of living index, who are not shown separately.

( ) Based on 25–49 unweighted cases

[1]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, Punjab, 1998–99

The coverage of most vaccinations declines more or less consistently with birth order. A large majority of first-order births occur to younger women who are more likely than older women to utilize maternal and child health care services. There is, in general, a positive relationship between mother's education and children's vaccination coverage. Only 55 percent of children of illiterate mothers are fully vaccinated compared with 93 percent of children with mothers who have completed at least high school. Hindu children are slightly more likely to be fully vaccinated (75 percent) than Sikh children (70 percent). Children belonging to the scheduled castes or to other backward classes are less likely to be fully vaccinated than children who do not belong to the scheduled castes, scheduled tribes, or other backward classes. Household standard of living has a strong positive relationship with vaccination coverage. Fifty-seven percent of children from households with a medium standard of living are fully vaccinated, compared with 89 percent of children from households with a high standard of living.

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

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, Punjab, 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 | 58.5 | 39.1 | 36.5 | 32.3 | 43.0 | 33.8 |
| **Percentage vaccinated by 12 months of age**[1] | | | | | | |
| BCG | 94.2 | 89.9 | 86.4 | 80.1 | 88.7 | 82.4 |
| Polio 0 | 17.3 | 29.2 | 8.7 | 8.0 | 11.2 | 12.6 |
| DPT | | | | | | |
| 1 | 97.7 | 90.6 | 81.9 | 81.9 | 86.7 | 83.8 |
| 2 | 96.5 | 88.1 | 80.8 | 79.6 | 85.5 | 81.5 |
| 3 | 92.2 | 86.8 | 74.4 | 72.3 | 79.7 | 75.5 |
| Polio | | | | | | |
| 1 | 97.7 | 90.6 | 84.7 | 83.9 | 88.7 | 85.5 |
| 2 | 96.5 | 89.3 | 82.5 | 80.8 | 86.8 | 82.8 |
| 3 | 93.3 | 88.0 | 76.1 | 76.3 | 81.2 | 79.0 |
| Measles | 72.6 | 66.5 | 60.5 | 57.8 | 63.7 | 59.7 |
| All vaccinations[2] | 69.1 | 66.5 | 56.4 | 53.5 | 59.9 | 56.9 |
| No vaccinations | 2.3 | 9.4 | 12.7 | 16.1 | 9.6 | 14.5 |
| Number of children | 76 | 68 | 183 | 243 | 259 | 312 |

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)

The proportion of children whose vaccination status was determined from a vaccination card declines substantially 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 increases slightly from 57 percent for children age 24–35 months to 60 percent for children age 12–23 months. This pattern is also observed for most of the vaccines. Improvements in the vaccination coverage of all vaccines, except polio 0 and BCG, are much greater in urban areas than in rural areas.

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 Punjab. Eighty-eight percent of all children who have received vaccinations received most of them from a public sector source and only 12 percent received them from a

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, Punjab, 1998–99

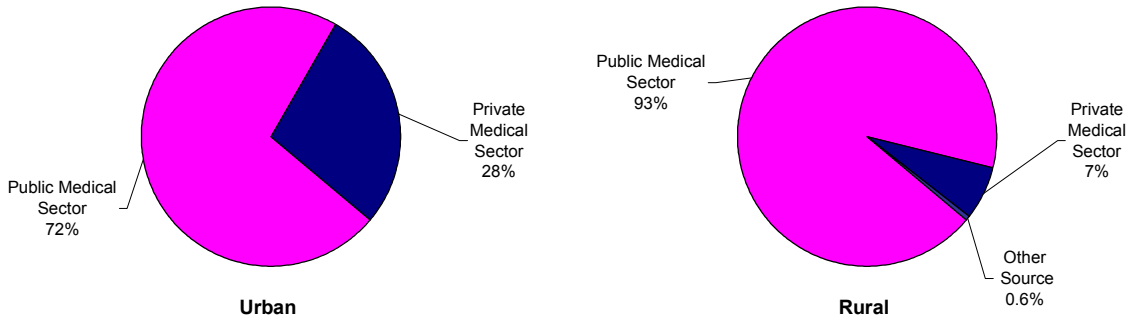
| Background characteristic | Source | | | Total percent | Number of children |
|---|---|---|---|---|---|
| | Public medical sector | Private medical sector | Other | | |
| **Age of child** | | | | | |
| < 12 months | 82.9 | 16.6 | 0.5 | 100.0 | 205 |
| 12–23 months | 87.8 | 11.8 | 0.4 | 100.0 | 236 |
| 24–35 months | 90.7 | 8.9 | 0.4 | 100.0 | 284 |
| **Sex of child** | | | | | |
| Male | 88.0 | 11.7 | 0.3 | 100.0 | 385 |
| Female | 87.0 | 12.4 | 0.6 | 100.0 | 340 |
| **Birth order** | | | | | |
| 1 | 83.6 | 15.6 | 0.9 | 100.0 | 246 |
| 2 | 88.2 | 11.8 | 0.0 | 100.0 | 228 |
| 3 | 92.6 | 7.4 | 0.0 | 100.0 | 149 |
| 4+ | 88.3 | 10.6 | 1.1 | 100.0 | 102 |
| **Residence** | | | | | |
| Urban | 72.3 | 27.7 | 0.0 | 100.0 | 183 |
| Rural | 92.7 | 6.7 | 0.6 | 100.0 | 542 |
| **Mother's education** | | | | | |
| Illiterate | 92.0 | 7.1 | 0.9 | 100.0 | 240 |
| Literate, < middle school complete | 94.1 | 5.9 | 0.0 | 100.0 | 151 |
| Middle school complete | 94.8 | 5.2 | 0.0 | 100.0 | 96 |
| High school complete and above | 76.0 | 23.5 | 0.4 | 100.0 | 239 |
| **Religion** | | | | | |
| Hindu | 86.2 | 13.8 | 0.0 | 100.0 | 295 |
| Sikh | 88.8 | 10.4 | 0.8 | 100.0 | 396 |
| **Caste/tribe** | | | | | |
| Scheduled caste | 95.2 | 4.4 | 0.4 | 100.0 | 248 |
| Other backward class | 90.9 | 9.1 | 0.0 | 100.0 | 128 |
| Other[1] | 80.8 | 18.5 | 0.6 | 100.0 | 349 |
| **Standard of living index** | | | | | |
| Low | (100.0) | (0.0) | (0.0) | 100.0 | 27 |
| Medium | 94.9 | 4.8 | 0.4 | 100.0 | 299 |
| High | 81.4 | 18.1 | 0.5 | 100.0 | 397 |
| Total | 87.5 | 12.0 | 0.4 | 100.0 | 725 |

