

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, 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, 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).

An important objective of NFHS-2 is to provide information on the use of safe-motherhood services. In addition, the survey includes questions on the prevalence and treatment of reproductive health problems. The Woman's Questionnaire includes relevant questions on safe motherhood for women age 15–49 who have given birth since 1 January 1995. The topics covered include pregnancy complications, antenatal and postnatal care, place of and assistance during delivery, delivery characteristics, and postpartum complications. Although the survey obtained information for the two most recent live births since 1 January 1995, the information presented in this chapter pertains only to the subset of those births that took place during the three years preceding the survey. 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 they received treatment.

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 folic acid tablets or syrup. 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 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.

Table 8.1 Health problems during pregnancy

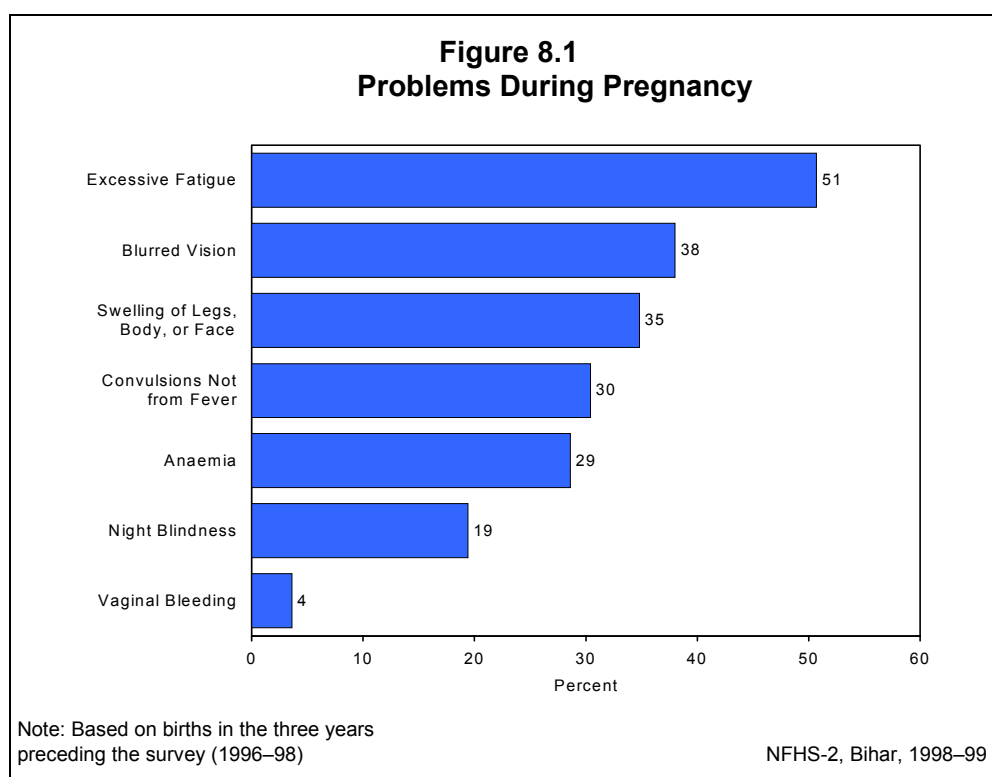
Among births during the three years preceding the survey, percentage of mothers experiencing specific health problems during pregnancy by residence, Bihar, 1998–99

Problem during pregnancy	Urban	Rural	Total
Night blindness	11.7	20.2	19.4
Blurred vision	37.2	38.1	38.0
Convulsions not from fever	29.7	30.5	30.4
Swelling of the legs, body, or face	32.8	35.0	34.8
Excessive fatigue	52.8	50.5	50.7
Anaemia	32.2	28.3	28.6
Vaginal bleeding	2.0	3.7	3.6
Number of births	258	2,689	2,947

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

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, problems during pregnancy are common in Bihar. The problem reported most often is excessive fatigue (51 percent), followed by blurred vision (38 percent), swelling of the legs, body, or face (35 percent), convulsions not from fever (30 percent), and anaemia (29 percent). Nineteen percent of women reported night blindness and 4 percent reported any vaginal bleeding during pregnancy. The reported prevalence of night blindness is much higher in rural (20 percent) than in urban areas (12 percent).



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. Women who received antenatal check-ups both at home and outside the home are categorized as having received care outside the home. If women received check-ups from more than one type of health provider, only the provider with the highest qualification is considered.

NFHS-2 results for Bihar show that 63 percent of mothers did not receive any antenatal check-up for their births during the three years preceding the survey. There has been no change in this percentage since NFHS-1. Mothers received antenatal check-ups from doctors for 25 percent of births and from other health professionals (such as ANMs, nurses, midwives, or LHVs) for 5 percent of births. Mothers received antenatal check-ups exclusively at home from a health worker for 6 percent of births.

Older women and women having higher-order births are much less likely to have received antenatal check-ups (especially from doctors) for their births. As expected, antenatal check-ups from doctors are much more common in urban areas (55 percent) than in rural areas (22 percent). The percentage receiving antenatal check-ups is highest (43 percent) in the Jharkhand region, followed by 38 percent in the South Bihar Plain region and 34 percent in the North Bihar Plain region.

In Bihar, 71 percent of illiterate women did not receive any antenatal check-ups for their births in the three years preceding the survey. The proportion of births whose mothers received antenatal check-ups from a doctor increases steadily with education, from 18 percent for illiterate mothers to 65 percent for mothers who have completed at least a high school education. The prevalence of antenatal check-ups only at home from a health worker does not show a clear relationship with education. The utilization of antenatal check-up services is slightly higher among Hindu women than among Muslim women. By caste/tribe, the likelihood of having received antenatal check-ups overall and from a doctor is lowest for births to scheduled-caste mothers and highest for births to mothers who do not belong to scheduled castes, scheduled tribes, or other backward classes. The likelihood of having received antenatal check-ups from a doctor increases with the standard of living of the household, from only 16 percent for births to mothers with a low standard of living to 63 percent for births to mothers with a high standard of living.

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, Bihar, 1998–99

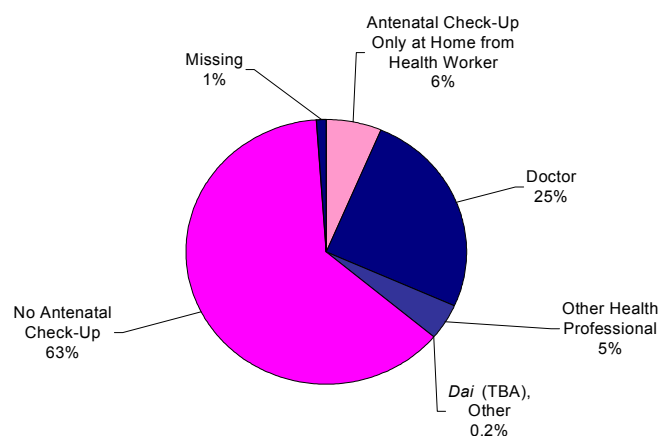
Background characteristic	Antenatal check-up only at home from health worker	Antenatal check-up outside home ¹ from:			No ante-natal check-up	Missing	Total percent	Number of births
		Doctor	Other health professional	Traditional birth attendant, other ²				
Mother's age at birth								
< 20	9.9	25.8	5.0	0.5	57.6	1.3	100.0	653
20–34	5.6	25.7	4.5	0.2	63.0	1.0	100.0	2,125
35–49	1.1	16.8	2.9	0.0	76.0	3.1	100.0	168
Birth order								
1	8.4	33.2	6.0	0.3	50.6	1.6	100.0	684
2–3	5.9	27.9	4.9	0.4	59.9	1.1	100.0	1,165
4–5	6.9	18.2	2.5	0.2	71.3	1.0	100.0	667
6+	3.5	16.0	4.1	0.0	75.2	1.2	100.0	430
Residence								
Urban	6.6	54.8	6.3	0.0	30.6	1.7	100.0	258
Rural	6.3	22.4	4.3	0.3	65.6	1.1	100.0	2,689
Region								
North Bihar Plain	9.3	21.1	3.9	0.1	65.6	0.1	100.0	1,378
South Bihar Plain	4.2	26.4	4.5	0.4	61.6	2.9	100.0	979
Jharkhand	3.0	32.7	6.0	0.4	56.9	1.1	100.0	590
Mother's education								
Illiterate	6.3	17.5	3.8	0.2	70.9	1.3	100.0	2,262
Literate, < middle school complete	7.7	36.8	6.9	0.7	47.1	0.8	100.0	280
Middle school complete	7.9	49.1	2.4	0.0	38.9	1.7	100.0	127
High school complete and above	4.6	65.2	8.4	0.0	21.0	0.8	100.0	277
Religion								
Hindu	6.6	25.8	4.6	0.3	61.5	1.2	100.0	2,378
Muslim	5.1	22.0	3.6	0.0	68.4	0.8	100.0	532
Caste/tribe								
Scheduled caste	6.7	17.1	3.8	0.0	70.7	1.7	100.0	672
Scheduled tribe	3.8	19.4	5.5	0.5	69.7	1.1	100.0	197
Other backward class	7.2	24.3	4.3	0.4	62.5	1.3	100.0	1,544
Other	4.3	40.1	5.4	0.0	49.8	0.4	100.0	533
Standard of living index								
Low	5.3	15.5	3.8	0.2	73.6	1.5	100.0	1,676
Medium	7.3	32.5	4.9	0.3	54.4	0.7	100.0	1,028
High	8.6	62.6	7.7	0.0	20.2	0.9	100.0	237
Total	6.3	25.2	4.5	0.2	62.5	1.2	100.0	2,947

