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 women, 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 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 a 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 socio-demographic 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. The Woman's Questionnaire included relevant maternal and safe motherhood information for women age 15–49 who have given birth since 1 January 1996. The topics covered include pregnancy complications, utilization and specific components of antenatal and postnatal care, place of and assistance during delivery, delivery characteristics, and postpartum complications. Although NFHS-2 obtained information for the two most recent live births since 1 January 1996, 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 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 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, rather than medical diagnoses, and should be interpreted with care.

As shown in Table 8.1 and Figure 8.1, the problems most commonly reported are excessive fatigue (28 percent), anaemia (19 percent), and swelling of the legs, body, or face (17 percent). Eleven percent of women reported convulsions not from fever, 7 percent reported blurred vision, 6 percent reported night blindness, and 1 percent reported vaginal bleeding. Although differentials in the prevalence of pregnancy complications are generally small, a higher proportion of urban than rural women reported swelling of the legs, body, or face, excessive fatigue, and anaemia. In contrast, a slightly higher proportion of rural than urban women reported having night blindness, blurred vision, and convulsions not from fever. Reporting of vaginal bleeding was almost the same in rural and urban areas.

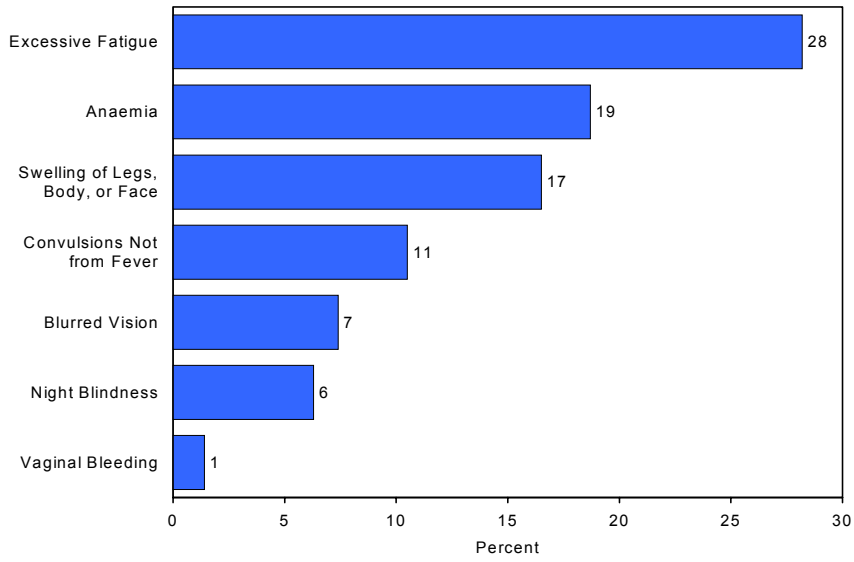
Table 8.1 Health problems during pregnancy

Among births during the three years preceding the survey, percentage of mothers experiencing specific health problems during pregnancy by residence, Karnataka, 1999

Problem during pregnancy	Urban	Rural	Total
Night blindness	5.1	6.9	6.3
Blurred vision	5.9	8.1	7.4
Convulsions not from fever	9.7	10.9	10.5
Swelling of the legs, body, or face	21.6	14.2	16.5
Excessive fatigue	30.3	27.3	28.2
Anaemia	20.6	17.9	18.7
Vaginal bleeding	1.6	1.4	1.4
Number of births	398	882	1,280

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

Figure 8.1
Problems During Pregnancy



Note: Based on births in the three years preceding the survey (1996–98)

NFHS-2, Karnataka, 1999

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 a woman received check-ups from more than one type of health provider, only the provider with the highest qualification is shown. NFHS-2 results for Karnataka show that a large majority of mothers (86 percent) received antenatal check-ups for their births during the three years preceding the survey (the same percentage as in NFHS-1). Seventy percent received check-ups from doctors and 11 percent from other health professionals outside the home. Only 5 percent received check-ups only at home from a health worker. Antenatal check-ups are more common for births to women age 20–34 than to younger women, and they are particularly prevalent for first births (93 percent). The proportion of births for which the mother received antenatal check-ups was higher in urban areas (95 percent) than in rural areas (83 percent). Mothers who completed at least a high school education received antenatal check-ups for almost all of their births (99 percent), but illiterate mothers received antenatal check-ups for only 77 percent of their births. As expected, more-educated women are more likely than

Table 8.2 Antenatal check-ups

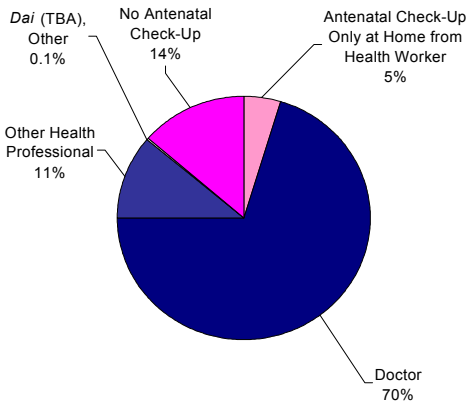
Percent distribution of births during the three years preceding the survey by source of antenatal check-up, according to selected background characteristics, Karnataka, 1999

Background characteristic	Antenatal check-up only at home from health worker	Antenatal check-up outside home[1] from:			No antenatal check-up	Total percent	Number of births
		Doctor	Other health professional	Traditional birth attendant, other			
Mother's age at birth							
< 20	3.4	65.6	13.5	0.0	17.4	100.0	426
20–34	5.5	72.9	10.0	0.1	11.5	100.0	833
Birth order							
1	0.9	82.0	10.3	0.0	6.9	100.0	462
2–3	5.5	69.8	10.5	0.0	14.2	100.0	580
4–5	11.6	51.4	15.5	0.0	21.4	100.0	172
6+	8.7	42.5	11.8	1.5	35.4	100.0	67
Residence							
Urban	1.2	86.7	6.5	0.0	5.5	100.0	398
Rural	6.4	62.9	13.3	0.1	17.3	100.0	882
Mother's education							
Illiterate	8.0	53.7	15.1	0.0	23.2	100.0	672
Literate, < middle school complete	2.4	83.2	9.8	0.5	4.2	100.0	211
Middle school complete	0.0	82.0	10.7	0.0	7.3	100.0	110
High school complete and above	1.0	95.1	3.2	0.0	0.7	100.0	287
Religion							
Hindu	5.1	71.0	10.8	0.1	13.0	100.0	1,037
Muslim	4.2	62.9	14.9	0.0	18.1	100.0	213
Caste/tribe							
Scheduled caste	7.1	63.3	12.0	0.0	17.6	100.0	250
Scheduled tribe	9.9	48.5	13.4	0.0	28.2	100.0	81
Other backward class	3.5	74.2	11.3	0.0	11.0	100.0	451
Other	4.1	74.0	10.7	0.2	11.0	100.0	483
Standard of living index							
Low	6.8	54.0	13.5	0.2	25.5	100.0	432
Medium	4.6	74.2	11.4	0.0	9.7	100.0	623
High	1.4	90.9	5.9	0.0	1.8	100.0	221
Total	4.8	70.3	11.2	0.1	13.7	100.0	1,280

