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Socioeconomic correlates of utilization of maternal health services by tribal women in India

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Abstract

Based on two waves of the National Family Health Surveys of India, this paper studies the effect of maternal characteristics on women's likelihood of using prenatal and delivery healthcare services among two groups of tribal women. Results show that tribal women in the northeastern states of India are more likely to utilize maternal healthcare facilities compared to those in the central states of the country. Women who work are less likely to utilize healthcare services. The findings call for different strategies for the implementation of healthcare services in different tribal regions of the country.
Keywords: *maternal health; scheduled tribal women in India; utilization of health services.*

Résumé

Cet article s'appuie sur les données de deux National Family Health Surveys (Enquêtes nationales sur la santé familiale) et étudie l'impact des caractéristiques des femmes sur leur tendance à utiliser des services de soins pendant la période prénatale de la grossesse et pendant l'accouchement chez deux groupes de femmes aborigènes de l'Inde (tribus répertoriées). Les résultats montrent que les femmes des états du nord-est de l'Inde ont plus tendance à faire appel aux établissements de soins de santé maternelle que les femmes des états du centre du pays. Les femmes qui occupent un emploi ont moins tendance à faire appel aux services de santé. Les résultats indiquent la nécessité de mettre en œuvre des stratégies de soins de santé qui soient adaptées aux populations aborigènes de l'Inde.
Mots-clés : *santé maternelle; femmes aborigènes répertoriées; Inde; utilisation des soins de santé.*

Introduction

Maternal healthcare is an integral part of India's family welfare programs, and infant and child mortality rates are important indicators of socioeconomic development and quality of life of a country. Previous studies have established the fact that proper and timely prenatal and postnatal care reduces the risk of both maternal and child morbidity and mortality significantly (Heldi et al. 2006; Kamal 2009). India's sociodemographic goals for 2010 were to have 80 per cent of all deliveries take place in institutions and have

100 per cent of deliveries attended by trained personnel (MHFW India 2000). Maternal and child health care (MCH) during pregnancy should begin in the early stages of pregnancy. MCH, an important component of primary healthcare in India, includes effective antenatal care, assurance of a safe and aseptic delivery, appropriate postnatal care, and timely immunization against common infectious diseases, among others. According to National Family Health Survey-3 of India (2005–06), 29 per cent of the tribal mothers in India received no antenatal check-up during the preceding five years. Further, only 25 per cent of scheduled tribe[1] mothers' deliveries took place in healthcare facilities, and 67 per cent of the deliveries were attended by untrained individuals (IIPS 2006).

The main aim of this paper is to provide an in-depth analysis of the utilization of maternal healthcare services by tribal women in India, particularly in the northeast and central regions of the country. More specifically, the study aims to analyze and compare the utility patterns of maternal healthcare services by scheduled tribe women from different areas in India. Further, this study traces the changes in utilization patterns that occurred along with the development of the socioeconomic and health sectors from 1998/99 to 2005/06. The reasons for non-utilization of healthcare facilities are studied to understand tribal women's views and opinions regarding professional maternal healthcare service utilization.

This analysis is situated in the context of India's recent rapid but uneven socioeconomic development. Since the late 1990s the Indian government has made efforts towards the development of rural areas by opening new schools and colleges, erecting health centres, and building roads. The goals of the National Population Policy of India, released in 2000, are: free and compulsory school education up to age 14, reduction of infant and maternal mortality, universal immunization of children, delivery assistance by trained health personnel for all births, and 100 per cent registration of all vital events. Further, various healthcare and awareness programs on maternal health, child care, immunization, and HIV/AIDS are funded and operated by both national and state government, with special focus on rural areas. Despite these efforts, mortality rates remain relatively high. India's maternal mortality rate (adjusted) was 450 pregnancy-related deaths per 100,000 live births in 2005 (UNICEF statistics 2010). Infant and child mortality was estimated at 57 and 74 deaths per thousand live births, respectively, by the National Family Health Survey-3 (2005–06) of India. Previous research and demographic analysis has shown very high maternal and infant morbidity and mortality among scheduled tribes when compared to the general population average (Basu 1993; Navaneetham and Dharmalingam 2001). For instance, estimated infant and under-five mortality rates among the tribal population was 62 and 96 deaths per thousand live births, respectively (IIPS 2006). Non-utilization of maternal and child healthcare services is the main factor for high maternal and infant morbidity and mortality rates in developing countries like India, Pakistan and Bangladesh (Govindasamy and Ramesh 1997; Paul and Rumsey 2002; Kamal 2009).

1. There is no single definition of *scheduled tribes*. However, they are regarded as 'scattered and disorganized offshoots of the aborigines' and as the 'descendants of the scattered remnants of the aborigines who were left behind on the plain and who gradually adopted Hindu culture. The Indian government has developed the schedules of different tribal groups and census provides information on scheduled tribes separately (Maharatna 2005).

