

## CHAPTER 8

### MATERNAL AND REPRODUCTIVE HEALTH

Promotion of maternal and child health has been one of the most important objectives of the Family Welfare Programme in India. The Government of India took steps to strengthen maternal and child health services as early as the First and Second Five-Year Plans (1951–56 and 1956–61). As part of the Minimum Needs Programme initiated during the Fifth Five-Year Plan (1974–79), maternal health, child health, and nutrition services were integrated with family planning services. The primary aim at that time was to provide at least a minimum level of public health services to pregnant women, lactating mothers, and preschool children (Kanitkar, 1979).

In 1992–93, the Child Survival and Safe Motherhood Programme continued the process of integration by bringing together several key child survival interventions with safe motherhood and family planning activities (Ministry of Health and Family Welfare, 1992). In 1996, safe motherhood and child health services were incorporated into the Reproductive and Child Health Programme. This new programme seeks to integrate maternal health, child health, and fertility regulation interventions with reproductive health programmes for both women and men. With regard to maternal and reproductive health (Ministry of Health and Family Welfare, 1997; 1998b), the important elements of the programme include:

- Provision of antenatal care, including at least three antenatal care visits, iron prophylaxis for pregnant and lactating mothers, two doses of tetanus toxoid vaccine, detection and treatment of anaemia in mothers, and management and referral of high-risk pregnancies
- Encouragement of institutional deliveries or home deliveries assisted by trained health personnel
- Provision of postnatal care, including at least three postnatal visits
- Identification and management of reproductive tract and sexually transmitted infections

In rural areas, the government delivers reproductive and other health services through its network of Primary Health Centres (PHCs), sub-centres, and other government health facilities. In addition, pregnant women and children can obtain services from private maternity homes, hospitals, private practitioners, and in some cases, nongovernmental organizations (NGOs). In urban areas, reproductive health services are available mainly through government or municipal hospitals, urban health posts, hospitals and nursing homes operated by NGOs, and private nursing and maternity homes.

In rural areas, a female paramedical worker, called an auxiliary nurse midwife (ANM), is posted at a sub-centre to provide basic maternal health, child health, and family welfare services to women and children either in their homes or in the health clinic. Her work is overseen by the lady health visitor (LHV) posted at the PHC. With regard to safe motherhood, the ANM is responsible for registering pregnant women, motivating them to obtain antenatal and postnatal care, assessing their health throughout pregnancy and in the postpartum period, and referring women with high-risk pregnancies. The ANM is assisted by a male health worker whose duties

include motivating men to participate in the family welfare programme and educating men about reproductive tract and sexually transmitted infections. The ANM and LHV also assist the medical officer at the PHC where health services including antenatal and postnatal care are provided (Ministry of Health and Family Welfare, 1997; 1998b).

The National Population Policy adopted by the Government of India in 2000 (Ministry of Health and Family Welfare, 2000) reiterates the government's commitment to the safe motherhood programmes within the wider context of reproductive health. Among the national sociodemographic goals for 2010 specified by the policy, several goals pertain to safe motherhood, namely that 80 percent of all deliveries should take place in institutions by 2010, 100 percent of deliveries should be attended by trained personnel, and the maternal mortality ratio should be reduced to a level below 100 per 100,000 live births. Empowering women for improved health and nutrition is 1 of the 12 strategic themes identified in the policy to be pursued in stand alone or intersectoral programmes.

An important objective of NFHS-2 is to provide information on the use of safe-motherhood services provided by the public and private sectors. In addition, the survey included questions on the prevalence and treatment of reproductive health problems. Relevant questions on safe motherhood were included in the Woman's Questionnaire. The topics covered include pregnancy complications, antenatal and postnatal care, place of and assistance during delivery, delivery characteristics, and postpartum complications. Although NFHS-2 obtained this information for the two most recent live births since 1 January 1995 for the states surveyed in the first phase and 1 January 1996 for the states surveyed in the second phase, the information presented in this chapter pertains only to the subset of those births that took place during the three years preceding the woman's interview. With regard to reproductive health, all women were asked about their experience of specific symptoms of reproductive health problems, and if problems were reported, whether and where treatment was received.

## **8.1 Antenatal Problems and Care**

Antenatal care (ANC) refers to pregnancy-related health care provided by a doctor or a health worker in a medical facility or at home. The Safe Motherhood Initiative proclaims that all pregnant women must receive basic, professional antenatal care (Harrison, 1990). Ideally, antenatal care should monitor a pregnancy for signs of complications, detect and treat pre-existing and concurrent problems of pregnancy, and provide advice and counselling on preventive care, diet during pregnancy, delivery care, postnatal care, and related issues. The Reproductive and Child Health Programme recommends that as part of antenatal care, women receive two doses of tetanus toxoid vaccine, adequate amounts of iron and folic acid tablets or syrup to prevent and treat anaemia, and at least three antenatal check-ups that include blood pressure checks and other procedures to detect pregnancy complications (Ministry of Health and Family Welfare, 1997; 1998b).

NFHS-2 collected information from women on specific problems they may have had during their pregnancies and whether they received any antenatal check-ups. Women who did not receive antenatal check-ups were asked why they did not. Women who received antenatal check-ups were asked about the care provider, the timing of the first antenatal check-up, the total number of check-ups, the procedures conducted during the check-ups, and the advice given. In addition, the survey asked women whether they received tetanus toxoid injections and iron and

Table 8.1 Health problems during pregnancy			
Among births during the three years preceding the survey, percentage of mothers experiencing specific health problems during pregnancy by residence, India, 1998–99			
Problem during pregnancy	Urban	Rural	Total
Night blindness	6.4	13.7	12.1
Blurred vision	17.0	23.2	21.8
Convulsions not from fever	11.0	15.2	14.3
Swelling of the legs, body, or face	28.2	25.8	26.3
Excessive fatigue	43.6	43.3	43.4
Anaemia	27.1	26.3	26.5
Vaginal bleeding	3.1	3.6	3.5
Number of births	7,191	25,202	32,393

Note: Table includes only the two most recent births during the three years preceding the survey.

folic acid tablets or syrup during the pregnancy. Results from each of these questions are discussed in this chapter.

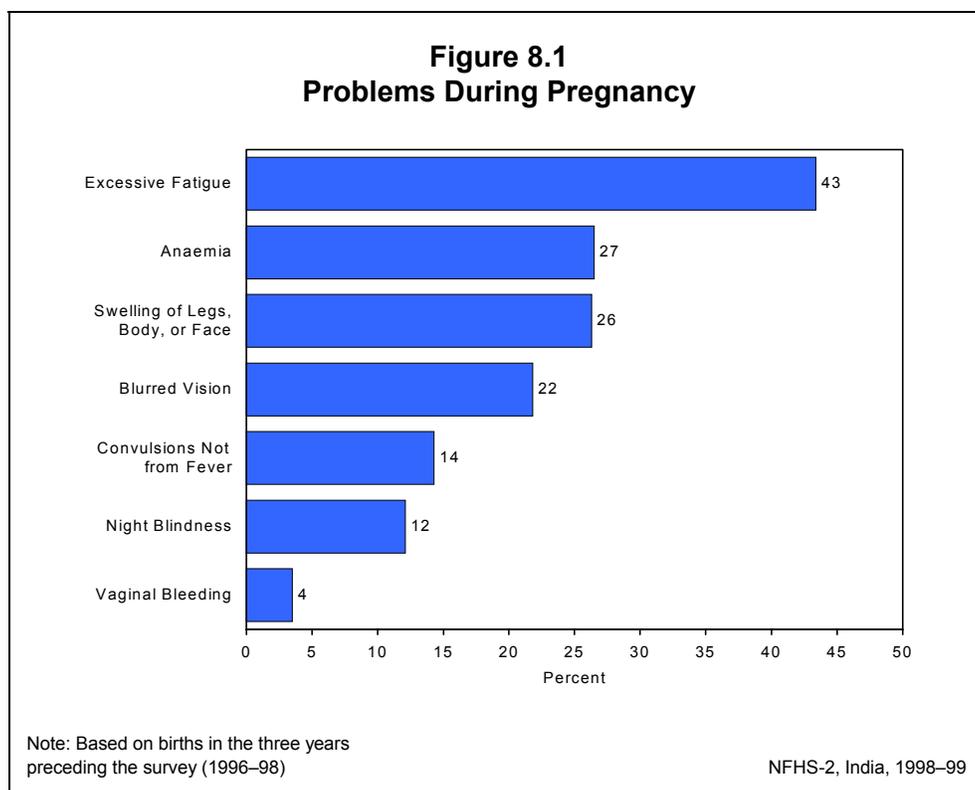
### Problems During Pregnancy

For each of the two most recent births in the three years preceding the survey, the mother was asked if at any time during the pregnancy she experienced any of the following pregnancy-related problems: night blindness, blurred vision, convulsions (not from fever), swelling (of the legs, body or face), excessive fatigue, anaemia, or vaginal bleeding. Night blindness, or difficulty seeing at dusk, is the result of chronic vitamin A deficiency and is often seen in pregnant women in areas where vitamin A deficiency is endemic. Convulsions accompanied by signs of hypertension can be symptomatic of eclampsia, a potentially fatal condition. The potential health risk posed by vaginal bleeding during pregnancy varies by when in the pregnancy the bleeding takes place. Although documenting the prevalence of the symptoms of pregnancy complications is vital for planning services to reduce maternal morbidity and mortality, the information presented here is based on women's self reports and should be interpreted with care.

As shown in Table 8.1 and Figure 8.1, the pregnancy-related health problems most commonly reported are excessive fatigue (43 percent), followed by anaemia (27 percent), swelling of the legs, body, or face (26 percent), and blurred vision (22 percent). Fourteen percent reported convulsions that were not from fever and 12 percent reported night blindness. Only 4 percent reported any vaginal bleeding. The reported prevalence of both kinds of vision problems and of convulsions that were not from fever are higher in rural than in urban areas. There is little urban-rural difference in the prevalence of the other pregnancy-related health problems.

### Antenatal Check-Ups

A pregnant woman can have an antenatal check-up by visiting a doctor or another health professional in a medical facility, receiving a home visit from a health worker, or both. NFHS-2 asked women who had a birth during the three years preceding the survey whether any health worker had visited them at home to provide antenatal check-ups. The survey also asked whether



women had gone for antenatal check-ups outside the home, and if they had, what type of service provider gave them the check-ups.

Table 8.2 and Figure 8.2 show the percent distribution of births in the three years preceding the survey by the source of antenatal check-ups received during pregnancy according to selected background characteristics. Women who received antenatal check-ups both at home and outside the home are categorized as having received care outside the home. If a woman received check-ups from more than one type of health provider, only the provider with the highest qualification is considered.

NFHS-2 results show that mothers in India received antenatal check-ups for only 65 percent of births during the three years preceding the survey, almost unchanged from 64 percent in NFHS-1. Mothers received antenatal check-ups from doctors for 49 percent of births and from other health professionals (such as ANMs, nurses, midwives, or LHVs) for 11 percent of births. Mothers received antenatal check-ups exclusively at home from a health worker for 6 percent of births.

Older women (age 35–49) are much less likely than younger women to have received antenatal check-ups for their births and the likelihood that an antenatal check-up was received declines sharply with birth order. Mothers of 78 percent of first order births received an antenatal check-up compared with only 37 percent of mothers of births of order six or higher. As expected, antenatal check-ups from doctors are much more common in urban areas than in rural areas. At least four out of five births to literate women received antenatal check-ups compared with half of the births to illiterate women. The proportion of births whose mothers received antenatal check-ups from a doctor increases sharply with education, from 32 percent for illiterate mothers to 62 percent for mothers who are literate but have not completed middle school and 85 percent

**Table 8.2 Antenatal check-ups**

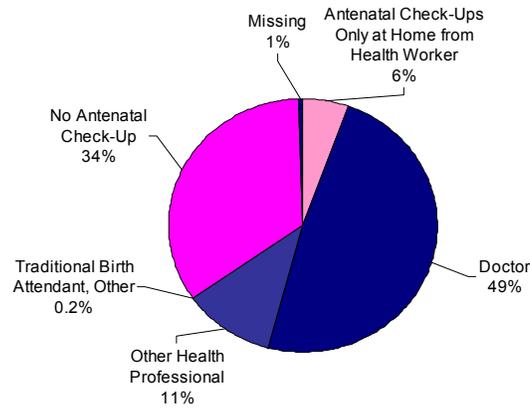
Percent distribution of births during the three years preceding the survey by source of antenatal check-up, according to selected background characteristics, India, 1998–99

Background characteristic	Antenatal check-up only at home from health worker	Antenatal check-up outside home <sup>1</sup> from:				No antenatal check-up	Missing	Total percent	Number of births
		Doctor	Other health professional	Traditional birth attendant, other					
<b>Mother's age at birth</b>									
< 20	6.3	48.7	12.4	0.4	31.7	0.6	100.0	7,589	
20–34	5.3	49.5	10.7	0.2	33.6	0.6	100.0	23,469	
35–49	5.7	32.1	6.1	0.1	54.9	1.2	100.0	1,335	
<b>Birth order</b>									
1	3.8	63.1	10.4	0.3	21.7	0.6	100.0	9,365	
2–3	5.9	51.4	12.0	0.2	30.0	0.6	100.0	14,104	
4–5	7.1	32.7	11.2	0.2	48.2	0.5	100.0	5,644	
6+	6.8	22.9	7.3	0.2	62.0	0.9	100.0	3,279	
<b>Residence</b>									
Urban	2.0	74.8	8.8	0.2	13.6	0.6	100.0	7,191	
Rural	6.6	41.2	11.5	0.3	39.8	0.6	100.0	25,202	
<b>Mother's education</b>									
Illiterate	7.3	32.1	11.2	0.3	48.4	0.7	100.0	19,061	
Literate, < middle school complete	4.8	62.1	12.9	0.3	19.3	0.7	100.0	5,818	
Middle school complete	3.0	71.8	11.2	0.1	13.5	0.4	100.0	2,935	
High school complete and above	1.2	85.4	7.2	0.1	5.8	0.3	100.0	4,574	
<b>Religion</b>									
Hindu	6.2	47.2	11.2	0.2	34.5	0.6	100.0	25,650	
Muslim	3.3	50.7	8.5	0.4	36.4	0.7	100.0	5,120	
Christian	3.0	73.4	7.5	0.2	15.4	0.4	100.0	753	
Sikh	1.3	44.7	29.0	0.0	24.9	0.1	100.0	450	
Jain	3.1	84.7	6.5	0.0	5.7	0.0	100.0	76	
Buddhist/Neo-Buddhist	1.4	74.9	9.2	0.0	14.5	0.0	100.0	199	
Other	0.3	59.9	15.7	0.1	19.7	4.2	100.0	87	
No religion	10.0	53.7	0.7	0.0	35.6	0.0	100.0	24	
<b>Caste/tribe</b>									
Scheduled caste	5.9	41.7	13.3	0.2	38.2	0.6	100.0	6,478	
Scheduled tribe	10.0	34.7	11.5	0.3	43.1	0.4	100.0	3,080	
Other backward class	5.9	48.9	9.6	0.2	34.8	0.6	100.0	10,404	
Other	4.0	56.5	10.6	0.2	27.9	0.7	100.0	12,050	
<b>Standard of living index</b>									
Low	7.3	35.8	11.0	0.2	45.1	0.7	100.0	11,804	
Medium	5.1	50.1	11.1	0.3	32.8	0.7	100.0	15,080	
High	2.8	73.7	10.5	0.2	12.4	0.4	100.0	5,112	
Total	5.6	48.6	10.9	0.2	34.0	0.6	100.0	32,393	

Note: Table includes only the two most recent births during the three years preceding the survey. Total includes 5, 33, 380, and 397 births with missing information on mother's education, religion, caste/tribe, and the standard of living index, respectively, which are not shown separately.