Note: Table includes only the two most recent births during the three years preceding the survey. Total includes 22 births to women age 35–49, 23 and 7 births to Christian women and women from 'other' religions, respectively, and 15 and 4 births with missing information on mother's caste/tribe and the standard of living index, respectively, which are not shown separately.
[1]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 qualification is shown.

less-educated women to receive antenatal check-ups from doctors for their births. The utilization of antenatal check-up services is slightly higher for births to Hindus than to Muslims. By caste/tribe, the proportion of births for which the mother received antenatal check-ups ranges from 72 percent for scheduled-tribe women to 89 percent for women who do not belong to a scheduled caste or a scheduled tribe. By the standard of living index, the proportion ranges from

Figure 8.2
Source of Antenatal Check-Ups During Pregnancy



Note: Percents add to more than 100.0 due to rounding

NFHS-2, Karnataka, 1999

75 percent for women living in households with a low standard of living to 98 percent for women living in households with a high standard of living.

In summary, a large majority of women in Karnataka received at least one antenatal check-up for births in the three years preceding the survey. The utilization of antenatal check-up services is lower for births to teenage women, women of high parity, women living in rural areas, women from scheduled tribes and scheduled castes, illiterate women, Muslim women, and women living in households with a low standard of living. This suggests that improving the coverage of antenatal programmes in Karnataka requires special efforts to reach rural women, women in high parities, Muslim women, and women who are socioeconomically disadvantaged.

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 by the main reason for not receiving any check-ups. For births to mothers who did not have any antenatal check-ups, 63 percent of mothers said a check-up was not necessary and 3 percent said a check-up was not customary. Another 9 percent said a check-up costs too much, 9 percent said that their family did not allow them to get a check-up, and 8 percent professed a lack of knowledge about antenatal check-ups. No other reason accounted for more than 5 percent of births. These results suggest the need to inform women and families about the availability and benefits of antenatal check-ups to help overcome traditional attitudes and other hurdles that prevent them from seeking antenatal care for their pregnancies. Utilization of antenatal check-ups could also be increased by lowering direct and indirect costs and improving the quality of services.

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

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, Karnataka, 1999

Reason for not receiving an antenatal check-up	Percent
Not necessary	62.5
Not customary	3.4
Costs too much	9.1
Poor quality/service	1.7
No time to go	3.4
Family did not allow	8.6
Lack of knowledge	7.8
No health worker visited	2.9
Other	0.6
Total percent	100.0
Number of births	175

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

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 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 for 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 Karnataka, mothers of 71 percent of births received at least three antenatal check-ups (compared with 44 percent in India as a whole) and 58 percent had at least four check-ups. The median number of check-ups for those who received at least one check-up was 4.3. There are substantial differences by residence in the number of antenatal check-ups. At least three antenatal check-ups were received for 86 percent of births to mothers living in urban areas and 65 percent of births to mothers living in rural areas. Among births to mothers who received at least one antenatal check-up, the median number of check-ups was 5.2 in urban areas and 3.8 in rural areas. The shorter distances

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 antenatal check-up, according to residence, Karnataka, 1999

Number and timing of check-ups	Urban	Rural	Total
Number of antenatal check-ups			
0	5.5	17.3	13.7
1	2.3	5.9	4.8
2	6.6	11.8	10.2
3	10.8	14.5	13.4
4+	74.7	50.4	58.0
Total percent	100.0	100.0	100.0
Median number of check-ups (for those who received at least one antenatal check-up)	5.2	3.8	4.3
Stage of pregnancy at the time of the first antenatal check-up			
No antenatal check-up	5.5	17.3	13.7
First trimester	67.3	46.1	52.7
Second trimester	24.4	32.2	29.8
Third trimester	2.8	4.4	3.9
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	3.4	3.2
Number of births	398	882	1,280

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

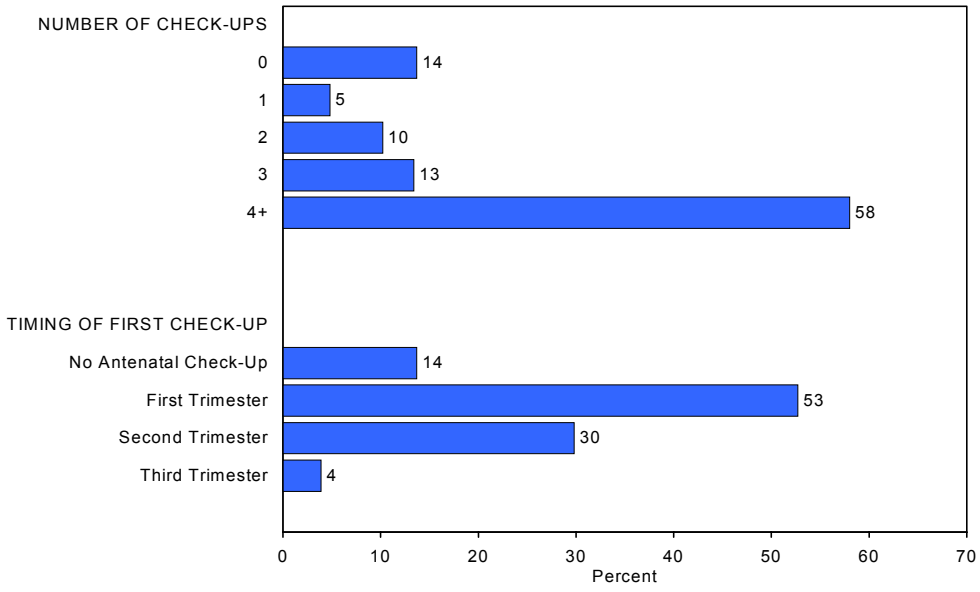
to antenatal-care services and the comparative ease of travelling in urban areas, as well as the higher educational attainment of mothers, could be important factors for the higher proportion of check-ups received by mothers in urban areas than in rural areas.