Note: Table includes only the two most recent births during the three years preceding the survey. Total includes 17 and 20 births to mothers belonging to Christian and 'other' religions, respectively, and 6 births with missing information on the standard of living index, which are not shown separately.

¹Includes 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 qualification is shown.

²Includes *hakim* and 'Don't know'

Figure 8.2
Source of Antenatal Check-Ups
During Pregnancy



Note: Percents add to more than 100.0 due to rounding

NFHS-2, Bihar, 1998–99

In summary, less than 4 out of 10 women in Bihar received any antenatal check-ups for their births in the three years preceding the survey. Women who did not receive an antenatal check-up are disproportionately older women, women of higher parity, women living in rural areas, illiterate women, women from scheduled castes and tribes, and women living in households with a low standard of living. This suggests that improving the coverage of antenatal programmes in Bihar requires special efforts to reach older higher-parity women, women who are socioeconomically disadvantaged, and women living in rural areas.

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 births to mothers who did not receive any antenatal check-ups, two-thirds of mothers did not consider having a check-up to be necessary (65 percent) or customary (3 percent). For 20 percent of births, the financial cost was reported as the main reason for not receiving any antenatal check-ups and for 3 percent of births, lack of knowledge about antenatal care was the main reason. For 5 percent of births, mothers did not have any antenatal check-ups because the family did not allow them to. Cost as a reason for non-utilization of antenatal care services is reported more frequently by mothers in rural areas (21 percent) than in urban areas (15 percent). Contrary to expectation, ‘family did not allow’ and ‘lack of knowledge’ are more frequently reported reasons for non-utilization of antenatal care services in urban areas than in rural areas. These results suggest the need to inform mothers 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. Utilization of antenatal care services could also be increased by lowering the cost and making the services more accessible.

<p><u>Table 8.3 Reason for not receiving an antenatal check-up</u></p> <p>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, Bihar, 1998–99</p>			
Reason for not receiving an antenatal check-up	Urban	Rural	Total
Not necessary	63.6	64.5	64.5
Not customary	2.7	3.4	3.4
Costs too much	14.6	20.6	20.4
Too far/no transport	0.0	2.0	1.9
Poor quality service	0.0	0.2	0.2
No time to go	2.7	0.6	0.7
Family did not allow	8.1	4.9	5.1
Lack of knowledge	8.3	2.9	3.1
No health worker visited	0.0	0.2	0.2
Other	0.0	0.6	0.6
Total percent	100.0	100.0	100.0
Number of births	79	1,764	1,843
<p>Note: Table includes only the two most recent births during the three years preceding the survey.</p>			

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 month 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 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).

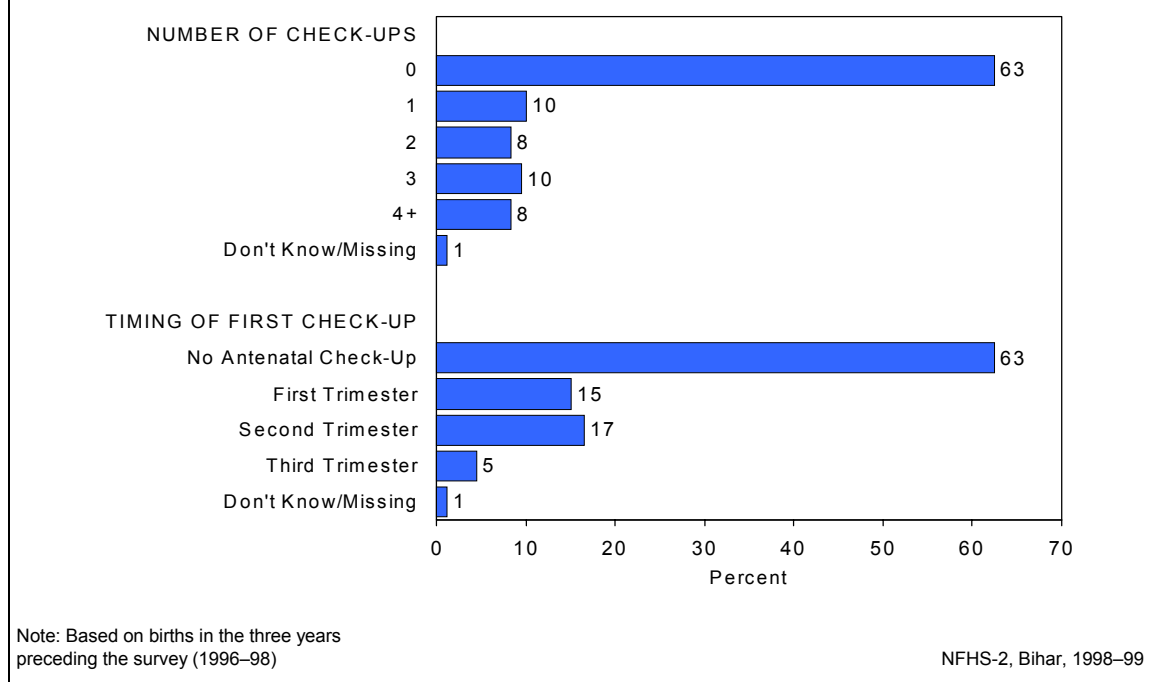
In India, the Reproductive and Child Health Programme includes the provision of at least three antenatal care check-ups for pregnant women. Guidelines of the programme require that each pregnancy be registered in the first 12–16 weeks (Ministry of Health and Family Welfare, 1997). Accordingly, the first 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 pregnancies 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 Number and timing of antenatal check-ups and stage of pregnancy			
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, Bihar, 1998–99			
Number and timing of check-ups	Urban	Rural	Total
Number of antenatal check-ups			
0	30.6	65.6	62.5
1	8.2	10.2	10.1
2	9.6	8.2	8.4
3	17.1	8.8	9.5
4+	32.5	6.0	8.3
Don't know/missing	2.1	1.1	1.2
Total percent	100.0	100.0	100.0
Median number of check-ups (for those who received at least one antenatal check-up)	2.9	1.8	2.0
Stage of pregnancy at the time of first antenatal check-up			
No antenatal check-up	30.6	65.6	62.5
First trimester	38.2	12.9	15.1
Second trimester	23.7	15.9	16.6
Third trimester	5.8	4.4	4.5
Don't know/missing	1.7	1.1	1.2
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)	3.2	4.4	4.2
Number of births	258	2,689	2,947
Note: Table includes only the two most recent births during the three years preceding the survey.			