<sup>1</sup>Includes all births for which the mothers received an antenatal check-up outside the home, even if they also received an antenatal check-up at home from a health worker. If more than one type of antenatal check-up provider was mentioned, only the provider with the highest qualifications is shown.

**Figure 8.2**  
**Source of Antenatal Check-Ups**  
**During Pregnancy**



Note: Percents add to more than 100 due to rounding

NFHS-2, India, 1998–99

for mothers who have completed at least high school. Conversely, the percentage of births for which mothers received home visits only from a health worker decreases with mothers' education. The majority of women in all religious groups receive antenatal check-ups; nonetheless, there is substantial variation in the likelihood of women receiving an antenatal check-up by religion. Antenatal check-ups were received for only 63–65 percent of births to Hindu and Muslim women compared with 84–86 percent of births to Christian and Buddhist/Neo-Buddhist women and 94 percent of births to Jain women. Jain women, followed by Buddhist/Neo-Buddhist and Christian women, are also most likely to have received check-ups from a doctor; but Sikh women are much more likely than women of any other religion to have received check-ups from health professionals other than doctors. By caste/tribe, the likelihood of having received any antenatal check-up and a check-up from a doctor is lowest for births to scheduled-tribe mothers and highest for births to mothers who do not belong to a scheduled caste, scheduled tribe, or other backward class. The likelihood of having received antenatal check-ups at all, as well as from a doctor, increases sharply with the household's standard of living. Among births to mothers living in households with a low standard of living, 54 percent received antenatal check-ups and 36 percent received antenatal check-ups from doctors. By contrast, among births to mothers living in households with a high standard of living, 87 percent received antenatal check-ups and 74 percent received check-ups from doctors.

In summary, more than one out of every three women in India did not receive an antenatal check-up for births in the three years preceding the survey. Women not receiving antenatal check-ups tend disproportionately to be older women, women of high parity, women from scheduled tribes, illiterate women, and poor women. This suggests that improving the coverage of antenatal programmes requires special efforts to reach older and high-parity women and women who are socioeconomically disadvantaged.

Table 8.3 Reason for not receiving an antenatal check-up			
Percent distribution of births during the three years preceding the survey to mothers who did not receive an antenatal check-up by the main reason for not receiving an antenatal check-up, according to residence, India, 1998–99			
Reason for not receiving an antenatal check-up	Urban	Rural	Total
Not necessary	63.4	59.1	59.5
Not customary	3.8	4.3	4.3
Costs too much	11.3	15.0	14.7
Too far/no transport	0.9	3.9	3.7
Poor quality service	1.6	0.8	0.8
No time to go	2.6	1.7	1.8
Family did not allow	11.3	8.2	8.5
Lack of knowledge	3.2	4.2	4.1
No health worker visited	0.2	1.6	1.5
Other	1.7	1.1	1.2
Total percent	100.0	100.0	100.0
Number of births	978	10,040	11,018

Note: Table includes only the two most recent births during the three years preceding the survey.

### Reasons for Not Receiving Antenatal Check-Ups

Table 8.3 shows the percent distribution of births in the three years preceding the survey whose mothers did not receive any antenatal check-ups in a health facility or at home by the main reason for not receiving check-ups. For almost three-quarters of the births to mothers who did not have any antenatal check-ups, mothers did not consider having a check-up to be necessary (60 percent) or customary (4 percent) or were not allowed by their families to have one (9 percent). Costs account for another 15 percent of cases and lack of knowledge, distance, and lack of transport account for the majority of the remaining reasons. These results suggest the need to inform mothers and families about the availability and benefits of antenatal check-ups to help overcome traditional attitudes and other hurdles that prevent mothers from seeking antenatal care for their pregnancies. In addition, since about one-fifth of the reasons reported deal with problems of accessibility, quality, and cost of services, utilization of antenatal care services could also be increased by lowering direct and indirect costs, improving quality, and making services more accessible.

### Number and Timing of Antenatal Check-Ups

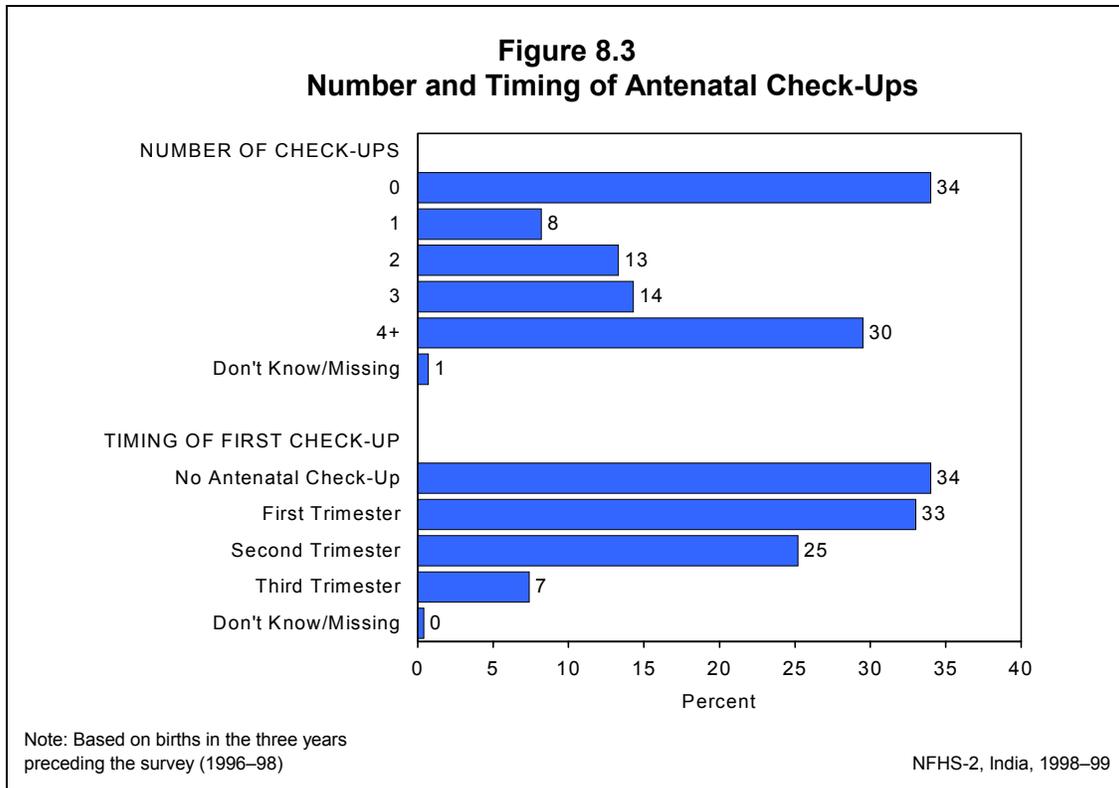
The number of antenatal check-ups and the timing of the first check-up are important for the health of the mother and the outcome of the pregnancy. The conventional recommendation for normal pregnancies is that once pregnancy is confirmed, antenatal check-ups should be scheduled at four-week intervals during the first seven months, then every two weeks until the last month, and weekly thereafter (MacDonald and Pritchard, 1980). Four antenatal check-ups—one each during the third, sixth, eighth, and ninth months of pregnancy—have been recommended as the minimum necessary (Park and Park, 1989). The conventional recommendation is to schedule the first check-up within six weeks of a woman's last menstrual period. Studies on the timing of the

<b>Table 8.4 Number and timing of antenatal check-ups and stage of pregnancy</b>			
Percent distribution of births during the three years preceding the survey by number of antenatal check-ups and by the stage of pregnancy at the time of the first check-up, according to residence, India, 1998–99			
Number and timing of check-ups	Urban	Rural	Total
<b>Number of antenatal check-ups</b>			
0	13.6	39.8	34.0
1	6.0	8.8	8.2
2	10.5	14.1	13.3
3	14.5	14.2	14.3
4+	54.7	22.4	29.5
Don't know/missing	0.7	0.8	0.7
Total percent	100.0	100.0	100.0
Median number of check-ups (for those who received at least one antenatal check-up)	4.2	2.5	2.8
<b>Stage of pregnancy at the time of the first antenatal check-up</b>			
No antenatal check-up	13.6	39.8	34.0
First trimester	55.1	26.6	33.0
Second trimester	24.2	25.5	25.2
Third trimester	6.9	7.6	7.4
Don't know/missing	0.2	0.4	0.4
Total percent	100.0	100.0	100.0
Median months pregnant at first antenatal check-up (for those who received at least one antenatal check-up)	3.0	3.9	3.5
Number of births	7,191	25,202	32,393
Note: Table includes only the two most recent births during the three years preceding the survey.			

initial antenatal check-up, however, show that even when antenatal care is initiated as late as the third trimester, there is a substantial reduction in perinatal mortality (Ramachandran, 1992).

In India, the Reproductive and Child Health Programme includes the provision of at least three antenatal care visits for pregnant women. Guidelines of the programme require that each pregnancy be registered in the first 12–16 weeks (Ministry of Health and Family Welfare, 1997). Accordingly, the first antenatal check-up should take place at the latest during the second trimester of pregnancy. NFHS-2 asked women who received antenatal check-ups for births in the three years preceding the survey about the total number of check-ups they received and when in their pregnancies they received their first check-up.

Table 8.4 and Figure 8.3 show the percent distribution of births in the three years preceding the survey by the number and timing of antenatal check-ups. In India, mothers of 44 percent of births received at least three antenatal check-ups (unchanged from NFHS-1) and 30 percent had four or more check-ups. The median number of check-ups was 2.8. There are substantial differences in the number of antenatal check-ups by residence. At least three antenatal



check-ups were received for 69 percent of births to mothers living in urban areas, but for only 37 percent of births to mothers living in rural areas. The median number of check-ups is also higher in urban areas (4.2) than in rural areas (2.5). The shorter distances to antenatal-care services and the comparative ease of travelling in urban areas, as well as the higher educational attainment of mothers in urban areas, could be important factors for the larger number of check-ups received by mothers in urban areas.

One-third of the births that took place in the three years preceding the survey were to mothers who received their first antenatal check-up in the first trimester of pregnancy (up from one-quarter of births in NFHS-1), and another one-quarter were to mothers who received their first check-up in the second trimester (Table 8.4 and Figure 8.3). Check-ups during the first trimester were about twice as common in urban areas (55 percent) as in rural areas (27 percent). The first check-up was rarely received as late as the third trimester. Among births for which the mother received at least one antenatal check-up, the median timing of the first antenatal check-up is 3.5 months for India as a whole and is about one month later in rural areas (3.9) than in urban areas (3.0).

### Components of Antenatal Check-Ups

The effectiveness of antenatal check-ups in ensuring safe motherhood depends in part on the tests and measurements done and the advice given during the check-ups. NFHS-2 collected information on this important aspect of antenatal care for the first time by asking mothers who received antenatal check-ups whether they received each of several components of antenatal check-ups at least once during any of their check-ups during pregnancy. For births during the three years preceding the survey for which antenatal check-ups were received, Table 8.5 presents the percentage whose mothers received specific components of check-ups by residence. Except

**Table 8.5 Components of antenatal check-ups**

Among births during the three years preceding the survey for which an antenatal check-up was received, the percentage receiving specific components of antenatal check-ups by residence, India, 1998–99

Components of antenatal check-ups	Urban	Rural	Total
<b>Antenatal measurements/tests</b>			
Weight measured	74.7	48.3	56.0
Height measured	37.1	22.2	26.5
Blood pressure checked	80.1	55.5	62.7
Blood tested	78.1	51.4	59.2
Urine tested	76.2	46.9	55.5
Abdomen examined	87.6	70.2	75.3
Internal examination	55.2	31.4	38.3
X-ray	6.9	3.5	4.5
Sonography or ultrasound	34.4	11.8	18.4
Amniocentesis	3.4	1.9	2.3
<b>Antenatal advice</b>			
Diet	76.7	63.9	67.6
Danger signs of pregnancy	45.5	31.7	35.7
Delivery care	51.0	37.4	41.3
Newborn care	47.7	34.0	38.0
Family planning	33.8	26.1	28.3
Number of births for which the mother received at least one antenatal check-up	6,171	15,002	21,173
Note: Table includes only the two most recent births during the three years preceding the survey.			

for X-rays (which are not recommended as a standard component of antenatal care), all of the measurements and tests are part of essential obstetric care or are required for monitoring high-risk pregnancies.