Note: Table includes only surviving chidren from among the two most recent births in the three years preceding the survey. Total includes 20 Muslim children, 14 children belonging to 'other' religions, and 3 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

private sector medical source. The percentage of vaccinated children receiving vaccinations from the private medical sector is four times as high in urban areas (28 percent), where private sector services tend to be concentrated, as in rural areas (7 percent). Even in urban areas, however, 72 percent of children received their vaccinations from the public sector.

Children of mothers who have completed at least high school, children who do not belong to a scheduled caste, a scheduled tribe, or an other backward class, and children who

**Figure 6.5**
**Source of Childhood Vaccinations by Residence**




Note: Percents may add to more than 100.0 due to rounding

NFHS-2, Punjab, 1998–99

belong to households with a high standard of living are more likely than other children to receive vaccinations from the private medical sector.

## 6.5 Vitamin A Supplementation

Vitamin A deficiency is one of the most common nutritional deficiency disorders in the world, affecting more than 250 million children worldwide (Bloem, de Pee, Danton-Hill, 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, 57 percent of children age 12–35 months received at least one dose of vitamin A, but only 30 percent received a dose within the past six months. This indicates that only about half of the children in Punjab who have received vitamin A supplementation at all have received the supplementation regularly.

Children living in urban areas, children of literate mothers, first-born children, children who do not belong to a scheduled caste, a scheduled tribe, or an other backward class, and children belonging to households with a high standard of living are considerably more likely to receive vitamin A supplementation than other children. Children from households with a low standard of living and children of birth order four or above are much less likely than any other children 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, Punjab, 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 | 55.7 | 39.8 | 259 |
| 24–35 months | 57.1 | 22.4 | 312 |
| **Sex of child** | | | |
| Male | 57.8 | 29.8 | 294 |
| Female | 55.1 | 30.8 | 277 |
| **Birth order** | | | |
| 1 | 66.4 | 37.7 | 174 |
| 2 | 57.8 | 32.9 | 160 |
| 3 | 58.3 | 28.7 | 129 |
| 4+ | 36.3 | 16.2 | 108 |
| **Residence** | | | |
| Urban | 70.4 | 38.7 | 144 |
| Rural | 51.8 | 27.4 | 427 |
| **Mother's education** | | | |
| Illiterate | 41.5 | 23.8 | 220 |
| Literate, < middle school complete | 60.5 | 31.2 | 113 |
| Middle school complete | 68.1 | 30.4 | 72 |
| High school complete and above | 68.5 | 38.1 | 166 |
| **Religion** | | | |
| Hindu | 55.6 | 28.6 | 220 |
| Sikh | 58.0 | 31.9 | 320 |
| **Caste/tribe** | | | |
| Scheduled caste | 47.6 | 24.4 | 206 |
| Other backward class | 53.1 | 30.9 | 105 |
| Other[1] | 64.9 | 34.6 | 260 |
| **Standard of living index** | | | |
| Low | (20.0) | (6.7) | 32 |
| Medium | 45.7 | 24.7 | 257 |
| High | 70.4 | 38.0 | 279 |
| Total | 56.5 | 30.2 | 571 |

Note: Table includes only surviving children from among the two most recent births in the three years preceding the survey. Total includes 18 Muslim children, 13 children belonging to 'other' religions, and 3 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 tract 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 (ARI), primarily pneumonia, is a major cause of illness among infants and children and the leading cause of childhood mortality throughout the world (Murray and Lopez, 1996). Early diagnosis and treatment with antibiotics can prevent a large proportion of ARI/pneumonia deaths. NFHS-2 found that 14 percent of children under age three years in Punjab suffered from acute respiratory infection (cough accompanied by short, rapid breathing) at some time during the two-week period before the survey.