Table 8.4 and Figure 8.3 show the percent distribution of births in the three years preceding the survey by number and timing of antenatal check-ups. In Bihar, mothers of only 18 percent of births received at least three antenatal check-ups and only 8 percent received four or more check-ups. For those who received antenatal check-ups, the median number of check-ups was 2.0. There are substantial differences in the number of antenatal check-ups by residence. At least three antenatal check-ups were received for 50 percent of births to mothers living in urban areas, compared with only 15 percent of births to mothers living in rural areas. The median number of check-ups is also higher in urban areas (2.9) than in rural areas (1.8). 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.

In Bihar, mothers of only 15 percent of the births that took place in the three years preceding the survey received their first antenatal check-up in the first trimester of pregnancy, and another 17 percent received their first check-up in the second trimester (Table 8.4 and Figure 8.3). Check-ups during the first trimester were much more common in urban areas (38 percent)

Figure 8.3
Number and Timing of Antenatal Check-Ups



than in rural areas (13 percent). The first check-up was rarely received as late as the third trimester. The median timing of the first antenatal check-up is 4.2 months for Bihar as a whole, and it is considerably later in rural areas (4.4 months) than in urban areas (3.2 months).

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. 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 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, 65 percent of mothers had an abdominal examination. Other relatively common components of antenatal check-ups were blood pressure check (47 percent), urine test (45 percent), and blood test (44 percent). Mothers of about one-third of births received an internal examination (37 percent) or had their weight measured (31 percent), and only 11 percent had their height measured during any antenatal check-up. X-rays, sonogram or ultrasound, and amniocentesis were rarely performed. All of these measurements or tests were performed more often in the case of births to mothers in urban areas than in rural areas. The differences by residence are most pronounced for weight measurement (49 percent in urban areas compared with 28 percent in rural areas) and for sonography or ultrasound (17 percent in urban areas compared with 4 percent in rural areas).

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, percentage receiving specific components of antenatal check-ups by residence, Bihar, 1998–99

Components of antenatal check-ups	Urban	Rural	Total
Antenatal measurements/tests			
Weight measured	48.6	28.0	31.3
Height measured	12.1	10.2	10.5
Blood pressure checked	64.7	43.8	47.2
Blood tested	59.0	41.3	44.2
Urine tested	56.8	42.5	44.9
Abdomen examined	76.2	62.8	65.0
Internal examination	39.6	36.6	37.1
X-ray	4.8	4.8	4.8
Sonography or ultrasound	16.8	3.6	5.7
Amniocentesis	3.0	0.5	0.9
Antenatal advice			
Diet	79.8	68.8	70.6
Danger signs of pregnancy	50.2	33.8	36.5
Delivery care	54.7	44.6	46.2
Newborn care	46.6	33.7	35.8
Family planning	24.1	16.5	17.7
Number of births for which the mother received at least one antenatal check-up	175	894	1,069

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 71 percent of cases). Mothers were less likely to receive advice on delivery care (46 percent), on danger signs of pregnancy (37 percent), and on newborn care (36 percent). Only 18 percent of mothers received advice on family planning. The proportions receiving advice on different topics are greater 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). Where expert medical help is not available, as is common in many rural areas in Bihar, death due to neonatal tetanus 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 both among 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 birth 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 Bihar is far from complete. For births in the three years preceding the survey, 36 percent of the mothers did not receive any tetanus toxoid injections during pregnancy, and another 5 percent received only one injection. The proportion of mothers who received two or more tetanus toxoid injections during their pregnancies rose from 31 percent to 58 percent between NFHS-1 and NFHS-2.

Tetanus toxoid injections are more common in urban areas than in rural areas. Coverage varies inversely by age of mother and by birth order. Tetanus toxoid coverage (two or more injections) is higher for births to women under age 35 (58–60 percent) than for the small number of births to older mothers (46 percent). At least two tetanus toxoid injections were received by mothers for 67 percent of first births, compared with 52 percent of fourth and fifth births and only 42 percent of sixth or higher-order births. By region, coverage is lower in the Jharkhand region (51 percent) than in the South Bihar Plain region (56 percent) and in the North Bihar Plain region (62 percent). Hindu and Muslim mothers have about the same level of tetanus toxoid coverage. Coverage is substantially lower for births to scheduled-tribe mothers (36 percent) than for scheduled-caste (50 percent), other backward class (59 percent), and ‘other’ caste/tribe/class (72 percent) mothers. For 52 percent of their births, scheduled-tribe mothers did not receive any tetanus toxoid vaccine and for another 10 percent they received only one injection. Tetanus toxoid coverage increases with an increase in the level of mother’s education and in the standard of living of the household. Only 51 percent of illiterate mothers received at least two tetanus toxoid injections for their births, compared with 90 percent for births to mothers with high school complete or more education. By living standard, the coverage increases from 48 percent for births in low standard of living households to 83 percent for births in high standard of living households. These results suggest that despite generally improving coverage of tetanus toxoid vaccinations, the coverage is still quite low in Bihar, particularly for socioeconomically disadvantaged women.

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, Bihar, 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 ¹	Percent- age who consumed all the supply ¹	Number of births whose mothers received IFA
	None	One	Two or more	Don't know/ missing	Total percent					
Mother's age at birth										
< 20	32.7	5.2	60.3	1.8	100.0	26.9	653	83.3	87.2	176
20–34	36.0	4.7	57.9	1.4	100.0	24.0	2,125	81.3	83.4	510
35–49	41.8	7.5	46.3	4.3	100.0	14.7	168	(88.5)	(92.3)	25
Birth order										
1	27.8	3.8	66.5	1.9	100.0	31.3	684	84.8	89.0	214
2–3	31.9	5.2	61.7	1.3	100.0	27.5	1,165	82.9	83.9	320
4–5	40.8	5.0	52.3	1.9	100.0	17.0	667	75.2	83.4	114
6+	49.7	6.5	42.1	1.7	100.0	14.4	430	80.4	75.5	62
Residence										
Urban	17.8	2.1	78.0	2.1	100.0	46.1	258	88.3	89.1	119
Rural	37.3	5.3	55.9	1.6	100.0	22.0	2,689	80.8	83.7	591
Region										
North Bihar Plain	33.5	4.1	62.1	0.3	100.0	21.9	1,378	84.5	85.7	301
South Bihar Plain	35.0	5.2	56.1	3.7	100.0	22.0	979	75.4	85.0	216
Jharkhand	41.2	7.0	50.6	1.2	100.0	32.7	590	85.7	82.5	193
Mother's education										
Illiterate	41.9	5.8	50.6	1.7	100.0	16.5	2,262	76.8	80.2	374
Literate, < middle school complete	21.2	3.6	73.6	1.5	100.0	35.8	280	86.6	90.7	100
Middle school complete	15.3	0.9	82.2	1.7	100.0	48.3	127	90.5	86.6	62
High school complete and above	7.5	2.3	89.5	0.8	100.0	62.7	277	87.6	90.0	174
Religion										
Hindu	35.4	5.0	57.9	1.7	100.0	25.0	2,378	81.9	85.2	595
Muslim	36.2	5.1	57.5	1.2	100.0	19.1	532	80.2	80.2	101
Caste/tribe										
Scheduled caste	41.7	5.4	50.3	2.6	100.0	18.0	672	76.4	78.1	121
Scheduled tribe	52.3	10.2	36.4	1.1	100.0	21.3	197	(69.3)	(81.9)	42
Other backward class	35.0	4.4	59.1	1.5	100.0	22.8	1,544	81.6	85.6	352
Other	23.1	4.5	71.6	0.8	100.0	36.5	533	89.0	87.5	195
Standard of living index										
Low	44.5	6.0	47.6	1.9	100.0	15.5	1,676	76.0	78.4	259
Medium	26.3	3.7	68.8	1.2	100.0	29.4	1,028	83.7	87.1	302
High	13.0	3.5	82.6	0.9	100.0	62.4	237	89.1	90.3	148
Total	35.6	5.0	57.8	1.6	100.0	24.1	2,947	82.0	84.6	710

Note: Table includes only the two most recent births during the three years preceding the survey. Total includes a small number of births to mothers belonging to Christian and 'other' religions, and births with missing information on the standard of living index, which are not shown separately.