Among all births for which mothers received antenatal check-ups, mothers had an abdominal examination in 75 percent of these cases and had their blood pressure checked in 63 percent of these cases. Other common components of antenatal check-ups were blood tests (59 percent), measurement of weight (56 percent), and urine tests (56 percent). Mothers of only 38 percent of births had an internal examination during any antenatal check-up, 27 percent had their height measured, and 18 percent had a sonogram or ultrasound. X-rays and amniocentesis were rarely performed. Most of these measurements or tests were performed at least 1.5 times more often during antenatal check-ups for births to mothers living in urban areas than for those living in rural areas. The differentials by residence are greatest for sonography or ultrasound (which is about three times as likely to be performed in urban areas as in rural areas).

Table 8.5 also shows the type of advice received by mothers who had antenatal check-ups for births in the three years preceding the survey. Dietary advice was given to mothers most often (in 68 percent of cases). Mothers were much less likely to receive advice on delivery care (41 percent), newborn care (38 percent), the danger signs of pregnancy (36 percent), and family planning (28 percent). The proportion receiving advice on each of these topics is consistently higher in urban areas than in rural areas.

## Tetanus Toxoid Vaccination

In India, an important cause of death in infancy is neonatal tetanus, which is caused by newborn infants becoming infected by tetanus organisms, usually at the umbilical stump. Neonatal tetanus is most common among children who are delivered in unhygienic environments and when unsterilized instruments are used to cut the umbilical cord. Tetanus typically develops during the first or second week of life and is fatal in 70–90 percent of cases (Foster, 1984). If neonatal tetanus infection occurs where expert medical help is not available, as is common in many rural areas in India, death is almost certain. Neonatal tetanus, however, is a preventable disease. Two doses of tetanus toxoid vaccine given one month apart during early pregnancy are nearly 100 percent effective in preventing tetanus among both newborn infants and their mothers. Immunity against tetanus is transferred to the foetus through the placenta when the mother is vaccinated.

In India, the tetanus toxoid immunization programme for expectant mothers was initiated in 1975–76 and was integrated with the Expanded Programme on Immunization (EPI) in 1978 (Ministry of Health and Family Welfare, 1991). To step up the pace of the immunization programme, the Government of India initiated the Universal Immunization Programme (UIP) in 1985–86. An important objective of the UIP was to vaccinate all pregnant women against tetanus by 1990. In 1992–93, the UIP was integrated into the Child Survival and Safe Motherhood Programme, which in turn has been integrated into the Reproductive and Child Health Programme. According to the National Immunization Schedule, a pregnant woman should receive two doses of tetanus toxoid injection, the first when she is 16 weeks pregnant and the second when she is 20 weeks pregnant (Central Bureau of Health Intelligence, 1991). Re-inoculation is recommended every three years. If two doses were received less than three years earlier, a single booster injection is recommended.

For each of the two most recent births during the three years preceding the survey, NFHS-2 asked mothers whether they were given an injection in the arm to prevent them and their baby from getting tetanus. Women who said they had received a tetanus injection were asked how many times they had received the injection during pregnancy.

Table 8.6 shows the distribution of births by the number of tetanus toxoid injections given to mothers, according to selected background characteristics. Tetanus toxoid coverage in India is far from complete. For births in the three years preceding the survey, 24 percent of the mothers did not receive any tetanus toxoid injections during pregnancy, and another 8 percent received only one injection. The proportion of mothers who received two or more tetanus toxoid injections during their pregnancies rose from 55 percent to 67 percent between NFHS-1 and NFHS-2.

Tetanus toxoid injections are more common in urban areas than in rural areas. Tetanus toxoid coverage (two or more injections) is much higher for births to women under age 35 (68 percent) than for the small number of births to older women (47 percent). Coverage varies inversely by birth order. At least two tetanus toxoid injections were received by mothers for 78 percent of first births compared with 56 percent of fourth and fifth births and less than half (42 percent) of higher-order births. Tetanus toxoid coverage is similar for Hindus (67 percent) and Muslims (66 percent), but coverage is much higher for births to mothers who are Jain or Sikh (both 88 percent). Coverage is substantially lower for births to scheduled-tribe mothers (46 percent) than for births to mothers in other caste and class groups (65–72 percent).

Table 8.6 Tetanus toxoid vaccination and iron and folic acid tablets or syrup

Percent distribution of births during the three years preceding the survey by the number of tetanus toxoid injections received by the mother, percentage of births for which the mothers were given iron and folic acid (IFA) tablets or syrup during pregnancy, and among those who received iron and folic acid tablets or syrup, percentage who received enough for three months or longer and percentage who consumed all the supply given, according to selected background characteristics, India, 1998–99

Background characteristic	Number of tetanus toxoid injections					Percent- age given iron and folic acid tablets or syrup	Number of births	Percent- age who received supply for 3+ months <sup>1</sup>	Percent- age who consumed all the supply <sup>1</sup>	Number of births whose mothers received IFA
	None	One	Two or more	Don't know/ missing	Total percent					
<b>Mother's age at birth</b>										
< 20	23.1	8.4	67.6	0.8	100.0	58.8	7,589	79.9	78.5	4,460
20–34	23.4	8.2	67.6	0.8	100.0	58.4	23,469	83.5	81.1	13,715
35–49	43.3	8.3	47.0	1.5	100.0	36.6	1,335	77.6	80.6	488
<b>Birth order</b>										
1	15.5	5.9	77.7	0.9	100.0	68.7	9,365	84.8	82.8	6,435
2–3	20.4	9.2	69.7	0.8	100.0	61.4	14,104	83.1	80.3	8,664
4–5	33.8	9.5	55.8	0.9	100.0	45.8	5,644	78.4	77.8	2,584
6+	48.1	8.6	42.2	1.0	100.0	29.9	3,279	73.8	74.3	980
<b>Residence</b>										
Urban	9.9	7.3	81.9	1.0	100.0	75.7	7,191	87.5	83.2	5,440
Rural	28.2	8.5	62.5	0.8	100.0	52.5	25,202	80.5	79.4	13,222
<b>Mother's education</b>										
Illiterate	35.3	9.1	54.7	0.9	100.0	43.6	19,061	77.4	76.3	8,304
Literate, < middle school complete	12.5	8.4	78.4	0.7	100.0	70.4	5,818	83.0	80.7	4,094
Middle school complete	7.5	7.5	84.2	0.7	100.0	78.5	2,935	86.4	81.5	2,304
High school complete and above	3.0	5.0	91.2	0.8	100.0	86.5	4,574	90.4	88.7	3,958
<b>Religion</b>										
Hindu	24.5	8.2	66.5	0.8	100.0	57.5	25,650	82.5	80.1	14,748
Muslim	25.8	7.7	65.6	0.8	100.0	51.7	5,120	80.8	80.9	2,649
Christian	14.8	10.3	74.0	1.0	100.0	77.3	753	87.9	81.3	582
Sikh	7.9	4.5	87.5	0.2	100.0	79.4	450	80.7	93.5	357
Jain	3.9	8.2	87.9	0.0	100.0	90.3	76	85.5	74.8	68
Buddhist/Neo-Buddhist	17.0	16.6	65.3	1.1	100.0	82.6	199	90.8	78.0	165
Other	18.7	22.1	52.0	7.1	100.0	69.9	87	89.0	94.1	61
No religion	43.0	13.5	43.5	0.0	100.0	61.8	24	86.6	94.5	15
<b>Caste/tribe</b>										
Scheduled caste	25.8	8.6	64.8	0.8	100.0	54.6	6,478	80.7	76.2	3,538
Scheduled tribe	38.7	13.6	46.4	1.3	100.0	48.6	3,080	81.6	82.0	1,496
Other backward class	23.8	7.1	68.4	0.7	100.0	56.8	10,404	84.9	81.4	5,910
Other	19.2	7.7	72.2	0.9	100.0	63.0	12,050	82.0	81.6	7,587
<b>Standard of living index</b>										
Low	34.1	9.5	55.4	1.0	100.0	46.0	11,804	79.1	77.1	5,433
Medium	22.3	8.2	68.7	0.8	100.0	59.4	15,080	81.8	80.2	8,956
High	6.4	5.6	87.5	0.6	100.0	79.2	5,112	88.4	86.1	4,050
Total	24.1	8.2	66.8	0.8	100.0	57.6	32,393	82.5	80.5	18,663

Note: Table includes only the two most recent births during the three years preceding the survey. Total includes births with missing information on mother's education, religion, caste/tribe, and the standard of living index, which are not shown separately.

<sup>1</sup>Among births whose mother received iron and folic acid tablets or syrup

For 39 percent of their births, scheduled-tribe mothers did not receive any tetanus toxoid vaccine. Illiterate mothers received at least two tetanus toxoid injections for 55 percent of their births, whereas literate mothers received at least two tetanus toxoid injections for 78 percent or more of their births. Tetanus toxoid coverage increases with an increasing standard of living of the household. Notably, among births to mothers living in households with a low standard of living in only about half (55 percent) of the cases did the mother receive the recommended two doses of tetanus toxoid. These results suggest that despite generally improving coverage of tetanus toxoid vaccinations, the coverage for socioeconomically disadvantaged women lags far behind the level for the country as a whole.

### **Iron and Folic Acid Supplementation**

Nutritional deficiencies in women are often exacerbated during pregnancy because of the additional nutrient requirements of foetal growth. Iron deficiency anaemia is the most common micronutrient deficiency in the world. It is a major threat to safe motherhood and to the health and survival of infants because it contributes to low birth weight, lowered resistance to infection, impaired cognitive development, and decreased work capacity. Studies in different parts of India have estimated that the proportion of births with a low birth weight (less than 2,500 grams) ranges from 15 percent in Trivandrum to 46 percent in Baroda (Nutrition Foundation of India, 1993). Overall, about one-third of newborn children in India are of low birth weight, indicating that many pregnant women in India suffer from nutritional deficiencies. Improvement in a woman's nutritional status, coupled with proper health care during pregnancy, can substantially increase her child's birth weight (Ramachandran, 1992). To this end, the provision of iron and folic acid (IFA) tablets to pregnant women to prevent nutritional anaemia forms an integral part of the safe-motherhood services offered as part of the MCH activities of the Family Welfare Programme (Ministry of Health and Family Welfare, 1991), and now offered as part of the Reproductive and Child Health Programme. The programme recommendation is that pregnant women consume 100 tablets of iron and folic acid during pregnancy.

For each birth during the three years preceding the survey, NFHS-2 collected information on whether the mother received IFA tablets or syrup during pregnancy. IFA syrup was included in the question along with IFA tablets since IFA syrup is sometimes prescribed in the private sector and may even be prescribed in the public sector when and where tablets are not available. Table 8.6 shows that mothers in India received IFA supplements for more than half (58 percent) of the births. As with tetanus toxoid coverage, however, IFA coverage is well below average for births to older women, illiterate women, women with a low standard of living, scheduled-tribe women, and mothers of higher-order births. IFA coverage is also lower in rural areas (53 percent) than in urban areas (76 percent) and is much lower for births to Hindu and Muslim mothers (52–58 percent) than for births to mothers of any other religion (70–90 percent). For India as a whole, IFA coverage improved slightly from 52 percent in NFHS-1 to 58 percent in NFHS-2. However, some of this improvement may be due to the fact that IFA syrup was included in the measurement of IFA coverage in NFHS-2 but not in NFHS-1.

Not all mothers who received IFA received the recommended three-month supply of tablets or syrup. Among births to mothers who received IFA during pregnancy, for 83 percent mothers received at least a three-month supply and for 81 percent mothers consumed all the supplements that were given to them. Differentials by background characteristics in the proportion that received at least a three-month supply and the proportion that consumed the

supply received are similar, except by religion and caste/tribe. Both indicators are negatively related to birth order and positively related to mother's education level and the standard of living, and both are relatively low in rural areas and for higher order births. Consumption of the supply received is relatively low for Jain and Buddhist/Neo-Buddhist mothers, and for scheduled-caste mothers, whereas the proportion who received at least a three-month supply is slightly lower than average for Muslims and Sikhs and does not vary much by caste/tribe. Thus, despite some success in ensuring that pregnant women receive the recommended dosage of IFA, many women are not actually consuming an adequate amount of IFA during their pregnancies. This suggests that the Reproductive and Child Health Programme needs to do a better job of informing pregnant women about the advantages of IFA, trying to understand why many women do not consume all the IFA they receive, and overcoming resistance to the consumption of IFA.

### **Antenatal Care Indicators by State**

Table 8.7 shows the percentage of live births during the three years preceding the survey whose mothers received different types of antenatal care by state. Six summary indicators of utilization of antenatal care services are presented: the percentage who received at least one antenatal check-up, the percentage who received three or more antenatal check-ups, the percentage who received an antenatal check-up in the first trimester of pregnancy, the percentage who received two or more tetanus toxoid injections, the percentage given any iron and folic acid tablets or syrup, and the percentage who received a supply of iron and folic acid tablets or syrup for three or more months.

The utilization of antenatal care services differs greatly by state; however, with a few exceptions, states that do well on any one indicator of antenatal care also perform well on the other indicators. Goa, Kerala, and Tamil Nadu consistently rank in the top five states in the country in terms of their performance on all six indicators. In these three states, mothers of 99 percent of births received at least one antenatal check-up, 91–98 percent received three or more antenatal check-ups, 60–81 percent received a check-up in the first trimester of pregnancy, 86–95 percent received two or more tetanus toxoid injections, 93–95 percent received any iron and folic acid tablets or syrup, and 84–89 percent received at least a three months supply. Kerala ranks highest on four of the six indicators. Goa is slightly ahead of Kerala in the percentage with at least one antenatal check-up and Tamil Nadu ranks highest in coverage by two or more tetanus toxoid injections. Although Andhra Pradesh is never in the top three, it is the only other state that performs consistently well on almost all indicators. Only a few states perform relatively well on one or more but not all of the antenatal care indicators. For example, Mizoram performs well in terms of the percentage who received at least one antenatal check-up (92 percent) and also in terms of the percentage who received three or more antenatal check-ups (76 percent) but does not perform as well on any of the other indicators. Other states that perform relatively well on only some indicators include Karnataka, Maharashtra, West Bengal, Punjab, Delhi, and Himachal Pradesh.