Table 6.11 shows that ARI was somewhat more common among boys than girls, among children living in urban areas than rural areas, and among children at birth order one than at other birth orders. ARI was also more common among children age 6–11 months (22 percent), Muslim children (22 percent), and children whose mothers are literate but have not completed middle school (20 percent). By contrast, children age 1–5 months and children whose mothers have completed at least high school are least likely to have had ARI in the two weeks preceding the survey (both 10 percent). The small range of variation in the prevalence of ARI by most socioeconomic characteristics, however, indicates that respiratory infections affect children of all strata irrespective of their socioeconomic background.

Table 6.11 also shows the percentage of children suffering from ARI symptoms in the two weeks before the survey who were taken to a health facility or provider. Ninety-four percent of children received advice or treatment from a health facility or health provider when ill with ARI, and this percentage is also above 90 percent for most subgroups of children suffering from ARI. The only exceptions are children of illiterate mothers, children belonging to the scheduled castes, and children from households with a medium standard of living. Eighty-five percent or more of even these children, however, were taken to a health facility or provider. Notably, this percentage is somewhat higher for girls than boys.

**Fever**

Fever is the most common of the three conditions examined in Table 6.11, with 25 percent of children suffering from fever during the two weeks preceding the survey. The prevalence of fever is considerably lower among children age 1–5 months (14 percent) than among older children (23–33 percent). The occurrence of fever does not vary much by most background characteristics. Indeed, fever is less prevalent (17–19 percent) only among children of mothers who have completed at least high school, Muslim children, and children belonging to other backward classes.

**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

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, Punjab, 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 | 9.7 | 13.7 | 10.8 | 0.6 | 152 | * | 15 |
| 6–11 months | 22.1 | 33.3 | 11.8 | 0.0 | 119 | (92.0) | 26 |
| 12–23 months | 14.4 | 29.7 | 10.4 | 0.4 | 259 | (91.2) | 37 |
| 24–35 months | 13.8 | 23.1 | 8.0 | 1.0 | 312 | (97.5) | 43 |
| **Sex of child** | | | | | | | |
| Male | 16.2 | 26.2 | 10.3 | 0.5 | 437 | 92.4 | 71 |
| Female | 12.5 | 23.4 | 9.2 | 0.7 | 405 | 95.7 | 50 |
| **Birth order** | | | | | | | |
| 1 | 16.2 | 25.4 | 6.7 | 0.4 | 266 | (92.5) | 43 |
| 2 | 13.4 | 22.0 | 12.1 | 1.2 | 243 | (93.4) | 33 |
| 3 | 14.4 | 27.3 | 10.8 | 0.6 | 174 | (95.6) | 25 |
| 4+ | 13.1 | 25.6 | 10.3 | 0.0 | 159 | * | 21 |
| **Residence** | | | | | | | |
| Urban | 15.9 | 21.6 | 11.0 | 0.4 | 197 | (100.0) | 31 |
| Rural | 14.0 | 25.8 | 9.4 | 0.7 | 645 | 91.6 | 90 |
| **Mother's education** | | | | | | | |
| Illiterate | 14.9 | 27.3 | 10.9 | 0.6 | 335 | (84.8) | 50 |
| Literate, < middle school complete | 19.6 | 29.4 | 10.6 | 1.2 | 163 | (100.0) | 32 |
| Middle school complete | 14.5 | 23.9 | 10.0 | 0.0 | 101 | * | 15 |
| High school complete and above | 10.3 | 18.8 | 7.7 | 0.4 | 243 | (100.0) | 25 |
| **Religion** | | | | | | | |
| Hindu | 15.8 | 24.6 | 11.6 | 0.9 | 341 | 96.0 | 54 |
| Muslim | (21.6) | (17.6) | (14.3) | (0.0) | 28 | * | 6 |
| Sikh | 13.5 | 25.5 | 8.3 | 0.5 | 457 | 93.0 | 62 |
| **Caste/tribe** | | | | | | | |
| Scheduled caste | 12.9 | 27.9 | 10.4 | 0.7 | 311 | (86.7) | 40 |
| Other backward class | 12.3 | 16.5 | 12.7 | 0.7 | 154 | * | 19 |
| Other[2] | 16.2 | 25.6 | 7.8 | 0.5 | 375 | 98.2 | 61 |
| **Standard of living index** | | | | | | | |
| Low | (12.2) | (24.3) | (14.2) | (0.0) | 52 | * | 6 |
| Medium | 15.2 | 28.7 | 10.9 | 0.9 | 372 | 88.6 | 57 |
| High | 13.9 | 21.3 | 8.1 | 0.5 | 413 | 98.1 | 58 |
| **Purification of water** | | | | | | | |
| Boiling | (15.1) | (27.0) | (22.0) | (4.0) | 27 | * | 4 |
| Nothing | 14.6 | 25.2 | 9.4 | 0.5 | 785 | 93.4 | 114 |
| Total | 14.4 | 24.9 | 9.8 | 0.6 | 842 | 93.8 | 121 |