Fifty-three percent of 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 48 percent in NFHS-1), and another 30 percent were to mothers who received their first check-up in the second trimester. Check-ups during the first trimester were much more common in urban areas (67 percent) than in rural areas (46 percent). In the state as a whole, the first check-up was received in the third trimester for 4 percent of births. The median timing of the first antenatal check-up was 3.4 months in rural areas, 3.0 months in urban areas, and 3.2 months in the state as a whole.

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

Figure 8.3
Number and Timing of Antenatal Check-Ups



Note: Based on births in the three years preceding the survey (1996–98)

NFHS-2, Karnataka, 1999

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 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 89 percent of cases and had their blood pressure checked in 77 percent of cases. Other common components of antenatal check-ups were blood tests (72 percent), weight measurement (66 percent), urine tests (65 percent), height measurement (52 percent), and internal examinations (33 percent). Mothers of 22 percent of births had a sonogram or ultrasound procedure. X-ray examinations and amniocentesis were each performed in less than 5 percent of cases. All of these measurements or tests were performed more often for women living in urban areas than for women living in rural areas. The absolute differences by residence are most pronounced for sonography or ultrasound and urine tests.

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 76 percent of cases), followed by advice on the danger signs of pregnancy and delivery care. Mothers were least likely to receive advice on family planning (35 percent) and on newborn care (39 percent). The proportions receiving advice on each of these topics is slightly higher in urban areas than 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, Karnataka, 1999

Components of antenatal check-ups	Urban	Rural	Total
Antenatal measurements/tests			
Weight measured	79.8	58.4	65.7
Height measured	64.9	44.9	51.7
Blood pressure checked	91.1	69.0	76.5
Blood tested	86.1	64.5	71.8
Urine tested	82.0	55.5	64.5
Abdomen examined	94.1	85.9	88.7
Internal examination	47.8	25.7	33.2
X-ray	7.6	2.9	4.5
Sonography or ultrasound	39.4	13.2	22.1
Amniocentesis	5.1	1.4	2.6
Antenatal advice			
Diet	78.9	74.2	75.8
Danger signs of pregnancy	55.4	44.9	48.5
Delivery care	55.1	42.2	46.6
Newborn care	46.0	36.1	39.4
Family planning	36.1	34.6	35.1
Number of births for which the mother received at least one antenatal check-up	376	730	1,105

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

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 vaccine, 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 women 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 the pregnancy.

Table 8.6 shows the distribution of births by the number of tetanus toxoid injections given to mothers, according to selected background characteristics. For births in the three years preceding the survey, 75 percent of mothers received at least two tetanus toxoid injections during pregnancy, and another 6 percent received one injection. The proportion of mothers who received two or more tetanus toxoid injections during their pregnancies rose from 71 to 75 percent between NFHS-1 and NFHS-2, and the proportion is higher than the average of 67 percent for all India.

Tetanus toxoid injections are much more common in urban areas than in rural areas. Coverage also varies by age of the mother and birth order. Tetanus toxoid coverage (two or more injections) is higher for births to women in age 20–34 (77 percent) than for younger women (71 percent). At least two tetanus toxoid injections were received by mothers for 87 percent of first births, compared with 48 percent of births of order six or higher. Coverage is strongly related to education, ranging from 62 percent for births to illiterate women to 95 percent for births to women who have completed at least a high school education. Tetanus toxoid coverage is slightly higher for Hindus (75 percent) than for Muslims (71 percent). Coverage ranges from 56 percent for births to scheduled-tribe women to 79 percent for births to women who do not belong to a scheduled caste, a scheduled tribe, or an other backward caste. Tetanus toxoid coverage increases with an increasing standard of living of the household, from 61 percent for births to women living in households with a low standard of living to 92 percent for births to mothers living in households with a high standard of living. These results suggest that despite generally improving coverage of tetanus toxoid vaccinations, the coverage for socioeconomically disadvantaged women lags behind the level for the state 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 lowered resistance to infection, impaired cognitive development, decreased work capacity, and low birth weight. 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 Reproductive and Child

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, Karnataka, 1999

Background characteristic	Number of tetanus toxoid injections					Percentage given iron and folic acid tablets or syrup	Number of births	Percentage who received supply for 3+ months[1]	Percentage 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	24.2	4.2	70.6	0.9	100.0	73.7	426	93.7	85.1	314
20–34	15.2	7.1	77.3	0.4	100.0	80.4	833	95.8	86.7	670
Birth order										
1	11.2	2.0	86.5	0.4	100.0	83.0	462	96.6	87.1	383
2–3	19.6	7.9	71.8	0.7	100.0	78.0	580	93.0	86.3	452
4–5	24.9	10.5	64.6	0.0	100.0	72.7	172	100.0	84.1	125
6+	44.2	5.9	48.4	1.4	100.0	57.3	67	(92.0)	(81.9)	39
Residence										
Urban	9.3	4.9	85.1	0.7	100.0	83.4	398	96.5	87.0	332
Rural	22.7	6.5	70.3	0.5	100.0	75.6	882	94.5	85.8	667
Mother's education										
Illiterate	31.1	5.9	62.4	0.6	100.0	67.7	672	93.7	83.9	455
Literate, < middle school complete	7.1	8.5	83.9	0.5	100.0	86.7	211	96.1	85.8	183
Middle school complete	8.3	9.9	81.8	0.0	100.0	86.4	110	92.5	81.9	95
High school complete and above	1.7	2.9	94.7	0.7	100.0	92.6	287	98.1	91.9	266
Religion										
Hindu	18.4	5.8	75.3	0.5	100.0	79.2	1,037	94.9	86.4	821
Muslim	21.4	7.1	70.6	0.9	100.0	69.2	213	96.6	83.7	148
Caste/tribe										
Scheduled caste	23.5	6.8	68.8	0.8	100.0	74.0	250	94.4	79.4	185
Scheduled tribe	33.4	11.0	55.7	0.0	100.0	63.3	81	96.3	94.2	51
Other backward class	17.2	4.6	78.0	0.2	100.0	83.3	451	93.9	87.8	376
Other	14.1	6.2	78.8	0.8	100.0	78.2	483	96.6	86.8	378
Standard of living index										
Low	31.2	6.9	61.4	0.5	100.0	66.5	432	92.8	84.2	287
Medium	15.4	5.8	78.2	0.6	100.0	81.0	623	95.9	84.9	504
High	2.7	4.9	91.9	0.4	100.0	92.3	221	96.6	92.5	204
Total	18.6	6.0	74.9	0.5	100.0	78.0	1,280	95.2	86.2	999

Note: Table includes only the two most recent births during the three years preceding the survey. Total includes a small number of births to women age 35–49, to Christian women and women from 'other' religions, and births with missing information on caste/tribe and 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

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 Karnataka received IFA supplements for 78 percent of births (slightly higher than the level of 77 percent in NFHS-1). This level of IFA coverage is much higher than the national average of 58 percent. As with tetanus toxoid coverage, IFA coverage in Karnataka is relatively low for births to disadvantaged women (i.e., illiterate women, scheduled-tribe women, and women with a low standard of living) and mothers of higher-order births. IFA coverage is also lower in rural areas (76 percent) than in urban areas (83 percent) and among Muslim women (69 percent) than among Hindu women (79 percent). The lowest level of IFA coverage for any group is for mothers of births of order six or higher.