<b>Table 8.7 Antenatal care indicators by state</b>						
Percentage of births during the three years preceding the survey for which mothers received different types of antenatal care by state, India, 1998–99						
State	Percentage that received at least one antenatal check-up	Percentage that received three or more antenatal check-ups	Percentage that received an antenatal check-up in the first trimester of pregnancy	Percentage that received two or more tetanus toxoid injections	Percentage given any iron and folic acid tablets or syrup	Percentage that received supply of iron and folic acid tablets or syrup for 3+ months
<b>India</b>	65.4	43.8	33.0	66.8	57.6	47.5
<b>North</b>						
Delhi	83.5	68.2	49.0	84.9	77.8	69.5
Haryana	58.1	37.4	32.8	79.7	67.0	53.3
Himachal Pradesh	86.8	60.9	48.2	66.2	85.6	70.9
Jammu & Kashmir	83.2	66.0	47.9	77.7	70.8	55.8
Punjab	74.0	57.0	42.6	89.9	79.6	64.2
Rajasthan	47.5	22.9	19.2	52.1	39.3	30.6
<b>Central</b>						
Madhya Pradesh	61.0	28.1	26.1	55.0	48.9	38.4
Uttar Pradesh	34.6	14.9	16.9	51.4	32.4	20.6
<b>East</b>						
Bihar	36.3	17.8	15.1	57.8	24.1	19.8
Orissa	79.5	47.3	33.7	74.3	67.6	62.2
West Bengal	90.0	57.0	35.1	82.4	71.6	56.4
<b>Northeast</b>						
Arunachal Pradesh	61.6	40.5	24.5	45.6	56.3	47.6
Assam	60.1	30.8	30.7	51.7	55.0	45.3
Manipur	80.2	54.4	45.0	64.2	50.0	38.0
Meghalaya	53.6	31.3	20.6	30.8	49.5	40.6
Mizoram	91.8	75.8	39.6	37.8	72.7	62.0
Nagaland	60.4	23.1	23.8	50.9	42.5	26.7
Sikkim	69.9	42.6	30.2	52.7	62.4	50.4
<b>West</b>						
Goa	99.0	95.7	73.4	86.1	94.7	87.8
Gujarat	86.4	60.2	35.8	72.7	78.0	66.6
Maharashtra	90.4	65.4	46.7	74.9	84.8	71.6
<b>South</b>						
Andhra Pradesh	92.7	80.1	52.5	81.5	81.2	70.7
Karnataka	86.3	71.4	52.7	74.9	78.0	74.2
Kerala	98.8	98.3	81.1	86.4	95.2	88.6
Tamil Nadu	98.5	91.4	59.5	95.4	93.2	84.1

Note: Table includes only the two most recent births during the three years preceding the survey.

Uttar Pradesh, Bihar, and Rajasthan perform consistently poorly on all antenatal care indicators. Compared with Kerala for example, where mothers of 98 percent of births received three or more antenatal check-ups, mothers of only 35–36 percent of births in Bihar and Uttar Pradesh received at least one antenatal check-up and only 15–18 percent received three or more check-ups. In Rajasthan, mothers of 48 percent of births received at least one antenatal check-up and 23 percent received three or more. In addition, in Bihar, Rajasthan, and Uttar Pradesh mothers of less than one in five births received an antenatal check-up in the first trimester of pregnancy. These three states also fall well below the national average in terms of the percentage

receiving iron and folic acid tablets or syrup. Only 24 percent of women in Bihar, 32 percent in Uttar Pradesh, and 39 percent in Rajasthan received any iron and folic acid tablets or syrup compared with an all-India average of 58 percent. With respect to tetanus toxoid injections, Meghalaya, Mizoram, and Arunachal Pradesh perform even worse than Bihar, Rajasthan, and Uttar Pradesh. While at least half of all women in the latter three states received two or more tetanus toxoid injections, only 31 percent in Meghalaya, 38 percent in Mizoram, and 46 percent in Arunachal Pradesh did so. Meghalaya also performs relatively poorly on most other antenatal care indicators, as does Nagaland. Manipur performs relatively well in terms of the percentage receiving antenatal check-ups but not in the percentage receiving iron and folic acid tablets or syrup. Notably, Madhya Pradesh, the only other large state in North India, though performing below the national average, performs better than Bihar, Rajasthan, and Uttar Pradesh on all antenatal care indicators other than the provision of tetanus toxoid vaccine.

In summary, antenatal care utilization in India varies greatly by state and for some indicators the variation ranges from only marginal coverage to almost complete coverage. For example, the percentage that received three or more antenatal check-ups ranges from only 15 percent in Uttar Pradesh to 98 percent in Kerala. In general, the southern and western states and some of the northern states perform uniformly well and the central states plus Bihar and Rajasthan perform uniformly poorly. The performance of the Northeastern states on most of the antenatal care indicators is mixed; notably, however, the percentage receiving tetanus toxoid injections is below the national average in all of these states.

The majority of states improved their performance with respect to antenatal care indicators between NFHS-1 and NFHS-2. The states with the largest absolute gains in the percentage of births for which the mother received at least one antenatal check-up were Nagaland, Orissa, Manipur, and Rajasthan (all of which increased by at least 15 percentage points). Large decreases in this indicator (12–17 percentage points) occurred in Haryana, Uttar Pradesh, and Punjab. All but three states (Kerala, Mizoram, and Meghalaya) improved coverage of tetanus toxoid vaccinations. Coverage increased by more than 20 percentage points in Bihar and Rajasthan. The percentage of births for which the mother received any iron and folic acid tablets or syrup increased in every state except Meghalaya. The increase was 15 percent or higher in Nagaland, Orissa, West Bengal, and Manipur.

## **8.2 Delivery Care**

### **Place of Delivery**

Another important thrust of the Reproductive and Child Health Programme is to encourage deliveries under proper hygienic conditions under the supervision of trained health professionals. For each birth during the three years preceding the survey, NFHS-2 asked the mother where she gave birth and who assisted during the delivery. Table 8.8 and Figure 8.4 show that one-third (34 percent) of births in India took place in health facilities, more than half took place in the women's own homes, and one in eight took place in their parents' homes. Births taking place in health facilities were about equally divided between those that took place in a private health facility and those that took place in public institutions (such as government-operated district,

Table 8.8 Place of delivery

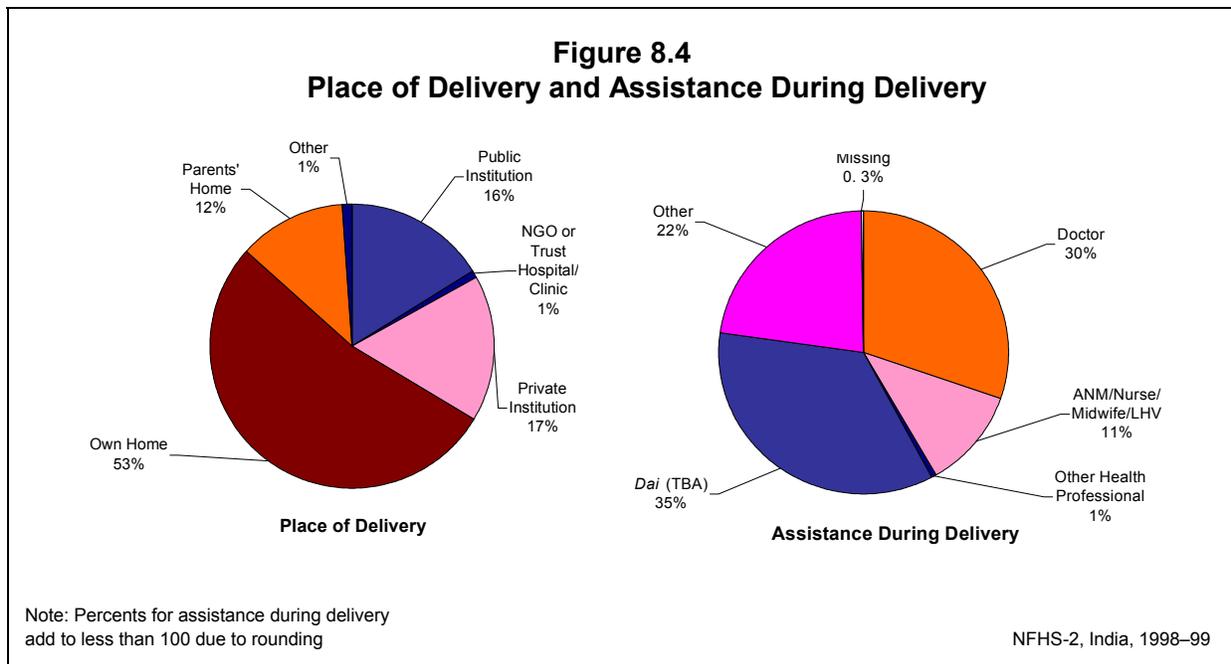
Percent distribution of births during the three years preceding the survey by place of delivery, according to selected background characteristics, India, 1998–99

Background characteristic	Place of delivery						Total percent	Number of births
	Health facility/institution			Home				
	Public	NGO/trust	Private	Own home	Parents' home	Other <sup>1</sup>		
<b>Mother's age at birth</b>								
< 20	16.7	0.7	14.4	46.0	21.0	1.1	100.0	7,589
20–34	16.4	0.8	17.8	54.2	9.8	1.0	100.0	23,469
35–49	9.5	0.5	9.9	75.3	3.1	1.7	100.0	1,335
<b>Birth order</b>								
1	23.2	1.0	26.4	32.6	15.8	1.0	100.0	9,365
2–3	16.4	0.7	16.7	51.5	13.6	1.1	100.0	14,104
4–5	9.6	0.6	7.3	73.7	7.9	1.0	100.0	5,644
6+	6.4	0.3	5.1	83.7	3.2	1.2	100.0	3,279
<b>Residence</b>								
Urban	29.1	1.5	34.5	27.6	6.3	1.0	100.0	7,191
Rural	12.5	0.5	11.6	60.5	13.8	1.0	100.0	25,202
<b>Mother's education</b>								
Illiterate	10.2	0.4	6.8	68.1	13.4	1.1	100.0	19,061
Literate, < middle school complete	23.3	1.1	19.0	42.3	13.4	0.9	100.0	5,818
Middle school complete	28.5	1.0	25.6	32.8	11.1	1.1	100.0	2,935
High school complete and above	24.2	1.5	49.3	17.9	6.4	0.7	100.0	4,574
<b>Religion</b>								
Hindu	16.4	0.6	15.9	53.5	12.5	1.1	100.0	25,650
Muslim	14.1	0.9	16.5	55.7	11.8	1.0	100.0	5,120
Christian	19.8	2.6	32.0	35.0	10.2	0.4	100.0	753
Sikh	10.8	0.9	35.3	45.4	7.3	0.4	100.0	450
Jain	12.4	1.6	57.6	25.5	3.0	0.0	100.0	76
Buddhist/Neo-Buddhist	38.9	0.0	16.3	30.5	14.0	0.4	100.0	199
Other	24.2	2.5	5.2	57.6	6.3	4.2	100.0	87
No religion	7.9	0.0	11.1	78.5	2.6	0.0	100.0	24
<b>Caste/tribe</b>								
Scheduled caste	16.0	0.5	10.3	60.1	12.0	1.1	100.0	6,478
Scheduled tribe	10.7	0.7	5.7	70.4	11.4	1.1	100.0	3,080
Other backward class	16.3	0.8	19.0	49.8	13.0	1.1	100.0	10,404
Other	17.9	0.9	21.3	47.1	11.9	0.9	100.0	12,050
<b>Standard of living index</b>								
Low	11.9	0.4	6.2	66.1	14.2	1.2	100.0	11,804
Medium	18.1	0.8	16.0	51.8	12.3	1.0	100.0	15,080
High	20.3	1.1	43.2	27.6	7.0	0.7	100.0	5,112
<b>Number of antenatal check-ups</b>								
0	4.2	0.1	3.0	80.5	11.5	0.8	100.0	11,018
1	11.2	0.2	6.8	67.3	13.5	1.0	100.0	2,641
2	15.7	0.4	10.7	57.0	15.3	0.9	100.0	4,293
3	21.8	0.7	15.0	45.7	16.0	0.7	100.0	4,628
4+	29.2	1.7	39.0	20.2	9.5	0.5	100.0	9,571
Total	16.2	0.7	16.7	53.2	12.2	1.0	100.0	32,393

Note: Table includes only the two most recent births during the three years preceding the survey. Total includes 5, 33, 380, 397, and 242 births with missing information on mother's education, religion, caste/tribe, the standard of living index, and number of antenatal check-ups, respectively, which are not shown separately.

NGO: Nongovernmental organization

<sup>1</sup>Includes missing



*tehsil/taluk*, town, or municipal hospitals and Primary Health Centres). Only 1 percent of births took place in facilities operated by nongovernmental organizations or trusts. About two-thirds of deliveries in urban areas and one-quarter of deliveries in rural areas took place in health facilities. The Sample Registration System (SRS) estimated that a slightly lower percentage of births took place in institutions in 1997 (25 percent of total births, 60 percent of births in urban areas, and 18 percent of births in rural areas). Deliveries in health facilities in India rose from 26 percent at the time of NFHS-1 to 34 percent at the time of NFHS-2.

The proportion of births occurring in health facilities is higher for mothers under age 35 (32–35 percent) than for mothers age 35–49 (20 percent). Births to Hindu mothers (33 percent) and Muslim mothers (32 percent) are about equally likely to take place in a health facility; births to Jain mothers (72 percent), followed by births to Buddhist/Neo-Buddhist and Christian mothers (54–55 percent), are more likely than births to mothers of all other religions to take place in a health facility. Only 17 percent of births to scheduled-tribe mothers are institutional deliveries, compared with 40 percent of births to mothers who do not belong to a scheduled caste, scheduled tribe, or other backward class. The proportion of births that were delivered in a health facility decreases as birth order increases from order one (51 percent) to order six and over (12 percent). Institutional deliveries, particularly in private facilities, increase sharply with education and with the standard of living.