() Based on 25–49 unweighted cases

¹ Among births whose mothers received iron and folic acid tablets or syrup

Iron and Folic Acid Supplementation

Nutritional deficiencies in women, such as iron deficiency, 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. Table 8.6 shows that only about one in four mothers in Bihar received IFA supplements for their births in the three years preceding the survey. As in the case of tetanus toxoid coverage, IFA coverage is well below average for mothers age 35 years and above and for fourth and higher order births. Urban women are more than twice as likely to receive IFA tablets or syrup as rural women. IFA coverage is considerably higher in the Jharkhand region (33 percent) than in the North and South Bihar Plain regions (both 22 percent). Hindu mothers are more likely than Muslim mothers to have received IFA supplements for their births. Mothers not belonging to a scheduled caste, scheduled tribe, or other backward class are more likely to have received IFA tablets or syrup than those belonging to any of these caste, tribe, or class categories. IFA coverage has a strong positive correlation with mother's education and household living standard. Only 17 percent of illiterate mothers received IFA tablets or syrup compared with 63 percent of mothers with high school or more education. By living standard, IFA coverage ranges from just 16 percent for births to mothers in low standard of living households to 62 percent in high standard of living households. For the state as a whole, IFA coverage increased slightly from 21 percent in NFHS-1 to 24 percent in NFHS-2.

Not all mothers who received IFA received the recommended three-month supply of 100 tablets (or the equivalent in terms of syrup). Among mothers who received IFA during pregnancy, 82 percent received at least a three-month supply and 85 percent consumed all the supplements that were given to them. Differentials by background characteristics in the proportion that received at least a three-month supply are minimal. Consumption of the supply received is negatively related to birth order and positively related to mother's education level and the standard of living. Consumption of the supply received is relatively low for Muslim and scheduled-caste mothers.

In summary, few pregnant women in Bihar receive IFA, and still fewer receive the recommended three-month supply and consume all the supply they receive. This suggests that the

Reproductive and Child Health Programme needs to do a better job of distributing IFA tablets and syrup and of informing pregnant women about the advantages of IFA, trying to understand why women resist consuming IFA, and overcoming this resistance.

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 8.7 and Figure 8.4 show that a large majority of births in Bihar take place at home. Only about 15 percent of births in the past three years took place in health facilities, 70 percent took place in women's own homes, and 13 percent took place in parents' homes. Eleven percent of births took place in private or NGO/trust health facilities and 4 percent took place in public health facilities (such as government-operated hospitals and Primary Health Centres). Institutional deliveries are much more prevalent in urban areas (40 percent) than in rural areas (12 percent). The 1997 SRS also estimated that 15 percent of births in Bihar take place in institutions. The NFHS-2 estimate of institutional deliveries for rural areas is also similar to the 1997 SRS estimate for rural areas (12 percent in NFHS-2 compared with 14 percent in the SRS), but the NFHS-2 estimate for urban areas is higher than the SRS estimate for urban areas (40 percent in NFHS-2 compared with 32 percent in the SRS) (Office of the Registrar General, 1999a). Institutional deliveries in Bihar have risen only slightly from 12 percent at the time of NFHS-1 to 15 percent at the time of NFHS-2.

The proportion of births occurring in health facilities is lower for mothers age 35 years and older (6 percent) than for mothers age less than 35 years (15 percent). The proportion of births that were delivered in a health facility decreases as birth order rises, from birth order one (25 percent) to birth order four or more (6–8 percent). Hindu mothers are much more likely to give birth in a health facility (16 percent) than are Muslim mothers (9 percent). Only 5 percent of births to scheduled-tribe mothers are institutional deliveries, compared with 29 percent of births to mothers who do not belong to scheduled castes, scheduled tribes, or other backward classes. Institutional deliveries, particularly in private facilities, increase sharply with mother's education and with household standard of living. Institutional deliveries are more prevalent in the South Bihar Plain region (22 percent) than in the Jharkhand region (14 percent) and in the North Bihar Plain region (10 percent).

Table 8.7 Place of delivery

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

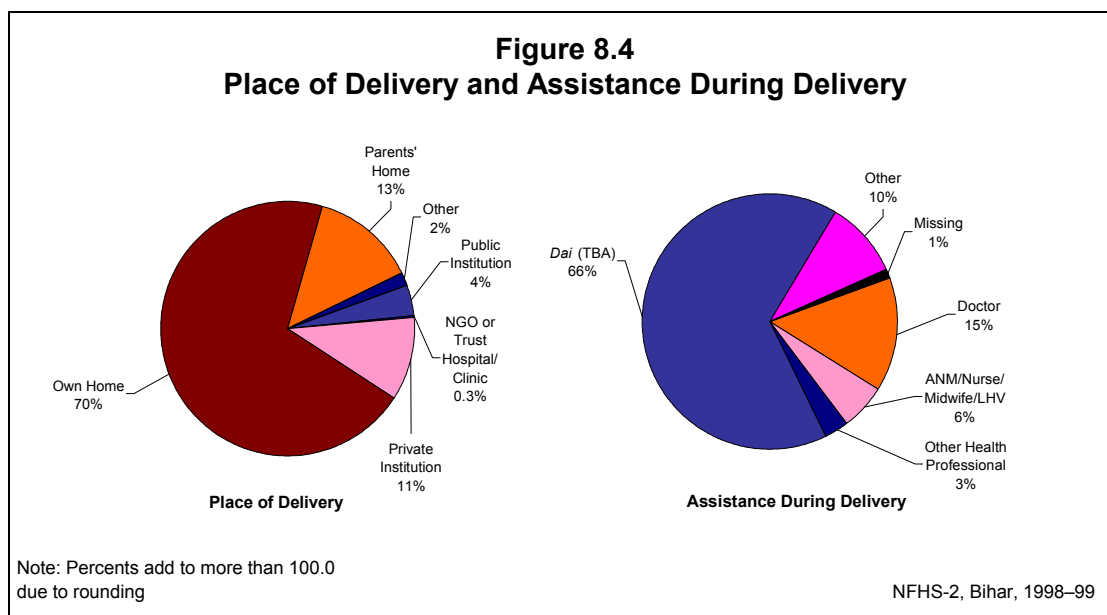
Background characteristic	Place of delivery						Total percent	Number of births
	Health facility/institution			Home				
	Public	NGO/trust	Private	Own home	Parents' home	Other ¹		
Mother's age at birth								
< 20	4.0	0.0	11.2	61.5	21.1	2.2	100.0	653
20–34	3.9	0.3	10.9	71.9	11.5	1.5	100.0	2,125
35–49	2.4	0.6	2.9	86.8	3.7	3.7	100.0	168
Birth order								
1	6.1	0.3	18.6	52.8	19.9	2.3	100.0	684
2–3	3.9	0.3	11.0	68.2	14.8	1.8	100.0	1,165
4–5	3.0	0.2	5.1	81.7	8.6	1.4	100.0	667
6+	1.2	0.4	4.7	87.0	5.2	1.4	100.0	430
Residence								
Urban	11.9	0.9	27.3	47.3	10.2	2.5	100.0	258
Rural	3.0	0.2	8.9	72.7	13.5	1.7	100.0	2,689
Region								
North Bihar Plain	3.1	0.1	6.7	74.9	14.3	0.8	100.0	1,378
South Bihar Plain	4.4	0.3	16.8	59.7	15.4	3.4	100.0	979
Jharkhand	4.5	0.6	8.9	77.8	6.8	1.4	100.0	590
Mother's education								
Illiterate	2.3	0.2	5.2	77.5	13.0	1.7	100.0	2,262
Literate, < middle school complete	6.1	0.0	21.3	55.2	16.3	1.2	100.0	280
Middle school complete	9.4	0.9	20.9	54.6	11.1	3.2	100.0	127
High school complete and above	11.0	0.7	38.0	35.8	12.3	2.2	100.0	277
Religion								
Hindu	4.4	0.3	11.3	69.3	12.9	1.9	100.0	2,378
Muslim	1.5	0.0	7.1	75.0	15.2	1.2	100.0	532
Caste/tribe								
Scheduled caste	2.5	0.1	5.5	75.2	14.6	2.2	100.0	672
Scheduled tribe	0.5	1.1	3.7	87.8	4.7	2.2	100.0	197
Other backward class	3.7	0.1	9.9	70.6	13.9	1.9	100.0	1,544
Other	7.1	0.6	21.3	57.7	12.5	0.8	100.0	533
Standard of living index								
Low	2.0	0.1	4.1	78.5	13.2	2.0	100.0	1,676
Medium	5.4	0.2	13.8	66.0	13.4	1.2	100.0	1,028
High	9.8	1.7	41.7	33.1	11.6	2.1	100.0	237
Number of antenatal check-ups								
0	1.6	0.1	3.6	80.8	13.5	0.4	100.0	1,843
1	5.2	0.0	9.1	73.0	11.8	1.0	100.0	297
2	6.2	0.0	20.1	58.8	14.1	0.8	100.0	246
3	8.3	1.1	18.7	53.3	17.3	1.4	100.0	279
4+	11.9	1.7	46.7	30.8	9.0	0.0	100.0	245
Don't know/missing	(0.0)	(0.0)	(0.0)	(3.0)	(0.0)	(97.0)	100.0	36
Total	3.8	0.3	10.5	70.4	13.2	1.8	100.0	2,947