Note: Table includes only surviving children age 1–35 months from among the two most recent births in the three years preceding the survey. Total includes a small number of children belonging to other religions and to the scheduled tribes, children living in households using other means to purify water, and children with missing information on 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

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

As in the case of ARI and fever, there is also not much variation in the prevalence of diarrhoea by background characteristics. Notably however, the prevalence of diarrhoea is slightly lower among children age 24–35 months than younger children. Prevalence is also lower among children at birth order one, children whose mothers have completed at least high school, Sikh children, children who do not belong to the scheduled castes, scheduled tribes, or other backward classes, and children from households with a high standard of living. One percent of all children age 1–35 months (6 percent of children who suffered from diarrhoea in the two weeks preceding the survey) had diarrhoea with blood, a symptom of dysentery.

Table 6.12 shows that 82 percent of mothers with births during the three years preceding the survey know about ORS packets, up from 51 percent for mothers who gave birth during the three years before NFHS-1, and significantly higher than the national average of 62 percent. As expected, knowledge of ORS packets is considerably higher among urban mothers than rural mothers, and among educated mothers than illiterate mothers. Mothers belonging to the scheduled castes are less likely than mothers belonging to the other backward classes and those not belonging to the scheduled castes, scheduled tribes, or other backward classes to know about ORS. Knowledge is also lower among the youngest mothers (age 15–19) and oldest mothers (age 35–49) than mothers at other ages. Knowledge of ORS packets is much lower among mothers who are not regularly exposed to any mass media (65 percent) than among mothers who are exposed to any media (87 percent) or mothers in any other population group.

In order to assess mothers' knowledge of children's need for extra fluids during episodes of diarrhoea, all mothers of children born in the past three years 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 Punjab, 47 percent of mothers correctly report that children should be given more to drink than usual during an episode of diarrhoea, but, contrary to the standard recommendation, 20 percent report that children should be given less. This suggests that mothers in Punjab need more education about the proper management of diarrhoea. The proportion reporting correctly that children with diarrhoea should be given more to drink is lower among the youngest (age 15–19) and oldest (age 35–49) mothers, rural mothers, less educated or illiterate mothers, mothers belonging to the scheduled castes or to other backward classes, and Hindu mothers.

Table 6.12 Knowledge of diarrhoea care

Among mothers with births during the three years preceding the survey, percentage who know about oral rehydration salt (ORS) packets, percent distribution by quantity to be given to drink during diarrhoea, and percentage who know two or more signs of diarrhoea that indicate the need for medical treatment by selected background characteristics, Punjab, 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 | (69.7) | (18.4) | (30.2) | (45.3) | (6.1) | 100.0 | (33.0) | 35 |
| 20–24 | 82.8 | 16.6 | 27.4 | 50.1 | 6.0 | 100.0 | 38.0 | 288 |
| 25–29 | 84.0 | 20.9 | 30.3 | 45.7 | 3.2 | 100.0 | 42.0 | 298 |
| 30–34 | 79.6 | 23.4 | 28.2 | 45.2 | 3.1 | 100.0 | 32.8 | 105 |
| 35–49 | (72.0) | (23.2) | (30.3) | (43.0) | (3.4) | 100.0 | (36.9) | 31 |
| **Residence** | | | | | | | | |
| Urban | 93.3 | 24.3 | 23.8 | 51.4 | 0.5 | 100.0 | 38.1 | 182 |
| Rural | 78.1 | 18.1 | 30.5 | 45.8 | 5.6 | 100.0 | 38.7 | 575 |
| **Education** | | | | | | | | |
| Illiterate | 69.6 | 21.3 | 31.4 | 40.2 | 7.1 | 100.0 | 33.7 | 289 |
| Literate, < middle school complete | 83.8 | 21.7 | 31.1 | 43.8 | 3.5 | 100.0 | 42.2 | 157 |
| Middle school complete | 84.7 | 19.8 | 28.4 | 48.1 | 3.7 | 100.0 | 41.0 | 81 |
| High school complete and above | 94.7 | 15.9 | 24.3 | 57.9 | 1.8 | 100.0 | 41.3 | 230 |
| **Religion** | | | | | | | | |
| Hindu | 80.6 | 19.3 | 31.2 | 44.4 | 5.0 | 100.0 | 40.2 | 302 |
| Sikh | 83.7 | 19.9 | 25.9 | 50.3 | 3.8 | 100.0 | 38.6 | 417 |
| **Caste/tribe** | | | | | | | | |
| Scheduled caste | 74.3 | 20.6 | 30.2 | 44.3 | 4.9 | 100.0 | 38.2 | 264 |
| Other backward class | 81.6 | 20.8 | 31.8 | 41.3 | 6.0 | 100.0 | 37.2 | 139 |
| Other[2] | 87.4 | 18.4 | 26.8 | 51.4 | 3.4 | 100.0 | 39.5 | 353 |
| **Exposure to media** | | | | | | | | |
| Exposed to any media | 86.6 | 17.4 | 31.4 | 47.8 | 3.5 | 100.0 | 39.0 | 589 |
| Watches television weekly | 86.6 | 17.6 | 31.2 | 47.5 | 3.7 | 100.0 | 38.3 | 557 |
| Listens to radio weekly | 90.4 | 15.8 | 32.7 | 48.4 | 3.0 | 100.0 | 39.9 | 243 |
| Visits cinema/theatre monthly | (96.9) | (22.3) | (20.2) | (57.5) | (0.0) | 100.0 | (35.2) | 35 |
| Reads newspaper/magazine weekly | 94.6 | 17.8 | 22.1 | 58.5 | 1.6 | 100.0 | 43.7 | 203 |
| Not regularly exposed to any media | 65.0 | 27.2 | 20.2 | 45.0 | 7.6 | 100.0 | 37.1 | 169 |
| Total | 81.8 | 19.6 | 28.9 | 47.2 | 4.4 | 100.0 | 38.6 | 757 |