Institutional deliveries are about two to four times as common among births to mothers who had four or more antenatal check-ups (70 percent) than to mothers who had 1–3 antenatal check-ups (18–38 percent). Institutional deliveries are least prevalent (7 percent) among births to mothers who did not receive any antenatal check-ups. Several factors are likely to contribute to the positive relationship between antenatal check-ups and delivery in a health facility. Women who receive antenatal check-ups are more likely than other women to deliver in a health facility because their antenatal care providers are likely to have advised them to do so. Conversely, women who register with a health facility for delivery may be called for regular check-ups by the facility. Another important factor may be pregnancy complications, because women with

complications are more likely than other women to have antenatal check-ups and to deliver in a health facility. Another contributing factor may be the growing awareness of the benefits of professional medical care during both pregnancy and delivery, especially among urban, young, and educated women.

With regard to deliveries at home, the proportion of deliveries in a woman's own home increases and the proportion in her parents' home decreases with age and birth order. Mother's education and standard of living are both negatively associated with deliveries at home.

### **Assistance During Delivery**

Table 8.9 and Figure 8.4 provide information on assistance during delivery by selected background characteristics. If more than one type of attendant assisted at delivery, only the most qualified attendant is shown. Forty-two percent of births in the three years before the survey were attended by a health professional, including 30 percent by a doctor and 11 percent by an ANM, nurse, midwife, or LHV. More than one-third of births (35 percent) were attended by a traditional birth attendant (TBA), and almost one-quarter (22 percent) were attended only by friends, relatives, and other persons. The proportion of deliveries attended by a health professional increased substantially from 33 percent in NFHS-1 to 42 percent in NFHS-2.

Eighty-seven percent of deliveries in private institutions were attended by a doctor compared with 71 percent of deliveries in public institutions. Among deliveries at home (the respondents' or their parents' homes), more than half were attended by a TBA and fewer than one in seven were attended by a health professional. The percentage of births attended by a doctor is lower for mothers age 35–49 than for younger mothers and decreases steadily by birth order. First-order births (46 percent) are more than four times as likely as births of order six or above (11 percent) to be attended by a doctor. Deliveries are much more likely to be attended by a doctor in urban areas (56 percent) than in rural areas (23 percent). The proportion of deliveries attended by doctors also increases sharply with mother's education and household standard of living. Seventy percent of births to mothers who have completed at least high school were attended by a doctor compared with only 16 percent of births to illiterate mothers. Among religious groups, Jain women (73 percent), followed by Christian women (50 percent), are most likely to have a delivery attended by a doctor. By contrast, only 29–30 percent of births to Muslim and Hindu women were attended by a doctor. Only 15 percent of births to women who belong to scheduled tribes and 24 percent to women who belong to scheduled castes were attended by a doctor compared with 37 percent of births to women who do not belong to a scheduled caste, scheduled tribe, or other backward class. As with deliveries in health facilities, the likelihood of having a birth attended by a doctor increases with the number of antenatal check-ups that the mother had during pregnancy. Only 8 percent of births to mothers who did not have any antenatal check-up were attended by a doctor; this proportion increases steadily to 33 percent for mothers who had three antenatal check-ups and 62 percent for mothers who had four or more antenatal check-ups. Among births to mothers who did not have any antenatal check-up, more than half (51 percent) were attended by a TBA and more than one-third (35 percent) only by friends, relatives, or others.

Table 8.9 Assistance during delivery

Percent distribution of births during the three years preceding the survey by attendant assisting during delivery, according to selected background characteristics, India, 1998–99

Background characteristic	Attendant assisting during delivery <sup>1</sup>						Total percent	Number of births
	Doctor	ANM/nurse/ midwife/ LHV	Other health profes- sional	Dai (TBA)	Other	Missing		
<b>Mother's age at birth</b>								
< 20	28.2	12.6	0.8	34.7	23.4	0.3	100.0	7,589
20–34	31.5	11.3	0.6	34.6	21.7	0.3	100.0	23,469
35–49	19.7	6.7	1.0	42.5	29.5	0.7	100.0	1,335
<b>Birth order</b>								
1	46.1	13.7	0.7	25.2	14.0	0.3	100.0	9,365
2–3	30.1	11.9	0.6	35.0	22.0	0.3	100.0	14,104
4–5	15.9	9.0	0.7	44.3	29.8	0.3	100.0	5,644
6+	10.5	6.8	0.6	46.7	35.0	0.4	100.0	3,279
<b>Residence</b>								
Urban	55.8	17.2	0.3	18.8	7.6	0.2	100.0	7,191
Rural	23.0	9.8	0.7	39.6	26.6	0.3	100.0	25,202
<b>Mother's education</b>								
Illiterate	15.6	9.0	0.8	44.7	29.6	0.4	100.0	19,061
Literate, < middle school complete	37.3	15.4	0.4	28.4	18.1	0.3	100.0	5,818
Middle school complete	49.5	17.1	0.3	21.0	11.7	0.3	100.0	2,935
High school complete and above	70.3	12.9	0.2	11.8	4.7	0.1	100.0	4,574
<b>Religion</b>								
Hindu	29.5	11.5	0.6	34.7	23.3	0.3	100.0	25,650
Muslim	29.0	9.6	0.6	40.0	20.5	0.2	100.0	5,120
Christian	50.4	12.2	1.3	18.7	17.1	0.3	100.0	753
Sikh	43.0	25.5	0.2	31.0	0.3	0.0	100.0	450
Jain	73.2	11.2	0.0	14.2	1.5	0.0	100.0	76
Buddhist/Neo-Buddhist	43.4	19.2	0.0	18.3	19.1	0.0	100.0	199
Other	30.0	6.1	0.0	22.1	37.5	4.2	100.0	87
No religion	10.6	10.9	0.0	50.8	27.6	0.0	100.0	24
<b>Caste/tribe</b>								
Scheduled caste	23.5	12.1	1.2	37.7	25.1	0.5	100.0	6,478
Scheduled tribe	14.5	8.3	0.2	44.4	32.2	0.5	100.0	3,080
Other backward class	31.8	12.3	0.8	34.9	19.9	0.3	100.0	10,404
Other	37.3	11.3	0.3	31.4	19.5	0.2	100.0	12,050
<b>Standard of living index</b>								
Low	15.8	8.5	1.1	43.5	30.7	0.5	100.0	11,804
Medium	31.1	12.8	0.4	34.3	21.1	0.3	100.0	15,080
High	60.9	14.5	0.3	17.5	6.8	0.1	100.0	5,112
<b>Number of antenatal check-ups</b>								
0	7.6	5.2	0.9	50.9	35.4	0.1	100.0	11,018
1	15.7	11.0	0.7	41.5	31.0	0.0	100.0	2,641
2	23.9	13.5	0.7	38.1	23.8	0.0	100.0	4,293
3	32.8	15.7	0.7	32.9	17.9	0.0	100.0	4,628
4+	62.3	15.9	0.3	14.7	6.8	0.0	100.0	9,571

Contd...

Table 8.9 Assistance during delivery (contd.)								
Percent distribution of births during the three years preceding the survey by attendant assisting during delivery, according to selected background characteristics, India, 1998–99								
Background characteristic	Attendant assisting during delivery <sup>1</sup>						Total percent	Number of births
	Doctor	ANM/nurse/ midwife/ LHV	Other health profes- sional	Dai (TBA)	Other	Missing		
<b>Place of delivery</b>								
Public health facility	70.6	28.6	0.1	0.3	0.4	0.0	100.0	5,247
NGO or trust hospital/clinic	82.7	17.3	0.0	0.0	0.0	0.0	100.0	234
Private health facility	87.2	12.3	0.1	0.2	0.2	0.0	100.0	5,409
Own home	4.7	6.3	0.8	53.4	34.7	0.0	100.0	17,224
Parents' home	9.3	9.4	1.4	50.7	29.3	0.0	100.0	3,945
Other <sup>2</sup>	6.3	10.5	0.0	27.6	25.3	30.3	100.0	333
<b>Total</b>	<b>30.3</b>	<b>11.4</b>	<b>0.6</b>	<b>35.0</b>	<b>22.4</b>	<b>0.3</b>	<b>100.0</b>	<b>32,393</b>
Note: Table includes only the two most recent births during the three years preceding the survey. Total includes 5, 33, 380, 397, and 242 births with missing information on mother's education, religion, caste/tribe, the standard of living index, and number of antenatal check-ups, respectively, which are not shown separately. ANM: Auxiliary nurse midwife; LHV: Lady health visitor; TBA: Traditional birth attendant; NGO: Nongovernmental organization <sup>1</sup> If the respondent mentioned more than one attendant, only the most qualified attendant is considered. <sup>2</sup> Includes missing								

## Delivery Characteristics

Table 8.10 shows the percentage of births during the three years preceding the survey that were delivered by caesarian section and the percent distribution of births by weight and the mother's estimate of the baby's size at birth. Based on mothers' reports, 7 percent of children born in India in the past three years were delivered by caesarian section. The proportion of deliveries by caesarian section was three times as high in urban areas (15 percent) as in rural areas (5 percent). Among births delivered by health professionals, 20 percent in urban areas and 15 percent in rural areas were delivered by caesarian section. The proportion of all births delivered by caesarian section increased substantially from NFHS-1 to NFHS-2, from 3 percent to 7 percent for India as a whole. A rapid increase took place in both urban areas (from 6 percent to 15 percent) and rural areas (from 2 percent to 5 percent).

Low birth weight babies face substantially higher risks of dying than do babies of normal birth weight. For each birth that took place in the three years preceding the survey, respondents were asked the baby's birth weight. Since babies delivered at home are unlikely to be weighed, the survey also asked mothers about the size of each baby at birth (large, average, small, or very small). In India, 70 percent of babies born in the three years preceding the survey were not weighed at birth. The proportion not weighed is 40 percent in urban areas and 79 percent in rural areas. Even for babies that were weighed, some mothers did not remember the weight. Therefore, the resulting sample of births for which weights are reported is subject to a potentially large selection bias, and the results should be interpreted with caution. Among children for whom birth weights were reported, 23 percent weighed less than 2.5 kilograms. The proportion weighing less than 2.5 kilograms is slightly higher in rural areas (24 percent) than in urban areas (21 percent).

<b>Table 8.10 Characteristics of births</b>			
Percentage of births during the three years preceding the survey that were delivered by caesarian section and percent distribution of births by birth weight and by the mother's estimate of the baby's size at birth, according to residence, India, 1998–99			
Characteristic of births	Urban	Rural	Total
Percentage delivered by caesarian section	14.7	4.9	7.1
<b>Birth weight</b>			
< 2.5 kg	10.8	4.2	5.7
2.5 kg or more	40.3	13.4	19.4
Don't know/missing	8.7	3.7	4.8
Not weighed	40.2	78.6	70.1
Total percent	100.0	100.0	100.0
<b>Size at birth</b>			
Large	16.0	13.3	13.9
Average	61.2	61.4	61.4
Small	17.6	19.9	19.4
Very small	4.9	5.0	5.0
Don't know/missing	0.3	0.4	0.4
Total percent	100.0	100.0	100.0
Number of births	7,191	25,202	32,393
Note: Table includes only the two most recent births during the three years preceding the survey.			

According to mothers' estimates, 61 percent of births in the three years preceding the survey were of average size, 14 percent were large, 19 percent were small, and 5 percent were very small. The proportion of babies reported as small or very small was similar in urban (23 percent) and rural (25 percent) areas.

### 8.3 Postnatal Care

The health of a mother and her newborn child depends not only on the health care she receives during her pregnancy and delivery, but also on the care she and the infant receive during the first few weeks after delivery. Postpartum check-ups within two months after the delivery are particularly important for births that take place in noninstitutional settings. Recognizing the importance of postpartum check-ups, the Reproductive and Child Health Programme recommends three postpartum visits (Ministry of Health and Family Welfare, 1998b).

Table 8.11 gives the percentage of noninstitutional births in the three years preceding the survey that were followed by a postpartum check-up within two months of delivery. Among births that were followed by a postpartum check-up, the table also shows the percentage with a check-up within two days of delivery (which is the most crucial period) and within one week of delivery, and the percentage whose mothers received specific recommended components of care during the check-up.