Note: Table includes only the two most recent births during the three years preceding the survey. Total includes 17 and 20 births to mothers belonging to Christian and 'other' religions, respectively, and 6 births with missing information on the standard of living index, which are not shown separately.

NGO: Nongovernmental organization

() Based on 25–49 unweighted cases

¹Includes missing



Institutional deliveries are much more common for births to mothers who had four or more antenatal check-ups (60 percent) than for those who had only two or fewer antenatal check-ups (26 percent or less). Institutional deliveries are least prevalent (5 percent) for births to mothers who did not receive any antenatal check-ups. Several different 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 advised them to do so. Conversely, women who register themselves 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 also to deliver in a health facility. Yet 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 at 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 8.8 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.

Table 8.8 Assistance during delivery

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

Background characteristic	Attendant assisting during delivery ¹						Total percent	Number of births
	Doctor	ANM/nurse/ midwife/LHV	Other health professional	Dai (TBA)	Other	Missing		
Mother's age at birth								
< 20	16.1	6.1	4.1	64.0	8.4	1.3	100.0	653
20–34	14.7	5.8	2.7	65.9	9.9	1.0	100.0	2,125
35–49	6.5	3.0	3.5	72.0	11.3	3.7	100.0	168
Birth order								
1	25.4	7.4	4.1	54.0	7.5	1.6	100.0	684
2–3	14.7	6.0	2.7	66.5	9.0	1.1	100.0	1,165
4–5	8.6	3.8	3.1	71.9	11.5	1.1	100.0	667
6+	6.2	5.2	2.5	73.5	11.6	1.0	100.0	430
Residence								
Urban	32.9	14.3	4.7	43.2	3.2	1.7	100.0	258
Rural	12.8	4.9	2.9	68.0	10.2	1.1	100.0	2,689
Region								
North Bihar Plain	10.6	4.7	5.4	70.7	8.5	0.1	100.0	1,378
South Bihar Plain	21.8	7.4	1.4	59.9	6.6	2.8	100.0	979
Jharkhand	11.7	5.3	0.5	64.2	17.1	1.1	100.0	590
Mother's education								
Illiterate	8.4	3.7	3.3	72.3	10.9	1.3	100.0	2,262
Literate, < middle school complete	23.2	9.9	3.8	53.9	8.4	0.8	100.0	280
Middle school complete	27.8	18.3	2.4	49.0	0.8	1.7	100.0	127
High school complete and above	49.4	12.2	1.0	32.5	4.0	0.8	100.0	277
Religion								
Hindu	16.0	5.9	3.0	64.7	9.1	1.3	100.0	2,378
Muslim	8.0	4.8	3.7	71.8	11.1	0.6	100.0	532
Caste/tribe								
Scheduled caste	9.0	3.8	4.9	67.7	12.9	1.7	100.0	672
Scheduled tribe	4.3	2.2	0.0	68.9	23.6	1.1	100.0	197
Other backward class	14.6	5.7	2.7	68.7	7.0	1.2	100.0	1,544
Other	25.3	9.6	3.0	53.9	7.8	0.4	100.0	533
Contd.								

Less than one in four births in the last three years were attended by a health professional, including 15 percent by a doctor, 6 percent by an ANM, nurse, midwife, or LHV, and 3 percent by other health professionals. About two-thirds of births (66 percent) were attended by a traditional birth attendant (TBA), and 10 percent were attended by friends, relatives, and other persons. The NFHS-2 estimates for assistance during delivery by a health professional and by a traditional birth attendant are similar to the corresponding SRS estimates for Bihar. According to the 1997 SRS, 19 percent of deliveries were attended by a health professional and 64 percent by a TBA. The proportion of deliveries attended by friends, relatives, or others is much higher in NFHS-2 (10 percent) than in the SRS (2 percent). The proportion of deliveries attended by a health professional increased slightly from 19 percent in NFHS-1 to 23 percent in NFHS-2.

Table 8.8 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, Bihar, 1998–99

Background characteristic	Attendant assisting during delivery ¹						Total percent	Number of births
	Doctor	ANM/nurse/ midwife/LHV	Other health professional	<i>Dai</i> (TBA)	Other	Missing		
Standard of living index								
Low	6.6	3.1	3.6	73.3	11.9	1.4	100.0	1,676
Medium	19.7	7.0	2.5	62.4	7.7	0.7	100.0	1,028
High	48.4	19.3	1.7	27.9	1.8	0.9	100.0	237
Number of antenatal check-ups								
0	6.1	3.0	3.5	75.9	11.5	0.1	100.0	1,843
1	13.4	6.6	3.6	67.5	8.9	0.0	100.0	297
2	25.7	8.2	1.6	58.6	5.9	0.0	100.0	246
3	27.2	12.5	4.6	48.3	7.4	0.0	100.0	279
4+	56.4	15.5	0.0	24.8	3.4	0.0	100.0	245
Don't know/missing	(0.0)	(0.0)	(0.0)	(3.0)	(3.0)	(94.0)	100.0	36
Place of delivery								
Public health facility	68.7	28.5	2.0	0.9	0.0	0.0	100.0	112
Private health facility	81.4	17.3	0.6	0.7	0.0	0.0	100.0	310
Own home	3.0	2.7	3.2	80.1	11.0	0.0	100.0	2,076
Parents' home	6.7	5.2	5.4	69.8	12.8	0.0	100.0	388
Other ²	5.4	11.2	0.0	6.0	9.9	67.4	100.0	52
Total	14.5	5.7	3.1	65.8	9.6	1.2	100.0	2,947

Note: Table includes only the two most recent births during the three years preceding the survey. Total includes 17 and 20 births to women belonging to Christian and 'other' religions, respectively, 8 births delivered in nongovernmental organization (NGO) or trust hospital/clinic, and 6 births with missing information on the standard of living index, which are not shown separately.

ANM: Auxiliary nurse midwife; LHV: Lady health visitor; TBA: Traditional birth attendant

() Based on 25–49 unweighted cases

¹ If the respondent mentioned more than one attendant, only the most qualified attendant is shown.

² Includes missing

Eighty-one percent of deliveries in private institutions were attended by a doctor, compared with 69 percent of deliveries in public institutions. Eighty percent of deliveries at respondents' own homes and 70 percent at parents' homes were attended by a traditional birth attendant (TBA). Only 9 percent of deliveries at respondents' own homes and 17 percent at parents' homes were attended by a health professional. The percentage of births attended by a doctor decreases steadily by age of the mother and by birth order. Deliveries are much more likely to be attended by a doctor in urban areas (33 percent) than in rural areas (13 percent). The proportion of births attended by doctors is almost twice as high for births to mothers living in the South Bihar Plain region (22 percent) as in the Jharkhand or the North Bihar Plain regions (11–12 percent).