Not all mothers who received IFA received the recommended three-month supply of tablets or syrup or consumed all the supply they received. Among births to women who received IFA during pregnancy, 95 percent received at least a three-month supply and 86 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 and the proportion that consumed all the supply received are not very large for most background characteristics.

Thus, the distribution of IFA supplements is fairly widespread in Karnataka and most of the women who receive IFA consume an adequate amount during their pregnancies. However, more than one-fifth of women still do not receive any IFA during their pregnancies. This suggests that the Reproductive and Child Health Programme needs to strengthen efforts to inform pregnant women about the advantages of IFA, as well as trying to understand better why some women do not consume all the IFA they receive and overcoming resistance to the consumption of IFA.

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 51 percent of births in Karnataka took place in health facilities (up from 38 percent in NFHS-1), 28 percent took place in the women's own homes, and 21 percent took place in their parents' homes. More births took place in public institutions (such as government-operated district, *taluk*, town, or municipal hospitals, and Primary Health Centres) than in private health facilities (28 percent and 22 percent, respectively). The NFHS-2 overall estimate of 51 percent of births in health facilities is slightly lower than the estimate of 53 percent from the Rapid Household Survey under the RCH Programme (International Institute for Population Sciences, 2000). Both these estimates are close to the 1997 SRS estimate of 49 percent.

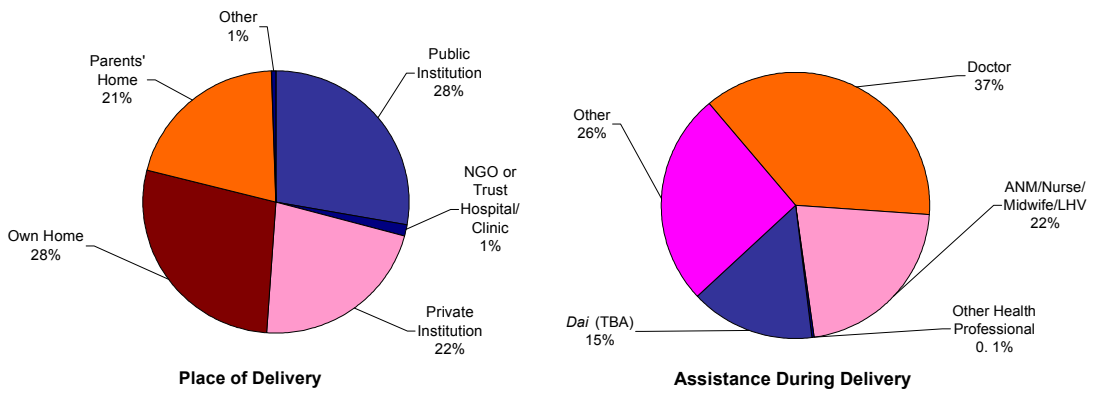
Table 8.7 Place of delivery

Percent distribution of births during the three years preceding the survey by place of delivery, according to selected background characteristics, Karnataka, 1999

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	30.5	0.0	13.4	26.8	28.3	0.9	100.0	426
20–34	26.6	1.9	26.1	28.2	16.9	0.3	100.0	833
Birth order								
1	36.6	0.5	32.4	11.6	18.5	0.4	100.0	462
2–3	25.0	1.9	18.1	30.7	23.6	0.7	100.0	580
4–5	16.9	1.7	12.4	48.7	19.7	0.6	100.0	172
6+	19.0	1.5	7.6	61.5	10.4	0.0	100.0	67
Residence								
Urban	38.6	1.8	38.4	11.5	9.6	0.0	100.0	398
Rural	22.9	1.1	14.5	35.2	25.5	0.8	100.0	882
Mother's education								
Illiterate	23.5	1.2	7.5	41.8	25.4	0.7	100.0	672
Literate, < middle school complete	35.4	1.5	24.0	19.5	19.2	0.5	100.0	211
Middle school complete	39.8	1.9	26.7	10.8	20.0	0.9	100.0	110
High school complete and above	27.7	1.4	52.5	8.0	10.4	0.0	100.0	287
Religion								
Hindu	27.5	1.2	22.0	28.3	20.4	0.7	100.0	1,037
Muslim	29.3	1.9	18.6	26.5	23.7	0.0	100.0	213
Caste/tribe								
Scheduled caste	26.2	2.0	11.0	39.5	20.4	0.8	100.0	250
Scheduled tribe	24.8	0.0	6.2	34.8	34.2	0.0	100.0	81
Other backward class	27.3	1.4	25.9	24.0	20.3	1.1	100.0	451
Other	29.8	1.2	26.8	23.6	18.5	0.0	100.0	483
Standard of living index								
Low	25.6	0.7	5.1	42.0	25.6	1.1	100.0	432
Medium	32.6	2.0	20.4	24.4	20.3	0.3	100.0	623
High	19.1	0.9	58.7	9.6	11.7	0.0	100.0	221
Number of antenatal check-ups								
0	10.1	1.7	2.3	50.6	34.1	1.1	100.0	175
1	17.8	0.0	6.6	38.7	36.9	0.0	100.0	61
2	26.1	0.0	7.8	36.6	28.1	1.5	100.0	131
3	34.9	3.5	13.5	30.2	17.9	0.0	100.0	171
4+	31.4	1.1	32.3	19.5	15.3	0.4	100.0	742
Total	27.8	1.3	22.0	27.9	20.5	0.5	100.0	1,280