Table 8.11 Postpartum check-ups

Percentage of noninstitutional births during the three years preceding the survey for which a postpartum check-up was received within two months of birth and among those receiving a postpartum check-up, percentage seen within two days and one week of birth and percentage receiving specific components of check-ups by selected background characteristics, India, 1998–99

Background characteristic	Percentage with a postpartum check-up within two months of birth	Number of births	Among those with a postpartum check-up						Number of births followed by a postpartum check-up
			Percentage seen within two days of birth	Percentage seen within one week of birth	Components of postpartum check-up (%)				
					Abdominal examination	Family planning advice	Breast-feeding advice	Baby care advice	
<b>Mother's age at birth</b>									
< 20	18.1	5,148	14.7	30.3	34.8	19.3	43.2	47.8	930
20–34	16.4	15,184	13.7	30.6	38.7	30.4	42.6	45.8	2,491
35–49	10.5	1,059	22.5	38.9	32.8	25.5	36.3	33.1	112
<b>Birth order</b>									
1	19.9	4,590	16.1	31.5	35.8	14.0	49.0	50.0	915
2–3	18.0	9,283	13.1	30.5	41.2	32.3	43.3	48.1	1,669
4–5	14.3	4,643	14.5	29.9	36.0	35.1	37.0	39.9	662
6+	10.0	2,875	14.1	32.4	24.6	23.1	30.3	34.5	286
<b>Residence</b>									
Urban	19.6	2,495	14.3	32.3	42.1	31.8	44.9	47.9	489
Rural	16.1	18,896	14.2	30.5	36.7	26.6	42.2	45.6	3,042
<b>Mother's education</b>									
Illiterate	13.6	15,665	14.5	31.9	33.8	26.7	38.4	42.8	2,126
Literate, < middle school complete	24.0	3,276	12.8	28.9	37.4	25.7	43.9	47.1	788
Middle school complete	23.2	1,310	19.7	31.1	50.5	29.7	56.4	57.1	304
High school complete and above	27.4	1,135	10.0	26.7	50.3	33.1	53.9	53.0	311
<b>Religion</b>									
Hindu	16.4	17,111	13.2	29.6	37.9	28.0	42.8	46.7	2,807
Muslim	15.7	3,491	20.4	36.3	32.3	23.6	40.6	42.4	549
Christian	24.4	341	4.8	23.6	32.6	34.9	38.9	40.6	83
Sikh	19.8	239	30.5	49.7	81.4	28.8	57.0	51.9	47
Buddhist/Neo-Buddhist	20.5	89	3.3	41.9	54.4	26.1	66.0	71.9	18
Other	16.7	56	*	*	*	*	*	*	9
No religion	25.1	19	*	*	*	*	*	*	5
<b>Caste/tribe</b>									
Scheduled caste	17.0	4,709	15.5	32.5	32.8	27.7	42.6	45.3	800
Scheduled tribe	14.1	2,542	5.0	17.0	35.9	27.7	34.0	41.0	358
Other backward class	15.6	6,615	11.2	31.5	39.3	33.2	44.4	50.4	1,035
Other	18.3	7,185	18.4	32.9	39.1	22.6	43.4	44.1	1,314
<b>Standard of living index</b>									
Low	15.5	9,565	14.4	30.5	31.2	26.8	39.0	43.4	1,486
Medium	16.5	9,768	13.6	29.4	40.0	26.9	44.2	47.9	1,613
High	20.5	1,798	15.8	37.6	52.3	32.9	49.7	48.3	368

Contd...

Only 17 percent of noninstitutional births were followed by a check-up within two months of the delivery. Among births that were followed by a check-up, few check-ups took place shortly after birth (only 14 percent within two days and 31 percent within one week). Births to urban mothers were slightly more likely to be followed by a postpartum check-up than births to rural mothers. The likelihood of a birth being followed by a postpartum check-up was higher for literate mothers than illiterate mothers and for mothers in households with a high standard of

Table 8.11 Postpartum check-ups (contd.)

Percentage of noninstitutional births during the three years preceding the survey for which a postpartum check-up was received within two months of birth and among those receiving a postpartum check-up, percentage seen within two days and one week of birth and percentage receiving specific components of check-ups by selected background characteristics, India, 1998–99

Background characteristic	Percentage with a postpartum check-up within two months of birth	Number of births	Among those with a postpartum check-up						Number of births followed by a postpartum check-up
			Percentage seen within two days of birth	Percentage seen within one week of birth	Components of postpartum check-up (%)				
					Abdominal examination	Family planning advice	Breast-feeding advice	Baby care advice	
<b>Number of antenatal check-ups</b>									
0	7.1	10,213	19.6	34.0	23.2	12.9	28.7	39.4	724
1	13.1	2,159	18.8	34.0	30.1	16.7	28.2	35.1	282
2	21.1	3,138	9.9	26.3	39.1	30.5	41.0	43.5	663
3+	32.1	5,777	12.9	30.6	43.5	33.4	50.7	51.0	1,856
<b>Assistance during delivery</b>									
Doctor/nurse/midwife/LHV <sup>1</sup>	29.3	2,882	21.5	42.3	48.9	34.2	54.2	53.4	844
Dai (TBA)	15.3	11,295	10.9	27.7	36.4	26.4	42.3	45.5	1,724
Other	13.4	7,211	13.7	26.2	29.4	22.8	32.8	40.2	964
Total	16.5	21,391	14.2	30.8	37.5	27.3	42.6	45.9	3,532

Note: Table includes only the two most recent births during the 2–35 months preceding the survey. Total includes births to mothers belonging to the Jain religion and births with missing information on mother's education, religion, caste/tribe, the standard of living index, number of antenatal check-ups, and assistance during delivery, which are not shown separately.

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

LHV: Lady health visitor; TBA: Traditional birth attendant

<sup>1</sup>Includes other health professionals

living than for mothers in households with a medium or low standard of living. This likelihood decreases by mother's age and birth order, and varies little by caste or tribe. Births to Hindu and Muslim women are equally likely to be followed by a postpartum check-up, whereas births to Christian women are more likely than births to women of other religions to be followed by a postpartum check-up. The likelihood that a birth was followed by a postpartum check-up increases steadily from 7 percent if the mother did not receive an antenatal check-up to 32 percent if the mother received three or more antenatal check-ups. Births delivered with the assistance of a health professional were more likely to be followed by a postpartum check-up (29 percent) than were births delivered with the assistance of a TBA (15 percent) or an other person (13 percent). These results clearly indicate that women are more likely to have a postpartum check-up if they have had continuous interaction with health providers through their pregnancy and delivery, even if they did not give birth in a health facility.

Mothers who did not deliver in a health facility but who received a postpartum check-up were asked whether they had received specific components of postpartum care, including an abdominal examination and advice on family planning, breastfeeding, and baby care. For 38 percent of births, mothers who received a postpartum check-up said that their abdomen was examined during the check-up, and for 27 percent mothers said that they received family planning advice. Advice on breastfeeding and baby care was considerably more common (given in 43 and 46 percent of cases, respectively). Urban mothers, mothers who had completed at least middle school, mothers belonging to households with a high standard of living, and mothers who had received two or more antenatal check-ups, as well as mothers whose births were assisted by a

health professional, were more likely to receive each of the components of a postpartum check-up. Older women (age 35–49) and women having births of order six and above were less likely than other women to have received an abdominal examination and advice on breastfeeding and baby care. Younger women (age less than 20), women having their first birth, and women with no or only one antenatal check-up were less likely than other women to receive advice on family planning. Notably, mothers received advice about family planning during postpartum check-ups for only 14 percent of first births, although these women are particularly likely to need advice on birth spacing and contraception. Even among births attended by health professionals, advice on family planning was given to only one-third of mothers who had a postpartum check-up. Women belonging to other backward classes were more likely than women in any other caste/tribe category to receive each component of postpartum care and Hindu women were more likely to receive each component of postpartum care than Muslim women.

### **Postpartum Complications**

Every woman who had a birth in the three years preceding the survey was asked if she had massive vaginal bleeding or a very high fever—both symptoms of possible postpartum complications—at any time during the two months after delivery (Table 8.12). Mothers in India reported massive vaginal bleeding for 11 percent of births and a very high fever in the postpartum period for 13 percent of births. Both complications were slightly more common among rural than urban mothers. While the likelihood of massive vaginal bleeding did not vary much by mother’s age and birth order, very high fever was somewhat more likely to be reported for births to older mothers (age 35–49) and for births at higher orders (four or above). The likelihood of having massive vaginal bleeding did not vary much by place of delivery and assistance during delivery. The only exceptions are in the case of the few deliveries that took place in NGO or trust hospitals/clinics (which had a relatively low likelihood of being followed by massive vaginal bleeding) and the few that were delivered by a health professional other than a doctor, auxiliary nurse midwife, nurse, midwife, or lady health visitor (which had a lower likelihood of being followed by massive vaginal bleeding). Mothers of births delivered in their own home or in their parents’ home were more likely, however, to have had a very high fever in the postpartum period (14 percent) than were mothers of births delivered elsewhere (11 percent or less).

<b>Table 8.12. Symptoms of postpartum complications</b>			
Among births during the three years preceding the survey, the percentage for which the mother had massive vaginal bleeding or very high fever within two months after the delivery by selected background characteristics, India, 1998–99			
Background characteristic	Massive vaginal bleeding	Very high fever	Number of births
<b>Residence</b>			
Urban	9.3	10.0	6,888
Rural	11.4	13.4	24,014
<b>Mother's age at birth</b>			
< 20	12.2	13.3	7,311
20–34	10.5	12.3	22,329
35–49	11.2	15.9	1,262
<b>Birth order</b>			
1	11.8	11.4	8,952
2–3	10.5	11.8	13,434
4–5	10.9	14.6	5,395
6+	10.5	16.4	3,121
<b>Place of delivery</b>			
Public health facility	11.1	10.4	5,016
NGO or trust hospital/clinic	7.3	11.1	220
Private health facility	10.6	9.4	5,185
Own home	10.9	14.3	16,410
Parents' home	11.9	13.6	3,754
Other <sup>1</sup>	8.4	8.1	316
<b>Assistance during delivery</b>			
Doctor	11.5	10.3	9,365
ANM/nurse/midwife/LHV	9.5	11.3	3,534
Other health professional	18.1	21.5	188
<i>Dai</i> (TBA)	11.3	14.0	10,780
Other <sup>1</sup>	10.3	14.2	7,035
Total	11.0	12.6	30,902
Note: Table includes only the two most recent births during the 2–35 months preceding the survey.			
NGO: Nongovernmental organization; ANM: Auxiliary nurse midwife; LHV: Lady health visitor; TBA: Traditional birth attendant			
<sup>1</sup> Includes missing			

#### 8.4 Summary of Maternal Care Indicators by State

Table 8.13 shows five different maternal care indicators for births during the three years preceding the survey by state. These indicators together summarize the extent to which different states have progressed towards achieving safe motherhood goals at all three stages of the birth process: antenatal, delivery, and postnatal. The first indicator is a summary antenatal care indicator which shows the percentage of births whose mothers received all of the following: three or more antenatal check-ups (with the first check-up within the first trimester of pregnancy), two or more tetanus toxoid injections, and iron and folic acid tablets or syrup for three or more months. The next two indicators pertain to care during delivery and show the percentage of births delivered in medical institutions and deliveries assisted by a health professional. The last two

Table 8.13 Maternal care indicators by state

Maternal care indicators for births during the three years preceding the survey by state, India, 1998–99

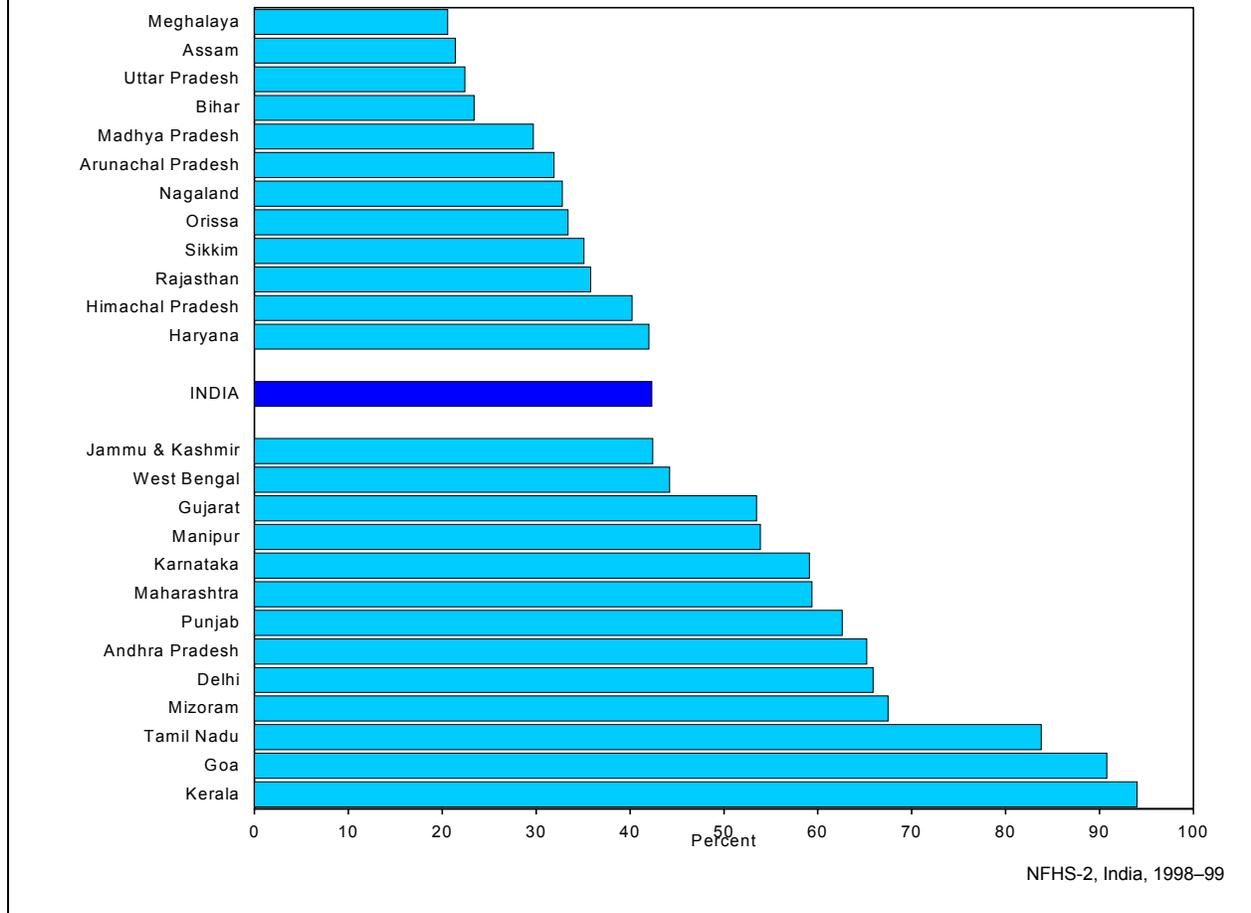
State	Percentage who received all recommended types of antenatal care <sup>1</sup>	Percentage of births delivered in a medical institution	Percentage of deliveries assisted by a health professional <sup>2</sup>	Percentage of non-institutional deliveries with a postpartum check-up within two months of birth <sup>3</sup>	Percentage of non-institutional deliveries with a postpartum check-up within two days of birth <sup>3</sup>
<b>India</b>	20.0	33.6	42.3	16.5	2.3
<b>North</b>					
Delhi	32.8	59.1	65.9	19.5	2.1
Haryana	20.8	22.4	42.0	15.7	2.5
Himachal Pradesh	30.2	28.9	40.2	21.2	2.9
Jammu & Kashmir	30.7	35.6	42.4	27.6	1.1
Punjab	31.7	37.5	62.6	20.3	5.7
Rajasthan	8.3	21.5	35.8	6.4	0.5
<b>Central</b>					
Madhya Pradesh	10.9	20.1	29.7	10.0	0.5
Uttar Pradesh	4.4	15.5	22.4	7.2	1.5
<b>East</b>					
Bihar	6.4	14.6	23.4	10.0	1.4
Orissa	21.4	22.6	33.4	19.2	2.2
West Bengal	19.7	40.1	44.2	31.6	7.1
<b>Northeast</b>					
Arunachal Pradesh	17.3	31.2	31.9	10.5	0.3
Assam	15.8	17.6	21.4	25.5	0.5
Manipur	18.3	34.5	53.9	27.1	1.4
Meghalaya	10.4	17.3	20.6	20.8	0.0
Mizoram	13.5	57.7	67.5	20.9	0.9
Nagaland	8.9	12.1	32.8	4.3	0.0
Sikkim	15.3	31.5	35.1	38.0	0.7
<b>West</b>					
Goa	60.6	90.8	90.8	41.0	6.9
Gujarat	25.0	46.3	53.5	10.4	1.6
Maharashtra	31.0	52.6	59.4	29.8	6.9
<b>South</b>					
Andhra Pradesh	35.6	49.8	65.2	44.9	1.6
Karnataka	41.5	51.1	59.1	35.3	3.6
Kerala	64.9	93.0	94.0	27.4	7.5
Tamil Nadu	50.8	79.3	83.8	53.0	10.1