Mother's education and household living standard have large positive effects on the likelihood that a birth is attended by a doctor. Forty-nine percent of births to mothers with at least a high school education were attended by a doctor compared with only 8 percent of births to illiterate mothers. The difference is equally large for births to mothers who live in high standard of living households (48 percent), compared with births to mothers in low standard of living households (7 percent). Among religious groups, Hindu women are twice as likely (16 percent) as Muslim women (8 percent) to have a delivery attended by a doctor. Births to women who do

Table 8.9 Characteristics of births			
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, Bihar, 1998–99			
Characteristic of births	Urban	Rural	Total
Percentage delivered by caesarian section	9.3	2.4	3.0
Birth weight			
< 2.5 kg	8.0	0.9	1.5
2.5 kg or more	20.3	3.9	5.3
Don't know/missing	6.2	3.3	3.5
Not weighed	65.6	91.9	89.6
Total percent	100.0	100.0	100.0
Size at birth			
Large	9.1	12.8	12.5
Average	69.6	66.8	67.1
Small	14.1	15.9	15.8
Very small	5.5	3.3	3.5
Don't know/missing	1.7	1.2	1.2
Total percent	100.0	100.0	100.0
Number of births	258	2,689	2,947
Note: Table includes only the two most recent births during the three years preceding the survey.			

not belong to a scheduled caste, scheduled tribe, or other backward class are more likely to be attended by a doctor than are other births. Only 4 percent of births to scheduled-tribe women were attended by a doctor, compared with 25 percent of births to women not belonging to scheduled castes, scheduled tribes, or other backward classes. There is a strong positive association between number of antenatal check-ups and delivery assistance by a doctor. Only 6 percent of births to women who did not have any antenatal check-ups were attended by a doctor, compared with 56 percent of births to women who had four or more antenatal check-ups.

Delivery Characteristics

Table 8.9 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 birth weight and the mother's estimate of the baby's size at birth. Based on mothers' reports, 3 percent of children born in Bihar in the past three years were delivered by caesarian section. The proportion of caesarian section deliveries was much higher in urban areas (9 percent) than in rural areas (2 percent).

Low birth weight babies face 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 asked mothers about the size of each baby at birth (large, average, small, or very small).

In Bihar, 9 out of 10 babies born in the three years preceding the survey were not weighed at birth. The proportion not weighed is 66 percent in urban areas and 92 percent in rural areas.

Even for babies that were weighed, some mothers did not remember the weight. Therefore, the resulting sample of births whose 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 are reported, 22 percent weighed less than 2.5 kilograms. The proportion weighing less than 2.5 kilograms is higher in urban areas (28 percent) than in rural areas (19 percent).

According to mothers' estimates, 67 percent of births in the three years preceding the survey were of average size, 13 percent were large, 16 percent were small, and 4 percent were very small. The proportion of babies reported as small or very small was about the same in urban and rural 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 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 8.10 gives the percentage of noninstitutional deliveries 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), the percentage with a check-up within one week of delivery, and the percentage whose mothers received specific recommended components of care during the check-up.

Only 1 out of 10 noninstitutional births was followed by a check-up within two months of the delivery. Among births that were followed by a postpartum check-up, few check-ups took place shortly after birth—only 14 percent within two days and 31 percent within one week. Mothers in the Jharkhand region (14 percent) are somewhat more likely to have received a postpartum check-up than mothers in the South Bihar Plain (11 percent) and North Bihar Plain (8 percent) regions. The likelihood of a postpartum check-up generally increases with mother's education and standard of living of the household. Births to mothers who received three or more antenatal check-ups were much more likely to be followed by a postpartum check-up (22 percent) than were births to mothers who received one or no antenatal check-up (less than 10 percent). Births delivered with the assistance of a health professional were more likely to be followed by a postpartum check-up (18 percent) than were births delivered with the assistance of a TBA (9 percent) or 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. There are no major differences in the percentage of women with postpartum check-ups by mother's age, birth order, residence, religion, or caste/tribe/class.

Table 8.10 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, Bihar, 1998–99

Background characteristic	Percent- age with a postpartum check-up within two months of birth	Number of births	Among those with postpartum check-up						Number of births followed by a post- partum check-up
			Percent- age seen within two days of birth	Percent- age seen within one week of birth	Components of postpartum check-up (%)				
					Abdominal examination	Family planning advice	Breast- feeding advice	Baby care advice	
Mother's age at birth									
< 20	10.0	545	11.5	28.2	23.6	10.9	40.6	58.6	55
20–34	10.2	1,783	14.0	32.0	19.3	11.6	30.0	39.4	182
35–49	7.9	152	*	*	*	*	*	*	12
Birth order									
1	9.8	502	(14.5)	(28.8)	(30.5)	(12.0)	(47.0)	(60.7)	49
2–3	10.4	976	11.2	30.8	21.8	14.0	31.9	47.5	101
4–5	9.9	604	11.7	27.0	13.5	6.7	25.5	33.2	60
6+	9.7	397	(24.1)	(42.2)	(10.1)	(10.6)	(21.0)	(23.5)	39
Residence									
Urban	10.0	150	*	*	*	*	*	*	15
Rural	10.1	2,330	13.4	30.4	19.6	10.7	30.9	43.8	234
Region									
North Bihar Plain	7.9	1,239	9.7	29.1	23.3	11.7	29.2	51.6	98
South Bihar Plain	10.9	739	6.5	18.1	15.4	6.4	28.5	26.8	81
Jharkhand	14.0	501	28.6	49.5	19.6	16.3	38.7	49.3	70
Mother's education									
Illiterate	9.1	2,056	14.2	31.4	18.7	10.2	30.2	41.0	187
Literate, < middle school complete	14.6	201	(10.7)	(31.1)	(24.1)	(10.6)	(27.9)	(48.4)	29
Middle school complete	15.5	86	*	*	*	*	*	*	13
High school complete and above	14.4	137	*	*	*	*	*	*	20
Religion									
Hindu	10.4	1,968	14.0	30.0	20.0	11.7	31.0	41.0	205
Muslim	8.4	482	(12.6)	(35.1)	(17.4)	(7.6)	(34.9)	(51.0)	41
Caste/tribe									
Scheduled caste	9.2	606	20.2	38.4	11.2	12.6	31.4	41.6	56
Scheduled tribe	8.7	184	*	*	*	*	*	*	16
Other backward class	10.1	1,313	8.5	26.5	19.2	12.8	27.1	40.4	133
Other	12.0	376	(17.8)	(30.9)	(24.5)	(2.2)	(40.3)	(46.2)	45
Contd...									

Contd...

Table 8.10 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, Bihar, 1998–99

Background characteristic	Percent- age with a postpartum check-up within two months of birth	Number of births	Among those with postpartum check-up						Number of births followed by a post- partum check-up
			Percent- age seen within two days of birth	Percent- age seen within one week of birth	Components of postpartum check-up (%)				
					Abdominal examination	Family planning advice	Breast- feeding advice	Baby care advice	
Standard of living index									
Low	8.5	1,545	12.5	35.7	16.2	10.2	25.9	39.0	131
Medium	12.6	821	14.1	26.4	23.2	11.5	38.7	48.2	103
High	13.7	109	*	*	*	*	*	*	15
Number of antenatal check-ups									
0	7.7	1,744	15.1	28.1	14.6	9.8	25.3	41.1	135
1	9.9	254	(12.1)	(36.4)	(11.8)	(0.0)	(23.8)	(39.3)	25
2	12.6	182	*	*	*	*	*	*	23
3+	21.9	298	16.1	36.5	26.4	13.6	37.9	44.0	65
Assistance during delivery									
Doctor/nurse/midwife/ LHV ¹	18.0 8.6	261 1,937	(18.9) 10.5	(33.6) 29.9	(19.7) 22.7	(12.6) 13.4	(28.4) 36.2	(37.8) 42.7	47 167
Dai (TBA) Other	12.6 10.0	282 2,480	(23.9) 14.0	(34.8) 31.3	(5.6) 19.7	(0.0) 11.3	(14.5) 31.7	(50.8) 43.0	35 249
Total									
Note: Table includes only the two most recent births during the 2–35 months preceding the survey. Total includes a small number of births to mothers belonging to Christian and ‘other’ religions, and births with missing information on the standard of living index and number of antenatal check-ups, which are not shown separately. LHV: Lady health visitor; TBA: Traditional birth attendant () Based on 25–49 unweighted cases *Percentage not shown; based on fewer than 25 unweighted cases ¹ Includes other health professionals									

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 20 percent of births, mothers who received a postpartum check-up said that their abdomen was examined during the check-up, and 11 percent said that they received family planning advice. Advice on breastfeeding and baby care was much more common (given in 32–43 percent of cases). For women having postpartum check-ups after noninstitutional births, mothers under age 20 years were more likely than older mothers to receive each of the components, except family planning advice. The likelihood of receiving various components of a postpartum check-up generally declined for higher order births. Except for baby care advice, mothers of births assisted by a TBA were more likely to receive each check-up component than were mothers of births assisted by a health professional or any other person. Mothers belonging to low standard of living households were less likely to receive each component of a postpartum check-up than were mothers belonging to medium standard of living households. Due to the small number of births

in some categories, it is not possible to draw conclusions about the effects of other background characteristics.