Note: Table includes only the two most recent births during the three years preceding the survey. Total includes 22, 23, and 7 births to women age 35–49, to Christian women and women from 'other' religions, respectively, and 15 and 4 births with missing information on caste/tribe and the standard of living index, respectively, which are not shown separately.
NGO: Nongovernmental organization
[1]Includes missing

Figure 8.4
Place of Delivery and Assistance During Delivery



Note: Percents add to more than 100.0 due to rounding

NFHS-2, Karnataka, 1999

In NFHS-2, the proportion of births that took place in health facilities is twice as high in urban areas (79 percent) as in rural areas (39 percent). Institutional deliveries are lower for births to mothers under age 20 (44 percent) than for births to mothers age 20–34 (55 percent). Institutional deliveries are highest for first births (70 percent) and lowest for births of order six or higher (28 percent). Institutional deliveries, particularly in private health facilities, increase sharply with the mother's education and the standard of living of the household. Births to women from scheduled castes, scheduled tribes, and other backward classes are less likely to have occurred in health facilities than births to women who do not belong to any of these groups. The proportion of institutional deliveries is the same among Hindus and Muslims.

The proportion of institutional births is almost twice as high among women who received four or more antenatal check-ups (65 percent) as among women who received two antenatal check-ups (34 percent) and nearly five times as high as among women who did not receive any antenatal check-ups (14 percent). 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 with a health facility for delivery may be called for regular antenatal 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. Another contributing factor may be the growing awareness of the benefits of professional medical care during both pregnancy and delivery, especially among urban, young, 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 the standard of living are both strongly negatively associated with delivery in women's own homes.

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, Karnataka, 1999

Background characteristic	Attendant assisting during delivery[1]					Total percent	Number of births
	Doctor	ANM/nurse/ midwife/ LHV	Other health professional	Traditional birth attendant	Other		
Mother's age at birth							
< 20	29.1	25.2	0.2	15.4	30.0	100.0	426
20–34	41.3	20.2	0.1	14.8	23.6	100.0	833
Birth order							
1	52.6	24.6	0.2	8.9	13.7	100.0	462
2–3	32.7	20.6	0.2	15.6	30.9	100.0	580
4–5	18.2	20.2	0.0	24.9	36.6	100.0	172
6+	20.5	14.9	0.0	28.0	36.6	100.0	67
Residence							
Urban	59.6	26.7	0.0	5.3	8.3	100.0	398
Rural	27.3	19.4	0.2	19.5	33.7	100.0	882
Mother's education							
Illiterate	20.9	19.7	0.3	21.4	37.7	100.0	672
Literate, < middle school complete	40.8	26.2	0.0	14.1	18.9	100.0	211
Middle school complete	45.8	28.0	0.0	9.2	17.1	100.0	110
High school complete and above	69.9	20.6	0.0	3.2	6.3	100.0	287
Religion							
Hindu	36.6	21.2	0.2	15.0	27.0	100.0	1,037
Muslim	36.0	25.8	0.0	17.3	21.0	100.0	213
Caste/tribe							
Scheduled caste	26.6	20.9	0.0	19.0	33.4	100.0	250
Scheduled tribe	16.2	22.5	0.0	18.4	42.9	100.0	81
Other backward class	39.1	21.0	0.2	14.1	25.6	100.0	451
Other	44.6	23.1	0.0	13.4	18.9	100.0	483
Standard of living index							
Low	19.5	19.3	0.4	22.1	38.6	100.0	432
Medium	38.4	26.0	0.0	12.8	22.9	100.0	623
High	68.7	14.5	0.0	7.7	9.1	100.0	221
Number of antenatal check-ups							
0	10.2	8.5	0.0	29.0	52.2	100.0	175
1	11.4	22.7	0.0	27.3	38.6	100.0	61
2	18.6	21.4	0.0	20.5	39.5	100.0	131
3	31.6	27.8	0.6	20.5	19.6	100.0	171
4+	50.4	23.3	0.1	8.6	17.5	100.0	742
Place of delivery							
Public health facility	55.0	45.0	0.0	0.0	0.0	100.0	356
Private health facility	86.5	13.5	0.0	0.0	0.0	100.0	281
Own home	3.1	10.6	0.5	24.5	61.3	100.0	357
Parents' home	4.5	15.1	0.0	40.2	40.3	100.0	263
Total	37.3	21.7	0.1	15.1	25.8	100.0	1,280

Note: Table includes only the two most recent births during the three years preceding the survey. Total includes 22 births to women age 35–49, 23 and 7 births to Christian women and women from 'other' religions, respectively, 17 births delivered in nongovernmental organization or trust hospitals/clinics, 7 births delivered at 'other' places, and 15 and 4 births with missing information on caste/tribe and the standard of living index, respectively, which are not shown separately.
ANM: Auxiliary nurse midwife; LHV: Lady health visitor
[1]If the respondent mentioned more than one attendant, only the most qualified attendant is shown.

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. Fifty-nine percent of births in the three years preceding the survey were attended by a health professional, including 37 percent by a doctor and 22 percent by an ANM, nurse, midwife, or LHV. Comparable estimates at the national level are 42 percent attended by a health professional, 30 percent by a doctor, and 11 percent by an ANM, nurse, midwife, or LHV. In Karnataka, 15 percent of births were attended by a traditional birth attendant, and 26 percent were attended only by friends, relatives, neighbours, or other persons. According to the two NFHS surveys, the proportion of deliveries attended by a health professional increased from 47 percent in NFHS-1 to 59 percent in NFHS-2.

The proportion of births attended by a doctor varies by the mother's age, from 41 percent for mothers age 20–34 to 29 percent for younger mothers. One possible explanation for this pattern is that very young mothers are less likely to be educated than older mothers. The differentials are much larger by birth order, ranging from 18 percent for births of order 4–5 to 53 percent for first-order births. Births are much more likely to be assisted by a doctor in urban areas (60 percent) than in rural areas (27 percent). The proportion of births delivered by a doctor increases sharply with the mother's level of education and the household standard of living. There is no difference by religion, but deliveries by doctors vary from only 16 percent for births to scheduled-tribe mothers to 45 percent for births to mothers who do not belong to a scheduled caste, a scheduled tribe, or an other backward class. Only 10 percent of births to women who did not have any antenatal check-up were attended by a doctor; this proportion increases steadily to 32 percent for births to women who had three antenatal check-ups and 50 percent for births to women who had four or more antenatal check-ups. Twenty-nine percent of births to women who did not have any antenatal check-ups were attended by a TBA, and over half of those births were attended only by friends, relatives, neighbours, or other persons who are not health professionals. By place of delivery, the proportion of births attended by a doctor was 55 percent for births in public health facilities and 87 percent for births in private health facilities, but only 3 percent for births occurring in the woman's own home and 5 percent for births occurring in her parents' home. One-quarter of births delivered at the respondent's home were attended by a TBA and only 14 percent were attended by a health professional.