Note: Total includes 23 Muslim mothers, 14 mothers belonging to 'other' religions, 1 mother belonging to a scheduled tribe, 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

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 about two-fifths of mothers (39 percent) were able to name two or more signs of diarrhoea that indicate that a child with diarrhoea should be given medical treatment. This percentage is particularly low, at 33–34 percent, among illiterate women, women age 15–19, and women age 30–34, but is never higher than 44 percent for any subgroup of the population. This 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.

Among the very small number of children in the sample in Punjab who suffered from diarrhoea during the two weeks preceding NFHS-2, 92 percent were taken to health facility or provider and 42 percent were treated with a solution made from ORS packets, up from 24 percent at the time of NFHS-1 (data not shown). Forty-two percent received increased fluids when sick with diarrhoea, 21 percent were given gruel, and 7 percent were given a homemade sugar-salt-water solution. Overall, about one-third of children who had diarrhoea in the two weeks preceding the survey did not receive any oral rehydration therapy (data not shown).

The use of antibiotics and other antidiarrhoeal drugs is not generally recommended for the treatment of childhood diarrhoea. Yet 78 percent of the children who had diarrhoea in the two weeks before NFHS-2 were treated with pills or syrup, and 29 percent received an injection (data not shown). These figures indicate poor knowledge about the proper treatment of diarrhoea not only among mothers but also among health-care providers. These 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. Eleven percent of children with diarrhoea did not receive any treatment at all.

Table 6.13 Source of ORS packet

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, Punjab, 1998–99

| Source | Percent |
|---|---|
| **Public medical sector** | (36.9) |
| Government/municipal hospital | (10.7) |
| Government dispensary | (20.1) |
| CHC/rural hospital/PHC | (6.1) |
| **Private medical sector** | (60.1) |
| Private hospital/clinic | (29.2) |
| Private doctor | (25.9) |
| Pharmacy/drugstore | (5.0) |
| Shop | (3.0) |
| 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.
CHC: Community health centre; PHC: Primary Health Centre
( ) Based on 25–49 unweighted cases

Table 6.13 shows the percent distribution of children who were treated with ORS for diarrhoea in the two weeks before NFHS-2 by the source of the ORS packets. Given the small number of cases of children with diarrhoea who were treated with ORS, meaningful comparisons cannot be made. Nonetheless, the table does suggest that the private medical sector is the major source of ORS packets.

## 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. The Population Division of the United Nations has estimated that India currently has about 3.5 million adults living with HIV/AIDS, second in number only to South Africa (United Nations, 2001). The Government of India established a National AIDS Control Organization (NACO) under the Ministry of Health and Family Welfare in 1989 to deal with the epidemic. Since then there have been various efforts to prevent HIV transmission, such as public health education through the media and the activities of many nongovernmental organizations (NGOs).

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

### Knowledge of AIDS

Table 6.14 shows the percentage of women who have heard about AIDS by background characteristics. Only fifty-five percent of women in Punjab have ever heard of AIDS, higher than the national level of 40 percent. NFHS-1 did not include AIDS-awareness questions for Punjab, so it is not possible to assess the trend in AIDS awareness between NFHS-1 and NFHS-2.