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 8.11 shows that for 15 percent of births, mothers reported massive vaginal bleeding, and for 17 percent of births, mothers reported a very high fever in the two-month postpartum period. Both complications were more common among rural than urban mothers. Massive vaginal bleeding was slightly more common among younger mothers, but very high fever was more common among older mothers. Mothers of births delivered in public health facilities and at parents' homes were more likely to have had massive vaginal bleeding as well as very high fever than were mothers of births delivered elsewhere. Mothers of births assisted by a doctor were less likely to have had very high fever than were mothers of births assisted by some other health professional or a traditional birth attendant.

8.4 Reproductive Health Problems

Absence of reproductive tract infections (RTIs) is essential for the reproductive health of both women and men and is also 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 highlighted 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 interventions: RTI/STI clinics at district hospitals (where not

Table 8.11 Symptoms of postpartum complications

Among births during the three years preceding the survey, percentage for which the mother had massive vaginal bleeding or very high fever within two months after the delivery by selected background characteristics, Bihar, 1998–99

Background characteristic	Massive vaginal bleeding	Very high fever	Number of births
Residence			
Urban	11.8	11.6	247
Rural	14.7	17.1	2,554
Region			
North Bihar Plain	14.7	17.7	1,311
South Bihar Plain	13.5	15.3	929
Jharkhand	15.4	15.9	561
Mother's age at birth			
< 20	15.5	15.8	625
20–34	14.2	16.6	2,015
35–49	13.6	19.5	162
Birth order			
1	16.0	14.2	650
2–3	13.1	16.4	1,096
4–5	15.9	18.5	638
6+	13.5	17.8	417
Place of delivery			
Public health facility	21.8	20.0	108
Private health facility	13.5	10.4	295
Own home	13.9	16.8	1,972
Parents' home	17.8	21.6	367
Other ¹	3.9	2.1	52
Assistance during delivery			
Doctor	15.4	13.3	410
ANM/nurse/midwife/LHV	16.8	16.4	159
Other health professional	18.1	21.4	87
Dai (TBA)	15.1	17.4	1,842
Other ¹	7.4	14.6	304
Total	14.5	16.6	2,801

Note: Table includes only the two most recent births during the 2–35 months preceding the survey. Total includes 7 births delivered in nongovernmental organization (NGO) or trust hospitals/clinics, which are not shown separately.

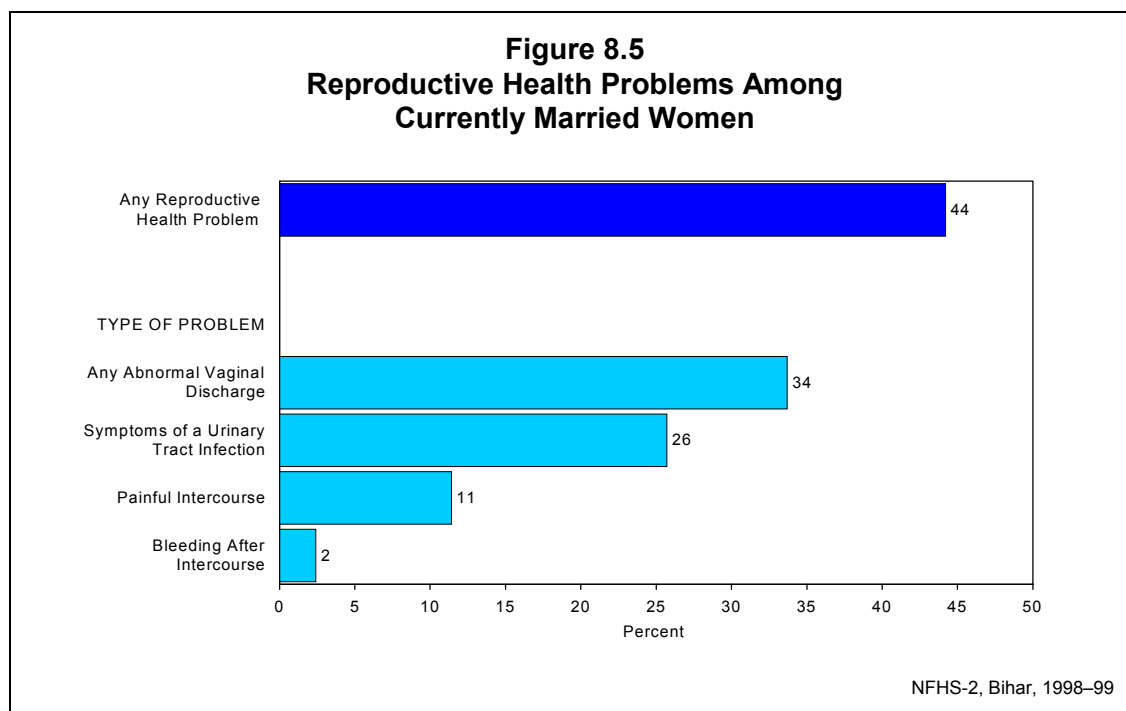
ANM: Auxillary nurse midwife; LHV: Lady health visitor; TBA: Traditional birth attendant

() Based on 25–49 unweighted cases

¹Includes missing

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, urinary tract infections, and intercourse-related pain and bleeding. Specifically, the prevalence of reproductive health problems among ever-married women is estimated from women's self-reported experience in the three months preceding the survey 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) painful intercourse and 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 8.12 shows the prevalence of different reproductive health problems among women in Bihar during the three months preceding the survey by background characteristics. Thirty-four percent of ever-married women reported at least one type of problem related to vaginal discharge, and 26 percent reported symptoms of a urinary tract infection. Overall, 42 percent of women reported either problems with vaginal discharge or symptoms of a urinary tract infection. Among problems related to vaginal discharge, severe lower abdominal pain was mentioned most frequently (23 percent), followed by itching or irritation (19 percent). The prevalence of problems related to vaginal discharge and symptoms of urinary tract infections is about the same among currently married and ever-married women.

Table 8.12 and Figure 8.5 show that 44 percent of currently married women report that they have one or more reproductive health problems. Eleven percent report painful intercourse and 2 percent report bleeding after intercourse. Reproductive health problems are somewhat more common among currently married women in the age range 25–39 than among women age 15–24 or 40–49. The prevalence of reproductive health problems is higher in rural areas (45 percent) than in urban areas (37 percent). The prevalence does not vary much by geographic region. Among education groups, the prevalence of reproductive health problems is highest for illiterate women (45 percent) and lowest for women who have completed high school or higher education (36 percent). Muslim women (50 percent) are more likely to have reproductive health problems than Hindu women (43 percent) or Christian women (30 percent). There is not much variation in the prevalence of reproductive health problems by caste, tribe, or class.