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, 11 percent of children born in Karnataka in the past three years were delivered by caesarian section. The proportion of deliveries by caesarian section was higher in urban areas (20 percent) than in rural areas (7 percent). Although caesarian sections are still not very common in Karnataka, they have increased rapidly over time, from only 3 percent of births in NFHS-1 to 11 percent in NFHS-2.

Babies with low birth weights face substantially higher risks of dying than do babies with normal birth weights. For each birth that took place in the three years preceding the survey, respondents were asked the baby's birth weight. Because babies delivered at home are unlikely to be weighed and because the mother might not remember the birth weight even if the baby was

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, Karnataka, 1999

Characteristic of births	Urban	Rural	Total
Percentage delivered by caesarian section	19.9	7.1	11.1
Birth weight			
< 2.5 kg	8.0	6.1	6.7
2.5 kg or more	52.5	22.7	32.0
Don't know/missing	12.0	5.0	7.2
Not weighed	27.5	66.2	54.2
Total percent	100.0	100.0	100.0
Size at birth			
Large	28.0	26.6	27.0
Average	48.4	38.6	41.7
Small	20.0	31.4	27.9
Very small	3.6	3.3	3.4
Don't know/missing	0.0	0.1	0.1
Total percent	100.0	100.0	100.0
Number of births	398	882	1,280

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

weighed, the survey also asked mothers to estimate the size of each baby at birth (large, average, small, or very small).

In Karnataka, more than half of the babies born in the three years preceding the survey were not weighed at birth. The proportion not weighed is 28 percent in urban areas and 66 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, so the results should be interpreted with caution. Among children for whom birth weights are reported, 17 percent weighed less than 2.5 kilograms (compared with 23 percent for India as a whole in NFHS-2 and 21 percent in Karnataka in NFHS-1). In Karnataka, the proportion weighing less than 2.5 kilograms is lower in urban areas (13 percent) than in rural areas (21 percent).

According to mothers' estimates, 27 percent of births in the three years preceding the survey were large, 42 percent were of average size, 28 percent were small, and 3 percent were very small. The proportion of babies reported as small or very small was higher in rural areas (35 percent) than in urban areas (24 percent).

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 shows 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.

Only 35 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, only 10 percent of first check-ups took place within two days of birth and 27 percent took place within one week of birth. Postpartum check-ups increase with mother's education, the standard of living, and the number of antenatal check-ups. Postpartum check-ups for noninstitutional births are more common for births delivered by a health professional than for births not delivered by a health professional, and check-ups are more prevalent in urban areas (42 percent) than in rural areas (34 percent). Postpartum check-ups are more common for scheduled-caste women (40 percent) than for other women (32–34 percent).

Mothers who did not deliver in a health facility but who received a postpartum check-up were asked whether they received specific components of postpartum care, including an abdominal examination and advice on family planning, breastfeeding, and baby care. Among these mothers, 46 percent reported an abdominal examination, 39 percent received advice on family planning, 30 percent received advice on breastfeeding, and 39 percent received advice on baby care.

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. In Karnataka, mothers reported a very high fever for 7 percent of births and massive vaginal bleeding following the birth for 6 percent of births (Table 8.11). These proportions do not vary much by any of the background characteristics. However, the proportions with each type of postpartum complication are higher for births of order six and above than for any other group.

8.4 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

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, Karnataka, 1999

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	Breastfeeding advice	Baby care advice	
Mother's age at birth									
< 20	35.4	239	5.7	25.5	40.8	26.7	34.1	48.1	84
20–34	35.9	378	13.1	27.6	48.7	46.8	27.1	33.6	136
Birth order									
1	38.2	141	10.9	29.1	42.4	14.8	46.6	53.9	54
2–3	36.8	319	8.5	21.9	45.6	45.7	26.1	36.1	117
4–5	33.4	118	(14.7)	(39.6)	(49.3)	(54.9)	(19.8)	(32.6)	40
6+	(22.2)	48	*	*	*	*	*	*	11
Residence									
Urban	41.9	84	(16.7)	(41.9)	(48.4)	(48.6)	(31.5)	(37.3)	35
Rural	34.3	542	9.0	23.8	45.4	37.6	29.8	39.8	186
Mother's education									
Illiterate	30.2	456	10.0	27.2	45.6	39.5	25.8	36.1	137
Literate, < middle school complete	48.2	83	(7.3)	(26.9)	(42.4)	(37.3)	(32.7)	(44.7)	40
Middle school complete	(37.3)	35	*	*	*	*	*	*	13
High school complete and above	58.5	53	(19.3)	(32.1)	(51.5)	(38.6)	(41.6)	(35.3)	31
Religion									
Hindu	35.5	511	8.7	22.8	46.7	39.2	28.9	40.4	182
Muslim	32.2	107	(19.8)	(47.9)	(42.7)	(39.9)	(34.1)	(34.2)	34
Caste/tribe									
Scheduled caste	40.4	152	9.5	22.3	46.2	35.4	33.7	41.8	61
Scheduled tribe	32.1	56	*	*	*	*	*	*	18
Other backward class	34.3	205	8.3	19.6	46.4	49.1	28.0	47.8	70
Other	34.1	204	14.2	40.9	45.7	35.8	33.1	31.4	70
Standard of living index									
Low	31.5	297	7.4	24.1	42.7	38.8	25.1	44.2	94
Medium	35.8	281	13.6	29.3	45.3	35.6	30.7	32.5	101
High	(55.6)	47	(7.7)	(26.5)	(61.4)	(57.3)	(46.2)	(50.3)	26
Number of antenatal check-ups									
0	16.5	150	(11.7)	(27.7)	(44.0)	(28.5)	(24.1)	(40.6)	25
1	(19.1)	46	*	*	*	*	*	*	9
2	37.0	86	(6.3)	(21.6)	(43.0)	(24.8)	(9.0)	(24.7)	32
3+	45.3	344	11.4	27.8	46.3	42.5	33.8	42.0	156
Assistance during delivery									
Doctor/ANM/nurse/midwife/LHV[1]	55.7	103	23.9	42.5	55.0	41.2	43.3	37.8	58
Dai (TBA)	31.3	193	9.8	37.5	49.0	44.0	37.5	57.4	60
Other	31.3	330	2.9	11.5	39.1	35.6	18.3	29.8	103
Total	35.3	626	10.2	26.7	45.9	39.3	30.0	39.4	221