Note: Table includes only the two most recent births during the three years preceding the survey.  
<sup>1</sup>Three or more antenatal check-ups (with the first check-up within the first trimester of pregnancy), two or more tetanus toxoid injections, and iron and folic acid tablets or syrup for three or more months  
<sup>2</sup>Doctor, auxiliary nurse midwife, nurse, midwife, lady health visitor, or other health professional  
<sup>3</sup>Based on births in the 2–35 months preceding the survey

indicators pertain to postnatal care and show the percentage of noninstitutional deliveries with a postpartum check-up within two months of birth and within two days of birth.

For India as a whole, mothers of only 20 percent of births received all of the required components of antenatal care. This indicator ranges from a high of 65 percent in Kerala and 61 percent in Goa to a low of only 4 percent in Uttar Pradesh. Other states that perform almost as poorly as Uttar Pradesh on this indicator include Bihar, Rajasthan, and Nagaland, where only 6–9

**Figure 8.5**  
**Percentage of Deliveries Assisted by a Health Professional by State**



percent of women received the required components of antenatal care. Kerala, followed closely by Goa, also outperform all other states in terms of delivery care, with over 90 percent of deliveries taking place in medical institutions and a similarly high percentage of deliveries assisted by a health professional (Figure 8.5). Tamil Nadu, with 79 percent of births delivered in medical institutions and 84 percent of deliveries assisted by a health professional, ranks third among the states on these delivery care indicators. By contrast, in Nagaland, Bihar, and Uttar Pradesh, only 12–16 percent of births were delivered in medical institutions and in Meghalaya, Assam, Uttar Pradesh, and Bihar, only 21–23 percent of deliveries were assisted by a health professional.

Tamil Nadu, with 53 percent of noninstitutional deliveries with a postpartum check-up within two months of birth and 10 percent within two days, tops the list of states with regard to both of the postnatal care indicators. What is particularly notable, however, is the poor performance of almost all states on the two indicators of postpartum care, both in absolute terms as well as relative to their performance on the antenatal care and delivery care indicators. There is no state other than Tamil Nadu where more than half of the noninstitutional deliveries in the three years preceding the survey were followed by a postpartum check-up within two months, and there are only six states where this percentage was 30–45 percent. In 19 states, less than 5

percent of noninstitutional deliveries were followed by a postpartum check within two days, including 2 states where the percentage receiving such check-ups was zero.

An examination of the performance of each state on the different safe motherhood indicators shows that several states consistently perform well below the national average on each of the five indicators. This list includes Arunachal Pradesh, Bihar, Madhya Pradesh, Nagaland, Rajasthan, and Uttar Pradesh. Assam, Meghalaya, and Sikkim also perform poorly on the indicators although the percentage of noninstitutional deliveries with a postpartum check-up within two months after birth in these states is higher than the national average. Haryana, Himachal Pradesh, and Orissa perform poorly on one or both of the delivery care indicators, whereas Mizoram performs much better on the delivery care indicators than it does on the other indicators. Gujarat performs particularly poorly on the provision of postpartum care but performs above the national average on the other indicators. Nonetheless, in Gujarat, the mothers of only 25 percent of births received all the recommended components of antenatal care. Between NFHS-1 and NFHS-2, the percentage of births delivered in a health institution and the percentage of deliveries assisted by a health professional increased in every state except Meghalaya.

## **8.5 Reproductive Health Problems**

Absence of reproductive tract infections (RTIs) is essential for the reproductive health of both women and men and is critical for their ability to meet their reproductive goals. There are three different types of reproductive tract infections for women: endogenous infections that are caused by the multiplying of organisms normally present in the vagina; iatrogenic infections caused by the introduction of bacteria or other infection-causing micro-organisms through medical procedures such as an IUD insertion; and sexually transmitted infections (STIs). Endogenous infections and several of the iatrogenic and sexually transmitted infections are often easily cured if detected early and given proper treatment. If left untreated, RTIs can cause pregnancy-related complications, congenital infections, infertility, and chronic pain. They are also a risk factor for pelvic inflammatory disease and HIV (Population Council, 1999).

A number of studies (Bang et al., 1989; Bang and Bang, 1991; Pachauri and Gittlesohn, 1994; Jeejeebhoy and Rama Rao, 1992) have shown that many Indian women suffer from RTIs. Several researchers have also shown that women in India often bear the symptoms of RTIs silently without seeking health care. RTIs and their sequelae are an important component of programmes for family planning, child survival, women's health, safe motherhood, and HIV prevention. RTIs have profound implications for the success of each of these initiatives, and conversely, these initiatives provide a critical opportunity for the prevention and control of RTIs (Germain et al., 1992). Studies have demonstrated that RTIs are an important reason for the poor acceptance and low continuation rates of contraceptive methods such as the IUD. Bhatia and Cleland (1995) found a higher incidence of gynaecological symptoms among women who had undergone a tubectomy than among other women. The Government of India recognized the importance of RTIs and STIs in undermining the health and welfare of individuals and couples in a policy statement on the Reproductive and Child Health Programme, which states that couples should be 'able to have sexual relations free of fear of pregnancy and contracting diseases' (Ministry of Health and Family Welfare, 1997:2). The Reproductive and Child Health Programme includes the following relevant interventions: establishment of RTI/STI clinics at district hospitals (where not already available), provision of technicians for laboratory diagnosis

of RTIs/STIs, and in selected districts, screening and treatment of RTIs/STIs (Ministry of Health and Family Welfare, 1997).

NFHS-2 collected information from women on some common symptoms of RTIs, namely problems with abnormal vaginal discharge or urinary tract infections in the three months preceding the survey, and intercourse-related pain (often) and bleeding (ever). Specifically, the prevalence of reproductive health problems among ever-married women is estimated from women's self-reported experience with each of the following problems: vaginal discharge accompanied by itching, by irritation around the vaginal area, by bad odour, by severe lower abdominal pain, by fever, or by any other problem; pain or burning while urinating or frequent or difficult urination; and (among currently married women only) painful intercourse or bleeding after intercourse. Women who experience one or more of these reproductive health problems could either have or be at risk of getting an RTI/STI. However, since information on health problems is based on self-reports rather than clinical tests or examinations, the results should be interpreted with caution.

Table 8.14 shows the prevalence of different reproductive health problems among women in India during the three months preceding the survey by background characteristics. Thirty percent of ever-married women report at least one type of problem related to vaginal discharge, and 18 percent report symptoms of a urinary tract infection. Overall, 36 percent of women report either problems with vaginal discharge or symptoms of a urinary tract infection. Among problems related to vaginal discharge, severe lower abdominal pain (19 percent) is mentioned most frequently, followed by itching or irritation (17 percent). Since a large majority of ever-married women are also currently married, there is almost no difference in the estimates of prevalence of problems related to vaginal discharge and symptoms of urinary tract infections for currently married women and ever-married women.

Table 8.14 and Figure 8.6 show that two out of five currently married women (39 percent) report that they have at least one reproductive health problem. Thirty-six percent have problems with vaginal discharge or urinary tract infections, 13 percent report painful intercourse, and 2 percent report bleeding after intercourse. The prevalence of reproductive health problems by age among currently married women first increases slightly from 38 percent for women age 15–19 to 42 percent for women age 25–34 and then declines to 30 percent for women age 45–49. The prevalence of reproductive health problems varies little between illiterate women (41 percent) and literate women who have completed at most middle school (39–40 percent) but it is lower for women who have completed at least high school (32 percent). Muslim women (49 percent), followed by Buddhist/Neo-Buddhist women (47 percent), are more likely than women of all other religions (with the exception of women who do not belong to any religion) to have reproductive health problems, and Sikh women (28 percent) and Jain women (33 percent) are least likely to have problems. The prevalence of reproductive health problems is slightly higher for scheduled-tribe women (42 percent) than for other women (38–40 percent), and women in households with a medium or low standard of living (40–41 percent) are more likely to have reproductive health problems than women in households with a high standard of living (34 percent). Women who are self-employed (44 percent) are more likely than nonworking women (38 percent), as well as other employed women (40 percent), to have reproductive health problems.

**Table 8.14 Symptoms of reproductive health problems**

Percentage of ever-married women reporting abnormal vaginal discharge or symptoms of a urinary tract infection during the three months preceding the survey and percentage of currently married women reporting painful intercourse or bleeding after intercourse by selected background characteristics, India, 1998–99

Background characteristic	Ever-married women												
	Vaginal discharge accompanied by:							Any abnormal vaginal discharge or symptoms of a urinary tract infection <sup>2</sup>	Number of ever-married women	Currently married women			
	Any abnormal vaginal discharge	Itching or irritation	Bad odour	Severe lower abdominal pain <sup>1</sup>	Fever	Other problem	Symptoms of a urinary tract infection <sup>2</sup>			Painful intercourse (often)	Bleeding after intercourse (ever) <sup>1</sup>	Any reproductive health problem	Number of currently married women
<b>Age</b>													
15–19	26.2	14.4	10.2	17.3	7.1	5.8	16.1	32.1	8,182	16.9	3.7	37.9	8,014
20–24	29.3	16.7	11.0	18.1	7.4	7.3	17.1	35.0	16,389	15.1	3.0	39.7	15,930
25–29	32.5	18.6	12.5	20.5	8.5	9.1	18.3	38.0	17,745	14.0	2.1	41.6	17,055
30–34	33.2	18.8	12.8	20.8	9.0	9.8	18.6	38.9	15,094	12.9	2.0	41.9	14,286
35–39	32.2	18.9	12.3	20.0	9.5	8.9	18.1	37.5	13,089	10.9	2.2	40.5	12,052
40–44	27.3	16.3	10.5	17.0	8.0	7.4	18.0	33.5	10,521	8.4	1.4	35.7	9,363
45–49	20.7	12.3	7.5	12.6	5.7	5.6	15.5	27.8	8,179	5.9	1.3	30.3	6,948
<b>Residence</b>													
Urban	27.8	15.9	8.7	16.5	6.3	8.6	15.4	33.1	23,370	11.5	1.8	36.7	21,888
Rural	30.4	17.5	12.3	19.3	8.7	7.8	18.4	36.4	65,829	12.9	2.4	40.1	61,761
<b>Education</b>													
Illiterate	31.3	18.2	13.0	20.3	9.7	8.5	19.3	37.3	51,871	12.8	2.4	40.8	48,018
Literate, < middle school complete	30.3	16.9	10.2	18.7	7.5	8.4	17.4	36.2	17,270	13.1	2.2	39.9	16,257
Middle school complete	29.1	16.9	10.0	17.0	6.2	7.1	15.1	34.3	7,328	12.7	2.4	38.6	7,073
High school complete and above	22.8	13.2	6.7	12.6	3.5	6.1	12.6	28.0	12,719	10.7	1.9	32.4	12,291
<b>Religion</b>													
Hindu	28.7	16.6	10.9	17.6	7.7	7.8	16.9	34.3	72,903	11.7	2.2	37.9	68,443
Muslim	37.2	20.6	14.3	25.4	11.8	10.3	23.2	44.1	11,190	18.5	3.0	48.6	10,477
Christian	29.5	14.8	10.1	18.9	5.9	6.6	15.3	35.0	2,263	14.9	2.5	40.0	2,072
Sikh	22.4	14.7	11.0	13.3	2.0	3.4	9.5	25.7	1,427	7.5	1.5	28.3	1,365
Jain	26.2	13.2	6.5	13.2	4.1	6.4	11.4	30.4	331	8.7	0.2	33.1	316
Buddhist/Neo-Buddhist	34.6	20.7	11.6	20.5	8.6	11.0	24.5	41.6	676	14.3	2.4	46.8	601
Other	35.0	22.7	14.1	24.3	9.6	6.6	25.6	42.1	285	11.7	1.9	45.2	259
No religion	51.5	35.5	30.2	22.6	12.9	12.7	37.2	57.5	44	5.3	0.0	59.0	38

Contd...

Table 8.14 Symptoms of reproductive health problems (contd.)