Knowledge of AIDS does not vary much by women's age, but there are substantial differentials for all other background characteristics. Eighty-four percent of urban women in Punjab have heard about AIDS, compared with only 42 percent of rural women. Knowledge of AIDS increases from only 19 percent among illiterate women to 96 percent for women who have completed at least high school. Similarly, knowledge of AIDS increases from 7 percent among women living in households with a low standard of living to 72 percent among women in households with a high standard of living. Muslim women are less likely to have heard about AIDS than other women. Two-thirds of women not belonging to the scheduled castes, scheduled tribes, or other backward classes know about AIDS, compared with about one-third of scheduled-caste women and half of the women from other backward classes. The effect of media exposure on knowledge of AIDS is very powerful. Only 12 percent of women who are not regularly exposed to the radio, television, cinema, theatre, or print media say that they have heard about AIDS, compared with more than 90 percent of women who read a newspaper or magazine at least once a week or go to the cinema or theatre at least once a month.

Table 6.14 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, Punjab, 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 | 52.0 | 532 | 27.2 | 93.6 | 2.8 | 26.8 | 21.1 | 1.5 | 0.3 | 21.4 | 0.3 | 0.6 | 277 |
| 25–34 | 56.5 | 1,115 | 27.8 | 94.1 | 5.7 | 36.4 | 21.2 | 3.4 | 0.6 | 22.8 | 0.6 | 2.1 | 630 |
| 35–49 | 54.0 | 1,149 | 21.6 | 95.5 | 2.6 | 35.4 | 25.6 | 3.4 | 0.9 | 26.9 | 0.7 | 4.5 | 620 |
| **Residence** | | | | | | | | | | | | | |
| Urban | 84.1 | 862 | 24.8 | 97.6 | 6.9 | 49.7 | 30.3 | 3.4 | 1.1 | 24.1 | 1.2 | 4.2 | 724 |
| Rural | 41.5 | 1,934 | 25.5 | 91.8 | 1.2 | 20.3 | 16.4 | 2.8 | 0.3 | 24.2 | 0.0 | 1.6 | 803 |
| **Education** | | | | | | | | | | | | | |
| Illiterate | 18.9 | 1,084 | 13.5 | 86.3 | 0.4 | 0.4 | 4.3 | 2.9 | 0.0 | 30.0 | 0.0 | 1.4 | 205 |
| Literate, < middle school complete | 53.4 | 593 | 24.3 | 93.3 | 0.6 | 12.0 | 16.4 | 2.9 | 0.0 | 27.8 | 0.0 | 1.2 | 316 |
| Middle school complete | 73.0 | 294 | 22.4 | 92.8 | 1.3 | 24.0 | 26.7 | 2.8 | 0.0 | 21.6 | 0.0 | 1.3 | 214 |
| High school complete and above | 95.8 | 826 | 29.3 | 97.7 | 6.9 | 54.7 | 29.4 | 3.3 | 1.3 | 21.9 | 1.1 | 4.3 | 791 |
| **Religion** | | | | | | | | | | | | | |
| Hindu | 58.7 | 1,125 | 22.4 | 95.9 | 5.1 | 34.5 | 24.5 | 2.2 | 0.8 | 24.1 | 0.7 | 2.4 | 660 |
| Muslim | 43.1 | 66 | (27.8) | (93.0) | (9.3) | (24.6) | (12.2) | (0.0) | (0.0) | (40.7) | (0.0) | (3.0) | 28 |
| Sikh | 52.0 | 1,556 | 27.4 | 94.0 | 2.7 | 34.5 | 22.0 | 3.3 | 0.6 | 23.0 | 0.5 | 2.8 | 809 |
| Other | (63.0) | 47 | (24.0) | (79.3) | (6.0) | (29.8) | (23.9) | (19.3) | (0.0) | (43.1) | (0.0) | (12.0) | 30 |
| **Caste/tribe** | | | | | | | | | | | | | |
| Scheduled caste | 35.0 | 781 | 20.3 | 90.6 | 2.0 | 19.8 | 16.6 | 3.2 | 0.0 | 27.4 | 0.0 | 2.3 | 273 |
| Other backward class | 49.6 | 453 | 29.0 | 95.0 | 1.6 | 24.5 | 21.0 | 3.5 | 0.5 | 27.0 | 0.0 | 1.7 | 225 |
| Other[1] | 66.0 | 1,560 | 25.7 | 95.5 | 4.9 | 40.2 | 25.1 | 2.9 | 0.9 | 22.7 | 0.8 | 3.2 | 1,029 |

Contd...

Table 6.14 Source of knowledge about AIDS (contd.)