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 age 35–49, births to Christian women and women from 'other' religions, and births with missing information on caste/tribe and 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
*Percentage not shown; based on fewer than 25 unweighted cases
[1]Includes other health professionals

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, Karnataka, 1999

Background characteristic	Massive vaginal bleeding	Very high fever	Number of births
Residence			
Urban	6.0	7.5	389
Rural	6.1	6.5	853
Mother's age at birth			
< 20	7.6	6.7	417
20–34	5.3	6.7	804
Birth order			
1	7.4	5.4	445
2–3	6.0	7.2	566
4–5	1.8	7.3	165
6+	9.1	12.1	65
Place of delivery			
Public health facility	6.9	6.6	347
Private health facility	7.4	5.6	273
Own home	5.2	7.8	346
Parents' home	5.4	6.6	253
Assistance during delivery			
Doctor	6.7	5.4	464
ANM/nurse/midwife/LHV	7.0	8.0	272
Dai (TBA)	4.9	9.8	181
Other[1]	5.2	6.2	322
Total	6.1	6.8	1,241

Note: Table includes only the two most recent births during the 2–35 months preceding the survey. Total includes 21 births to women age 35–49, 16 births delivered in nongovernmental organization or trust hospitals/clinics, 7 births delivered in 'other' places, and 2 births assisted by other health professionals, which are not shown separately.
ANM: Auxiliary nurse midwife; LHV: Lady health visitor; TBA: Traditional birth attendant
[1]Includes missing

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 Gittelsohn, 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 sequellae 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 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, intercourse-related pain (often), and bleeding after intercourse (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 8.12 shows the prevalence of different reproductive health problems among women in Karnataka by background characteristics. Thirteen percent of ever-married women reported at least one type of problem related to vaginal discharge, and 7 percent reported symptoms of a urinary tract infection. Overall, 18 percent of women reported either problems with vaginal discharge or symptoms of a urinary tract infection. Among problems related to vaginal discharge, itching or irritation was mentioned by 8 percent, followed by severe lower abdominal pain (mentioned by 6 percent).

Table 8.12 and Figure 8.5 show that only 19 percent of currently married women report one or more reproductive health problems (much lower than the national average of 39 percent). Three percent report painful intercourse and less than 1 percent report bleeding after intercourse.

Reproductive health problems are more common among women in the middle of the reproductive age span than at the extremes of 15–19 and 40–49. The reported level of reproductive health problems is the same in urban and rural areas (19 percent). The prevalence of reproductive health problems does not vary in a consistent way by education, but women who have completed at least high school have a lower prevalence level than other women. Every type of reproductive health problem except bleeding after intercourse is slightly more common among Muslim women than among Hindu women. The prevalence of reproductive health problems does not vary much by caste/tribe, work status, or the standard of living index. Reproductive health problems are somewhat more common for women with two or more children than for women with fewer than two children.

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 selected background characteristics, Karnataka, 1999

Background characteristic	Ever-married women									Currently married women			
		Vaginal discharge accompanied by:											
	Any abnormal vaginal discharge	Itching or irritation	Bad odour	Severe lower abdominal pain[1]	Fever	Other problem	Symptoms of a urinary tract infection[2]	Any abnormal vaginal discharge or symptoms of a urinary tract infection[2]	Number of ever-married women	Painful intercourse (often)	Bleeding after intercourse (ever)[1]	Any reproductive health problem	Number of currently married women
Age													
15–19	8.6	5.2	1.4	4.6	0.7	2.8	4.4	11.4	427	3.2	0.2	13.5	414
20–24	14.5	9.5	2.3	6.7	2.3	6.8	5.5	17.3	777	3.9	0.7	19.0	744
25–29	16.5	10.5	3.6	7.2	2.9	5.7	9.4	22.0	863	3.2	0.3	23.4	811
30–34	16.8	10.1	3.2	7.2	2.5	7.9	9.0	21.6	721	3.2	0.1	22.8	669
35–39	14.1	7.5	2.4	6.6	4.0	4.4	7.4	18.7	631	1.9	0.3	19.3	564
40–44	11.0	6.7	2.0	4.6	2.2	3.9	6.7	14.3	534	1.1	0.2	14.0	455
45–49	6.0	4.3	1.0	1.9	1.4	2.1	7.1	10.7	419	1.4	0.3	12.3	357
Residence													
Urban	13.4	8.9	2.6	5.5	1.9	5.2	6.8	17.6	1,523	2.6	0.5	18.6	1,418
Rural	13.4	7.9	2.4	6.2	2.7	5.2	7.6	17.6	2,851	2.8	0.2	18.9	2,597
Education													
Illiterate	13.6	8.0	2.6	6.7	2.9	5.1	7.9	18.1	2,414	3.0	0.3	19.5	2,154
Literate, < middle school complete	14.9	8.6	2.9	6.2	2.2	6.9	7.8	18.7	818	2.3	0.3	19.9	756
Middle school complete	16.1	9.8	2.1	5.6	1.1	5.9	6.6	20.3	289	2.5	0.4	21.7	279
High school complete and above	10.5	8.0	1.7	3.8	1.8	3.7	5.5	14.1	853	2.6	0.5	15.2	827
Religion													
Hindu	13.0	7.8	2.4	5.9	2.3	5.2	7.1	17.0	3,741	2.5	0.4	18.2	3,430
Muslim	15.3	11.1	3.1	6.1	3.9	5.1	8.7	20.6	492	3.7	0.0	22.1	458
Christian	13.4	10.5	0.0	4.8	0.0	4.8	8.9	19.2	105	4.5	0.0	21.6	94
Other	(25.8)	(11.4)	(8.5)	(14.5)	(8.7)	(14.6)	(2.9)	(28.7)	35	(6.3)	(0.0)	(31.2)	32
Caste/tribe													
Scheduled caste	14.7	8.6	3.0	7.9	2.4	5.0	8.5	18.5	704	3.6	0.0	19.9	633
Scheduled tribe	11.9	7.2	1.9	5.2	2.0	2.8	4.8	14.3	252	3.0	0.4	15.3	228
Other backward class	12.9	7.8	2.4	6.1	2.3	5.9	7.5	17.5	1,809	2.3	0.6	18.7	1,665
Other	13.7	9.1	2.3	5.2	2.8	4.9	6.9	17.7	1,559	2.9	0.1	19.1	1,445