Table 8.12 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 background characteristics, Bihar, 1998–99

Background characteristic	Ever-married women								Number of ever-married women	Currently married women			Number of currently married women
	Any abnormal vaginal discharge	Vaginal discharge accompanied by:					Symptoms of a urinary tract infection ²	Any abnormal vaginal discharge or symptoms of a urinary tract infection ²		Painful intercourse (often)	Bleeding after intercourse (ever) ¹	Any reproductive health problem	
		Itching or irritation	Bad odour	Severe lower abdominal pain ¹	Fever	Other problem							
Age													
15–19	24.4	13.0	10.2	15.4	6.5	6.4	19.7	32.0	825	13.9	2.8	36.9	802
20–24	33.0	19.5	16.8	22.4	10.2	7.7	25.4	41.0	1,419	14.7	3.5	43.8	1,379
25–29	37.1	21.8	18.2	24.7	10.0	11.9	27.1	45.6	1,419	11.7	1.9	47.5	1,373
30–34	39.1	22.8	18.4	28.3	12.6	12.3	28.3	47.5	1,088	12.3	2.0	48.9	1,027
35–39	38.2	20.8	17.9	25.6	12.2	14.2	28.0	46.6	921	11.7	2.8	48.5	859
40–44	30.8	19.0	14.1	20.8	9.4	8.4	27.5	40.4	759	7.1	1.9	41.9	698
45–49	24.5	12.5	9.1	17.0	6.7	9.0	19.7	34.5	593	1.9	1.2	35.0	522
Residence													
Urban	27.7	15.7	11.1	18.9	9.2	10.4	16.9	34.2	718	11.6	1.7	37.1	677
Rural	34.2	19.6	16.3	23.2	10.1	10.1	26.6	42.9	6,306	11.4	2.5	45.1	5,984
Region													
North Bihar Plain	32.2	18.5	15.5	22.5	10.3	10.9	26.4	40.8	3,133	10.4	1.8	42.5	2,974
South Bihar Plain	37.5	21.2	18.4	25.1	9.8	10.1	23.8	44.1	2,199	11.9	3.1	46.4	2,074
Jharkhand	30.6	18.0	12.8	20.0	9.5	8.8	26.4	41.6	1,692	12.8	2.6	44.7	1,613
Education													
Illiterate	33.8	19.3	16.2	23.0	10.7	9.9	26.7	43.0	5,383	11.5	2.4	45.2	5,083
Literate, < middle school complete	35.0	21.8	16.0	23.4	9.0	12.0	25.8	42.6	779	10.9	2.0	44.9	748
Middle school complete	33.4	20.5	13.1	23.4	9.1	13.2	20.3	39.1	267	12.4	2.8	41.1	256
High school complete and above	28.9	14.6	12.4	19.5	5.4	8.8	17.2	33.7	595	11.1	2.6	36.3	573
Religion													
Hindu	32.9	18.9	15.6	22.4	9.6	9.7	24.6	41.1	5,872	11.3	2.3	43.4	5,574
Muslim	36.9	21.3	17.5	25.1	12.4	12.0	31.2	47.3	1,038	12.4	3.0	49.5	982
Christian	25.1	10.7	5.5	14.4	1.8	10.5	8.8	26.9	59	3.8	0.0	29.8	57
Other	38.7	29.2	13.8	19.5	11.5	18.9	39.2	52.5	55	(13.6)	(2.3)	(55.4)	48
Contd...													

Contd...

Table 8.12 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 background characteristics, Bihar, 1998–99

Background characteristic	Ever-married women								Number of ever-married women	Currently married women			Number of currently married women
	Any abnormal vaginal discharge	Vaginal discharge accompanied by:					Symptoms of a urinary tract infection ²	Any abnormal vaginal discharge or symptoms of a urinary tract infection ²		Painful intercourse (often)	Bleeding after intercourse (ever) ¹	Any reproductive health problem	
		Itching or irritation	Bad odour	Severe lower abdominal pain ¹	Fever	Other problem							
Caste/tribe													
Scheduled caste	33.9	19.6	15.5	23.6	9.6	11.6	25.3	43.1	1,452	12.0	2.2	45.2	1,383
Scheduled tribe	32.6	20.4	15.3	21.7	10.2	8.3	30.8	44.2	582	13.6	3.7	45.5	546
Other backward class	33.2	18.8	16.1	22.1	9.3	9.7	24.4	41.0	3,642	11.0	2.2	43.4	3,454
Other	34.4	19.6	15.3	24.0	11.9	10.7	26.8	42.7	1,348	10.9	2.7	44.9	1,277
Standard of living index													
Low	34.5	19.3	16.9	23.4	10.3	9.9	26.9	43.8	3,709	11.9	2.7	45.9	3,480
Medium	33.7	20.2	15.3	23.1	10.7	10.4	25.6	41.7	2,595	11.7	2.2	44.1	2,491
High	27.5	15.1	11.5	18.2	5.4	10.5	19.0	34.0	712	8.2	1.8	36.3	682
Work status													
Working in family farm/business	32.5	19.4	12.5	22.5	10.5	11.4	25.5	41.8	639	12.4	1.4	42.7	590
Employed by someone else	39.2	23.6	21.8	28.6	13.3	14.1	30.3	47.8	814	14.7	3.3	50.1	753
Self-employed	36.2	21.9	17.1	26.6	14.6	13.0	25.3	44.9	404	12.1	1.2	45.6	345
Not worked in past 12 months	32.5	18.3	15.1	21.6	9.0	9.1	24.9	40.9	5,168	10.7	2.5	43.5	4,973
Number of children													
Ever born													
0	31.1	17.5	14.9	21.6	9.8	7.9	24.9	39.3	897	19.4	4.9	45.0	846
1	30.6	17.1	16.7	19.0	8.6	8.2	23.1	37.7	921	11.9	1.7	39.5	874
2–3	34.5	19.9	16.2	24.2	9.7	9.9	26.0	42.2	2,194	10.7	2.5	44.3	2,082
4–5	35.8	20.5	16.5	23.9	11.4	11.5	27.1	45.5	1,789	10.3	1.8	46.9	1,692
6+	32.2	19.0	13.7	22.1	9.5	11.7	25.0	41.7	1,223	8.2	1.7	43.3	1,167
All ever-married women	33.5	19.2	15.7	22.7	10.0	10.1	25.6	42.0	7,024	NA	NA	NA	NA
All currently married women	33.7	19.3	15.8	22.8	10.1	10.2	25.7	42.2	6,661	11.4	2.4	44.2	6,661

Note: Total includes a small number of women with missing information on the standard of living index, who are not shown separately.

NA: Not applicable

() Based on 25–49 unweighted cases

¹Not related to menstruation

²Includes pain or burning while urinating or more frequent or difficult urination

Table 8.13 Treatment of reproductive health problems

Among women with a reproductive health problem, percentage who sought advice or treatment from specific providers by residence, Bihar, 1998–99

Provider	Urban	Rural	Total
Public medical sector	6.2	4.8	4.9
Government doctor	6.2	3.9	4.1
Public health nurse	0.8	1.9	1.8
ANM/LHV	0.0	0.5	0.5
Male MPW/supervisor	0.0	0.1	0.1
Anganwadi worker	0.0	0.1	0.1
Village health guide	0.0	0.2	0.2
Other public medical sector	0.0	0.3	0.2
Private medical sector	36.7	25.1	26.1
Private doctor	29.0	19.3	20.1
Private nurse	2.7	2.9	2.9
Compounder/pharmacist	0.4	0.3	0.3
Vaidya/hakim/homeopath	6.8	3.1	3.4
Dai (TBA)	2.1	1.5	1.5
Traditional healer	0.4	1.9	1.8
Other private medical sector	0.8	0.8	0.8
Other	1.2	2.2	2.1
None	59.1	70.4	69.4
Number of women	261	2,826	3,087
<p>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: Auxilliary nurse midwife; LHV: Lady health visitor; MPW: Multipurpose worker TBA: Traditional birth attendant</p>			

Women in households with a medium or low standard of living (44–46 percent) are more likely to have reproductive health problems than women in households with a high standard of living (36 percent). Women who are employed by others are somewhat more likely to report reproductive health problems than other woman (50 percent compared with 43–46 percent). The prevalence of reproductive health problems does not vary much by number of children ever born.

Among women who report any reproductive health problem, 69 percent have not seen anyone for advice or treatment (Table 8.13). The proportion of women who have not obtained any advice or treatment is higher in rural areas (70 percent) than in urban areas (59 percent). Among women who have obtained advice or treatment, 66 percent saw a private doctor (71 percent in urban areas and 65 percent in rural areas). Only one-sixth (16 percent) of women who have obtained advice or treatment were seen by someone in the public medical sector.

NFHS-2 results show that although a large proportion of ever-married women in Bihar (44 percent) report at least one reproductive health problem that could be symptomatic of a serious reproductive tract infection, the majority of them bear their problems silently without seeking advice or treatment. 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 in the public sector.