Percentage of ever-married women who have heard about AIDS and among women who have heard about AIDS, percentage who received information from specific sources by selected background characteristics, Punjab, 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 | |
| **Standard of living index** | | | | | | | | | | | | | |
| Low | 7.3 | 113 | * | * | * | * | * | * | * | * | * | * | 8 |
| Medium | 29.7 | 989 | 16.3 | 86.3 | 0.7 | 9.5 | 10.9 | 3.3 | 0.0 | 27.7 | 0.0 | 0.9 | 294 |
| High | 72.3 | 1,681 | 27.5 | 96.9 | 4.8 | 40.4 | 26.1 | 3.1 | 0.8 | 22.9 | 0.7 | 3.4 | 1,216 |
| **Exposure to mass media** | | | | | | | | | | | | | |
| Exposed to any media | 64.1 | 2,292 | 25.7 | 96.4 | 4.1 | 35.4 | 23.6 | 3.1 | 0.7 | 22.7 | 0.6 | 2.9 | 1,469 |
| Listens to radio weekly | 76.1 | 989 | 36.5 | 97.1 | 4.7 | 39.3 | 24.6 | 2.9 | 1.0 | 25.1 | 0.6 | 3.9 | 753 |
| Watches television weekly | 65.8 | 2,162 | 25.5 | 97.5 | 4.2 | 35.6 | 23.6 | 3.1 | 0.7 | 22.5 | 0.6 | 2.8 | 1,423 |
| Goes to cinema/theatre monthly | 97.7 | 159 | 32.0 | 97.6 | 18.0 | 71.5 | 31.9 | 2.8 | 2.8 | 23.2 | 0.6 | 5.6 | 155 |
| Reads newspaper/magazine weekly | 90.7 | 878 | 26.8 | 97.5 | 7.1 | 57.2 | 31.0 | 3.6 | 1.3 | 22.6 | 0.9 | 4.5 | 797 |
| Not regularly exposed to any media | 11.5 | 504 | 12.4 | 46.9 | 0.0 | 5.5 | 6.7 | 3.6 | 0.0 | 62.6 | 0.0 | 0.0 | 58 |
| Total | 54.6 | 2,796 | 25.2 | 94.6 | 3.9 | 34.2 | 23.0 | 3.1 | 0.7 | 24.2 | 0.6 | 2.8 | 1,527 |

Note: Total includes a small number of women belonging to the scheduled tribes and women 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]Not belonging to a scheduled caste, a scheduled tribe, or an other backward class

## 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 6.14 shows the percentage of women who have heard about AIDS from specific sources among women who have heard of AIDS. Television is by far the most important source of information about AIDS among ever-married women in Punjab. Ninety-five percent of women who know about AIDS received information from television. Other important sources of information are newspapers or magazines (34 percent), radio (25 percent), and posters or hoardings (23 percent). One-fourth of women have heard about AIDS from friends or relatives; by contrast, only 3 percent report that they received information about AIDS from a health worker.

Television is the most important source of information about AIDS for women in all the subgroups of population shown in Table 6.14 except women who are not regularly exposed to any media. For these women, friends and relatives are the most important source of AIDS information. For illiterate women too, friends and relatives tend to be an important source of AIDS information, but even among illiterate women, 86 percent received information on AIDS from television.

## 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 6.15 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, 32 percent do not know of any way to avoid infection, compared with 33 percent for India as a whole. Lack of knowledge of ways to avoid becoming infected with AIDS decreases sharply with increasing levels of education and household standard of living, and is particularly high among women not regularly exposed to mass media. Rural women are less likely to know of ways to avoid infection than urban women, as are scheduled-caste women compared with women who do not belong to a scheduled caste, a scheduled tribe, or an other backward class.

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 (40 percent), using condoms (35 percent), and avoiding injections or using clean needles (30 percent). About one-quarter each of respondents also mention abstaining from sex and avoiding blood transfusions. Eleven percent of women mention avoiding sex with commercial sex workers as a way of avoiding AIDS. Four percent mention avoiding IV drug use and 2 percent mention avoiding sex with homosexuals. The percentage reporting most of the specific ways of avoiding AIDS is lower among rural than among urban women and among women not regularly exposed to any mass media than other women. The level of education and the household standard of living are strongly and positively associated with women mentioning most ways of avoiding AIDS. The use of condoms as a way of avoiding AIDS is mentioned most often by women who