Contd…

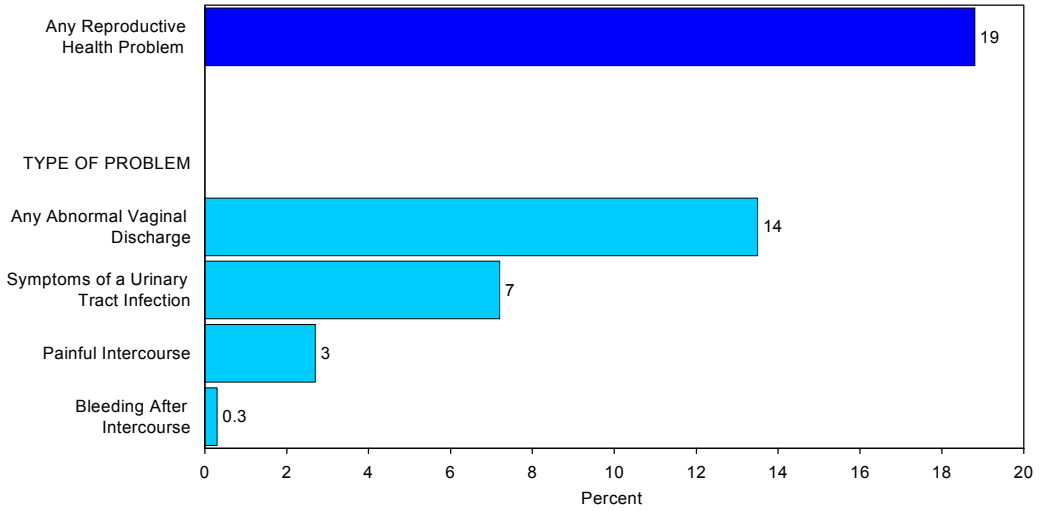
Table 8.12 Symptoms of reproductive health problems (contd.)

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 selected background characteristics, Karnataka, 1999

	Ever-married women									Currently married women			
		Vaginal discharge accompanied by:											
Background characteristic	Any abnormal vaginal discharge	Itching or irritation	Bad odour	Severe lower abdominal pain[1]	Fever	Other problem	Symptoms of a urinary tract infection[2]	Any abnormal vaginal discharge or symptoms of urinary tract infection[2]	Number of ever-married women	Painful intercourse (often)	Bleeding after intercourse (ever)[1]	Any reproductive health problem	Number of currently married women
Standard of living index													
Low	13.3	8.2	2.7	6.5	2.4	4.2	8.2	18.0	1,314	3.2	0.4	19.6	1,139
Medium	14.4	8.9	2.7	6.5	3.1	6.2	7.1	18.2	2,141	3.0	0.2	19.5	1,998
High	11.3	6.8	1.7	3.9	1.1	4.2	6.4	15.4	904	1.6	0.5	16.3	866
Work status													
Working in family farm/ business	12.1	6.2	1.5	5.8	2.5	5.2	6.4	16.3	726	2.2	0.4	18.3	675
Employed by someone else	15.5	9.8	3.0	7.8	2.9	5.3	8.9	20.0	1,296	2.5	0.4	20.9	1,104
Self-employed	15.7	11.0	3.5	7.9	3.1	5.5	7.1	19.7	254	2.8	0.9	20.2	218
Not worked in past 12 months	12.2	7.7	2.3	4.7	2.1	5.2	6.7	16.3	2,097	3.0	0.2	17.7	2,019
Number of children ever born													
0	10.6	6.4	1.8	6.7	2.7	3.7	5.2	13.8	449	4.1	0.0	15.5	392
1	11.6	8.1	1.7	4.4	1.1	4.6	6.7	15.7	656	3.4	0.7	17.7	598
2–3	14.2	8.7	2.8	6.7	2.6	6.1	7.3	18.1	2,008	2.8	0.3	18.9	1,851
4–5	14.1	7.7	2.8	6.1	3.0	5.1	8.6	19.5	865	1.7	0.4	21.0	805
6+	13.5	9.5	2.3	3.8	2.5	4.0	7.8	17.8	396	2.2	0.0	18.9	368
All ever-married women	13.4	8.2	2.5	6.0	2.4	5.2	7.3	17.6	4,374	NA	NA	NA	NA
All currently married women	13.5	8.3	2.5	5.9	2.5	5.2	7.2	17.7	4,015	2.7	0.3	18.8	4,015

Note: Total includes a small number of women with missing information on caste/tribe, the standard of living index, and work status, who are not shown separately.
NA: Not applicable
( ) Based on 25–49 unweighted cases
[1]Not related to menstruation
[2]Includes pain or burning while urinating or more frequent or difficult urination

Figure 8.5
Reproductive Health Problems Among Currently Married Women



NFHS-2, Karnataka, 1999

Among women who report any reproductive health problems, almost half have not seen anyone for advice or treatment (Table 8.13). The proportion of women who have not obtained advice or treatment is slightly higher in rural areas (50 percent) than in urban areas (45 percent). Overall, two-thirds of women who obtained advice or treatment were seen by someone in the private medical sector (75 percent in urban areas and 62 percent in rural areas). Among women who sought advice or treatment, 65 percent saw a private doctor and only 27 percent saw a government doctor.

NFHS–2 results in Karnataka show that although only 2 in every 10 currently married women report at least one reproductive health problem that could be symptomatic of a more serious reproductive tract infection, half of them bear the problems silently without seeking advice or treatment. 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.

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, Karnataka, 1999

Provider	Urban	Rural	Total
Public medical sector	14.5	20.8	18.6
Government doctor	12.4	15.1	14.1
Public health nurse	0.4	0.9	0.7
ANM/LHV	1.1	5.2	3.8
Male MPW/supervisior	0.4	0.0	0.1
Anganwadi worker	0.4	0.4	0.4
Village health guide	0.4	0.4	0.4
Other public medical sector	0.4	0.4	0.4
NGO worker	0.0	0.2	0.1
Private medical sector	42.0	31.3	35.0
Private doctor	41.3	30.0	33.8
Private nurse	0.4	0.4	0.4
Compounder/pharmacist	0.0	0.2	0.1
Vaidya/hakim/homeopath	0.0	0.2	0.1
Dai (TBA)	0.0	0.2	0.1
Traditional healer	0.7	0.4	0.5
Other private medical sector	0.0	0.4	0.2
Other	0.4	0.6	0.5
None	45.0	49.8	48.1
Number of women	279	535	814

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