Percentage of ever-married women reporting abnormal vaginal discharge or symptoms of a urinary tract infection during the three months preceding the survey and percentage of currently married women reporting painful intercourse or bleeding after intercourse by selected background characteristics, India, 1998–99

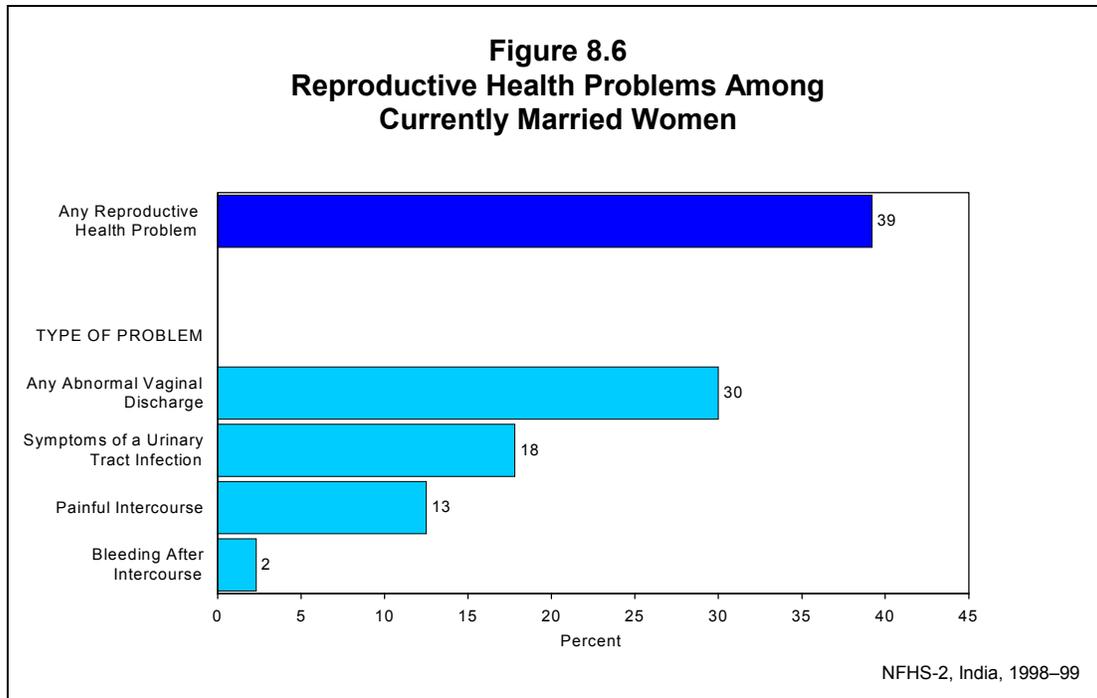
Background characteristic	Ever-married women										Currently married women			
	Vaginal discharge accompanied by:							Symptoms of a urinary tract infection <sup>2</sup>	Any abnormal vaginal discharge or symptoms of a urinary tract infection <sup>2</sup>	Number of ever-married women	Painful intercourse (often)	Bleeding after intercourse (ever) <sup>1</sup>	Any reproductive health problem	Number of currently married women
	Any abnormal vaginal discharge	Itching or irritation	Bad odour	Severe lower abdominal pain <sup>1</sup>	Fever	Other problem								
<b>Caste/tribe</b>														
Scheduled caste	30.1	17.2	11.8	18.8	7.8	8.0	17.9	36.1	16,301	13.2	2.1	39.9	15,178	
Scheduled tribe	33.4	18.9	14.8	22.3	10.3	7.3	20.4	39.2	7,750	12.6	3.4	42.0	7,176	
Other backward class	27.8	16.0	9.9	17.6	7.8	7.7	17.4	33.8	29,383	11.9	2.3	37.7	27,529	
Other	30.6	17.7	11.6	18.6	7.9	8.5	17.0	36.1	34,904	12.7	2.1	39.6	32,957	
<b>Standard of living index</b>														
Low	31.2	17.3	12.8	20.7	9.6	8.1	19.5	37.4	29,033	13.5	2.5	41.3	26,505	
Medium	30.5	17.7	11.5	18.9	8.4	8.3	18.0	36.3	41,289	13.0	2.3	40.1	38,999	
High	25.6	15.3	8.7	14.5	5.0	7.0	13.7	30.6	17,845	10.1	1.7	34.0	17,173	
<b>Work status</b>														
Working in family farm/ business	31.3	19.1	12.4	19.4	9.8	8.4	19.3	37.0	12,849	12.0	2.6	40.1	12,062	
Employed by someone else	30.6	16.6	10.7	20.0	9.4	9.0	18.5	36.5	17,571	12.6	2.4	40.4	15,403	
Self-employed	32.7	18.4	11.3	20.5	9.6	10.0	19.2	39.2	4,483	14.7	2.3	43.5	3,891	
Not worked in past 12 months	28.8	16.7	11.3	17.8	7.1	7.4	16.8	34.5	54,271	12.5	2.1	38.3	52,269	
<b>Number of children ever born</b>														
0	29.4	16.5	11.0	19.6	7.8	7.2	18.7	35.9	9,807	19.3	4.5	42.5	8,980	
1	26.2	14.6	9.6	15.7	6.1	6.2	14.9	31.5	12,752	12.7	2.1	35.8	11,823	
2–3	29.7	16.6	10.7	18.5	7.5	8.0	16.8	35.1	35,858	11.8	2.1	38.5	33,861	
4–5	31.8	18.6	12.8	20.0	9.8	9.1	19.1	37.8	19,743	11.7	2.0	40.6	18,618	
6+	30.5	19.5	12.9	18.9	9.6	8.9	19.7	37.2	11,039	10.6	1.7	39.6	10,368	
<b>All ever-married women</b>	29.7	17.1	11.3	18.6	8.1	8.0	17.6	35.5	89,199	NA	NA	NA	NA	
<b>All currently married women</b>	30.0	17.3	11.5	18.7	8.1	8.1	17.8	35.9	83,649	12.5	2.3	39.2	83,649	

Note: Total includes women with missing information on education, religion, caste/tribe, the standard of living index, and work status, who are not shown separately.

NA: Not applicable

<sup>1</sup>Not related to menstruation

<sup>2</sup>Includes pain or burning while urinating or more frequent or difficult urination



Women with no children are slightly more likely than women with one or more children to have reproductive health problems. Among women with at least one child, women with two or more children are somewhat more likely to have reproductive health problems (39–41 percent) than are women with only one child (36 percent). Overall, however, the prevalence of reproductive health problems is very similar for women with almost all background characteristics. Notably, with the exception of the much larger variation by religion, prevalence ranges only between 30 percent and 44 percent for all other currently married women.

Among women who report any reproductive health problems, almost two-thirds have not seen anyone for advice or treatment (Table 8.15). The proportion of women who have not obtained advice or treatment is higher in rural areas (69 percent) than in urban areas (55 percent). Overall, more than three-quarters of women who have obtained advice or treatment were seen by someone in the private medical sector and less than one-third sought advice or treatment from someone in the public medical sector. Among women who sought advice or treatment, 64 percent saw a private doctor and 22 percent saw a government doctor. A private doctor was seen by 69 percent of these women in urban areas and 62 percent in rural areas, whereas a government doctor was seen by less than one-quarter of both urban women (23 percent) and rural women (21 percent).

### Reproductive Health Problems by State

Table 8.16 shows the prevalence of any reproductive health problem, as well as the prevalence of different types of reproductive health problems, among currently married women by state. Since these prevalence rates are based on self-reports and because the willingness of women to talk about and report reproductive health problems may vary by state, considerable caution should be used in interpreting differences in prevalence between states. Overall, the percentage of currently married women with any reproductive health problem varies from 19 percent in Karnataka to 67 percent in Meghalaya. Other states where more than half of currently married women had at least

Table 8.15 Treatment of reproductive health problems			
Among women with a reproductive health problem, the percentage who sought advice or treatment from specific providers by residence, India, 1998–99			
Provider	Urban	Rural	Total
<b>Public medical sector</b>	12.0	10.0	10.5
Government doctor	10.2	6.7	7.5
Public health nurse	0.4	0.8	0.7
ANM/LHV	1.0	1.9	1.7
Male MPW/supervisor	0.0	0.1	0.1
Anganwadi worker	0.0	0.1	0.1
Village health guide	0.0	0.1	0.1
Other public medical sector	0.4	0.2	0.3
NGO worker	0.2	0.1	0.1
<b>Private medical sector</b>	35.6	24.1	26.9
Private doctor	30.9	19.3	22.2
Private nurse	1.4	1.1	1.2
Compounder/pharmacist	0.3	0.3	0.3
Vaid/hakim/homeopath	2.2	1.9	2.0
Dai (TBA)	0.3	0.5	0.5
Traditional healer	0.3	0.7	0.6
Other private medical sector	0.1	0.3	0.3
Other	0.9	1.2	1.1
None	55.3	68.8	65.5
Number of women	8,462	25,989	34,451

Note: Table includes currently married women who report abnormal vaginal discharge, symptoms of a urinary tract infection, painful intercourse or bleeding after intercourse and women who are ever married but not currently married who report abnormal vaginal discharge or symptoms of a urinary tract infection. Percentages add to more than 100.0 because women could report treatment from multiple providers.  
ANM: Auxiliary nurse midwife; LHV: Lady health visitor; MPW: Multipurpose health worker; NGO: Nongovernmental organization; TBA: Traditional birth attendant

one reproductive health problem are Jammu and Kashmir, Manipur, Mizoram, and Assam. In all but five states, at least one-third of women report one or more reproductive health problems.

In all states, women are much more likely to report problems with vaginal discharge than to report symptoms of a urinary tract infection or problems related to intercourse. Nonetheless, there is substantial variation by state in the prevalence of each of these different reproductive health problems. The percentage of currently married women with any abnormal vaginal discharge ranges from 14 percent in Karnataka to 64 percent in Meghalaya; the percentage with symptoms of a urinary tract infection ranges from 7 percent in Karnataka to 31 percent in Jammu and Kashmir; the percentage who often experience painful intercourse ranges from 3 percent in Karnataka to 22 percent in Jammu and Kashmir; and the percentage who ever experienced bleeding after intercourse ranges from 0.3 percent in Karnataka to 5 percent in Nagaland. The states where the prevalence of all four kinds of reproductive health problems is consistently high are Jammu and Kashmir, Madhya Pradesh, Andhra Pradesh, and all the northeastern states except Arunachal Pradesh and Mizoram. Jammu and Kashmir has high levels of all the reproductive health problems except bleeding after intercourse. Prevalence of all of the different reproductive health problems is lowest in Karnataka. Other states where the reported prevalence of

**Table 8.16 Symptoms of reproductive tract infections by state**

Percentage of currently married women reporting various symptoms of reproductive tract infections by state, India, 1998–99

State	Percentage with any abnormal vaginal discharge	Percentage with symptoms of a urinary tract infection <sup>1</sup>	Percentage with any abnormal vaginal discharge or symptoms of a urinary tract infection <sup>1</sup>	Percentage with painful intercourse (often)	Percentage with bleeding after intercourse (ever) <sup>2</sup>	Percentage with any reproductive health problem
<b>India</b>	30.0	17.8	35.9	12.5	2.3	39.2
<b>North</b>						
Delhi	29.9	13.9	34.0	9.3	1.3	36.5
Haryana	32.2	12.6	35.9	8.3	1.0	38.2
Himachal Pradesh	26.5	14.3	30.8	8.6	0.7	33.7
Jammu & Kashmir	50.5	31.0	56.5	21.7	2.3	60.5
Punjab	23.9	8.5	26.3	5.6	0.9	28.3
Rajasthan	36.8	19.1	41.3	11.1	1.8	43.2
<b>Central</b>						
Madhya Pradesh	34.8	22.5	41.2	16.7	4.2	44.9
Uttar Pradesh	28.0	17.9	33.9	16.4	2.4	38.1
<b>East</b>						
Bihar	33.7	25.7	42.2	11.4	2.4	44.2
Orissa	18.2	11.0	22.9	11.0	1.9	27.5
West Bengal	35.8	18.4	41.8	14.6	1.9	45.3
<b>Northeast</b>						
Arunachal Pradesh	29.5	23.6	39.8	10.5	1.3	42.1
Assam	41.2	20.6	47.3	14.7	4.1	50.6
Manipur	41.3	29.5	51.7	19.8	3.2	56.0
Meghalaya	64.2	24.5	66.2	20.2	3.6	66.9
Mizoram	44.7	21.6	50.7	10.7	2.0	52.5
Nagaland	40.8	24.4	44.4	20.3	4.6	45.6
Sikkim	37.5	20.1	44.5	14.0	3.1	48.6
<b>West</b>						
Goa	26.2	17.4	35.3	11.3	1.0	40.2
Gujarat	23.0	10.3	26.3	6.9	1.6	28.6
Maharashtra	30.7	20.1	37.1	10.4	1.8	40.0
<b>South</b>						
Andhra Pradesh	38.2	18.8	44.0	16.9	2.9	48.5
Karnataka	13.5	7.2	17.7	2.7	0.3	18.8
Kerala	26.3	19.8	35.7	16.8	3.7	42.4
Tamil Nadu	18.6	12.3	24.2	8.5	2.2	27.8

<sup>1</sup>Includes pain or burning while urinating or more frequent or difficult urination

<sup>2</sup>Not related to menstruation

reproductive health problems is consistently low are Gujarat, Orissa, Punjab, Tamil Nadu, and Himachal Pradesh.

In summary, NFHS-2 results show that although more than one-third of ever-married women in India report at least one reproductive health problem related to vaginal discharge or urination, and two-fifths of currently married women report at least one reproductive health problem related to vaginal discharge, urination, or intercourse that could be symptomatic of a more serious reproductive tract infection, the majority of them bear the problems silently without

seeking advice or treatment. There does not appear to be any systematic variation in reports of reproductive health problems by the level of development of the state: women in both less developed and more developed states report a high prevalence of at least one reproductive health problem. Given the silence that surrounds reproductive health problems, this consistently high self-reported prevalence suggests that reproductive health problems are widespread among all groups of women and in almost all states. Moreover, women who seek advice or treatment for reproductive health problems do not usually go to government health professionals. These findings highlight the need to educate women regarding the symptoms and consequences of reproductive health problems and the urgent need to expand counselling and reproductive health services in both rural and urban areas, particularly through the public sector.