Table 6.15 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, Punjab, 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 | 25.7 | 32.3 | 42.3 | 9.1 | 1.5 | 18.4 | 24.1 | 4.3 | 5.6 | 32.6 | 277 |
| 25–34 | 24.0 | 39.5 | 40.1 | 11.6 | 1.1 | 25.5 | 29.9 | 4.3 | 5.0 | 28.9 | 630 |
| 35–49 | 26.3 | 31.2 | 39.5 | 10.3 | 2.6 | 23.0 | 32.5 | 3.5 | 5.8 | 35.0 | 620 |
| **Residence** | | | | | | | | | | | |
| Urban | 32.3 | 42.5 | 45.4 | 13.5 | 2.8 | 29.1 | 39.9 | 3.8 | 5.6 | 23.9 | 724 |
| Rural | 18.8 | 27.9 | 35.7 | 8.0 | 0.9 | 17.9 | 20.9 | 4.1 | 5.3 | 39.4 | 803 |
| **Education** | | | | | | | | | | | |
| Illiterate | 13.4 | 10.9 | 31.4 | 8.5 | 1.0 | 11.4 | 13.7 | 0.5 | 3.9 | 52.0 | 205 |
| Literate, < middle school complete | 19.3 | 23.7 | 33.5 | 7.7 | 0.3 | 15.8 | 22.6 | 1.6 | 6.6 | 41.9 | 316 |
| Middle school complete | 19.3 | 31.2 | 38.6 | 11.3 | 1.5 | 19.9 | 22.7 | 5.9 | 5.1 | 34.7 | 214 |
| High school complete and above | 32.3 | 46.4 | 45.8 | 12.2 | 2.7 | 30.1 | 39.0 | 5.3 | 5.4 | 22.2 | 791 |
| **Religion** | | | | | | | | | | | |
| Hindu | 27.0 | 35.0 | 41.5 | 9.8 | 1.4 | 23.0 | 31.6 | 3.9 | 6.0 | 32.1 | 660 |
| Muslim | (37.0) | (46.1) | (36.7) | (27.6) | (3.1) | (21.5) | (46.1) | (3.7) | (9.0) | (16.3) | 28 |
| Sikh | 23.5 | 34.0 | 39.1 | 10.2 | 2.1 | 23.5 | 27.6 | 4.2 | 5.1 | 32.8 | 809 |
| Other | (20.8) | (42.9) | (49.4) | (25.1) | (3.0) | (21.9) | (39.8) | (0.0) | (0.0) | (26.2) | 30 |
| **Caste/tribe** | | | | | | | | | | | |
| Scheduled caste | 18.9 | 24.4 | 38.6 | 11.1 | 1.5 | 14.4 | 22.0 | 2.6 | 6.7 | 40.3 | 273 |
| Other backward class | 24.1 | 30.3 | 37.6 | 8.2 | 1.2 | 19.7 | 27.8 | 2.6 | 6.2 | 33.0 | 225 |
| Other[1] | 27.2 | 38.5 | 41.3 | 11.0 | 2.0 | 26.3 | 32.5 | 4.7 | 4.9 | 29.7 | 1,029 |

Contd…

Table 6.15 Knowledge about avoidance of AIDS (contd.)

Among ever-married women who have heard about AIDS, percentage who believe AIDS can be avoided in specific ways by selected background characteristics, Punjab, 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 | | |
| **Standard of living index** | | | | | | | | | | | |
| Medium | 18.0 | 21.3 | 33.3 | 9.6 | 0.7 | 11.7 | 17.7 | 2.1 | 6.4 | 44.5 | 294 |
| High | 26.8 | 38.2 | 42.0 | 10.9 | 2.1 | 26.2 | 33.2 | 4.5 | 5.2 | 28.9 | 1,216 |
| **Exposure to mass media** | | | | | | | | | | | |
| Exposed to any media | 25.6 | 35.5 | 40.7 | 10.8 | 1.9 | 23.9 | 30.8 | 4.1 | 5.5 | 31.1 | 1,469 |
| Listens to radio weekly | 31.1 | 40.8 | 45.7 | 13.8 | 2.8 | 32.2 | 38.4 | 4.1 | 5.2 | 22.9 | 753 |
| Watches television weekly | 26.0 | 36.2 | 41.3 | 10.8 | 1.9 | 24.2 | 31.4 | 4.3 | 5.6 | 30.5 | 1,423 |
| Goes to cinema/theatre monthly | 41.1 | 59.3 | 39.4 | 9.0 | 2.3 | 40.6 | 52.7 | 4.0 | 6.6 | 18.3 | 155 |
| Reads newspaper/magazine weekly | 32.8 | 45.3 | 45.7 | 14.0 | 2.7 | 30.9 | 40.6 | 5.6 | 5.9 | 21.3 | 797 |
| Not regularly exposed to any media | 15.9 | 16.1 | 28.1 | 7.1 | 0.0 | 4.8 | 6.7 | 0.0 | 3.0 | 56.1 | 58 |
| Total | 25.2 | 34.8 | 40.3 | 10.6 | 1.8 | 23.2 | 29.9 | 4.0 | 5.4 | 32.1 | 1,527 |

Note: Total includes 8 women from households with a low standard of living index and 9 women 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

go to the cinema or theatre monthly, Muslim women, women who have completed at least high school, women who read a newspaper or magazine weekly, urban women, and women who listen to the radio weekly. Thus knowledge about AIDS and the ways to avoid it is still mainly reaching the more privileged and educated women and women who are exposed to different types of media. Innovative programs need to be developed to educate the more disadvantaged women and women not regularly exposed to the media about the disease, how it is spread, and the ways to avoid it.