Tribal population in India

Tribal groups are the earliest settlers of India. In India, there are more than 400 tribal groups that constitute 8.14 per cent of the nation's total population (Saha 2003; Mitra and Singh 2008). About 83.6 million persons have been enumerated in the country as members of scheduled tribes (Census 2001). The majority of tribal people live in rural areas and are engaged in agricultural pursuits. Scheduled tribes, also referred to as *adivasis* ('original inhabitants', from *Adi* 'old' and *vasi* 'those who stay') are spread all over India with major concentrations across the central, northeast, and western regions. Tribal groups have their own culture and social life. Almost all tribal communities possess rich mythologies, folk tales and stories that illustrate their affinity and relationship with tradition and traditional characters. Even though they have a rich culture, they are socioeconomically disadvantaged, with 50 per cent belonging to the lowest wealth quintile (IIPS 2006) and a 53 per cent illiteracy rate (Census 2001).

The tribal groups were socially and geographically isolated following the entry of the Aryans and, subsequently, the Muslims and British. The tribal groups inhabit widely varying ecological and geo-climatic conditions (hilly, forest, desert, and coastal regions, etc.) in different concentrations throughout the country, and have distinct biological, cultural, and socioeconomic characteristics. Tribal groups are highly heterogeneous, are culturally firm, and practice different forms of folk medicine.

The population of the tribal groups consists of an almost equal number of men and women, and in most tribes women enjoy an equal status to men. Instead of dowry, there is a bride price, which indicates the high social status of tribal women. A tribal woman can divorce and remarry easily; she earns money and can be economically independent. The Dhebar Commission report (1961) notes: "[t]he tribal woman is not drudge or a beast of burden; she is found to be exercising a relatively free and firm hand in all aspects related to her social life unlike in non-tribal societies." Traditional and customary norms are comparatively more liberal to women, though high proportions are illiterate. In fact only 33 per cent of tribal women were found to be literate,[2] in comparison to 60 per cent of tribal men and 55 per cent of all women in the survey (IIPS 2006).

Research context

Among women in general, a high literacy rate is associated with lower infant mortality rates, reduced fertility rates, and enhanced status of women in both the domestic and public spheres (Caldwell 1979; Behrman and Wolfe 1987; Elo 1992; Basu 1997; Dharmalingam et al. 1999; Kingdon 1999; Raghupathy 1996; World Bank 1997). Cross-country comparisons using large data sets, such as the World Fertility Survey and the Demographic and Health Surveys, have shown that various maternal characteristics, such as education and work status, exert a strong influence on reducing child morbidity and mortality (Boerma et al. 1990; Caldwell and Caldwell 1990; Basu and Basu 1991; Bicego and Boerma 1993; Murthi et al. 1995; Basu 1997; Govindasamy and Ramesh 1997). Studies have also shown that the utilization of prenatal care is dependent on various factors, such as household standard of living, availability of health facilities, maternal education, work status, birth order, etc. (Moneith 1987; Bhatia and Cleland 1995; Celik and Hotchkiss 2000; Kamal 2009). Several studies have been carried out to explain how maternal back-

2. Literate refers to men/women who can read a whole or a part of a sentence and who have completed grade 6 or higher of education (IIPS 2006).

Table 1. Background characteristics for India and two groups of central and northeastern states of India in NFHS-2 and NFHS-3.

	Per cent Illiterate		Per cent Working		Per cent with Electricity		Per cent Urban		Total Fertility Rate		Infant Mortality Rate		Under five mortality	
	NFHS-2	NFHS-3	NFHS-2	NFHS-3	NFHS-2	NFHS-3	NFHS-2	NFHS-3	NFHS-2	NFHS-3	NFHS-2	NFHS-3	NFHS-2	NFHS-3
India	58.2	44.9	39.2	42.8	60.1	67.9	26.2	31	2.9	2.7	68	57	95	74
Central														
Madhya Pradesh	68.5	55.6	57.2	54	68.1	71.4	25.3	28	3.3	3.1	86	70	138	94
Chattisgarh	68.5	55.1	64.3	69.1	58.4	71.4	18.2	22	2.8	2.6	81	71	123	90
Bihar	76.6	63	26.4	34	18.2	27.7	10.2	16	3.5	4.0	73	62	105	85
Jharkhand	76.3	62.9	31.7	56.8	23.6	40.9	17.2	25	2.8	3.3	54	69	78	93
Orissa	59.5	47.8	30.6	36.9	33.8	45.4	11	17	2.5	2.4	81	65	104	91
Northeastern														
Arunachal Pradesh	52.7	47.3	59.6	72.7	68.9	76.9	15.9	27	2.5	3.0	63	61	98	88
Manipur	42.9	27.4	69.9	64.1	75.3	87	33.7	32	3	2.8	37	30	56	42
Mizoram	10	6	49.9	45.6	84.1	92.3	52.9	54	2.9	2.9	37	34	55	53
Meghalaya	38.1	30.5	47.6	41.2	41.2	70.4	20	26	4.6	3.8	89	45	122	71
Nagaland	39.8	24.8	63.9	45.9	56.3	82.9	20.3	27	3.8	3.7	42	38	64	65
Tripura	31.5	31.5	22.7	32.1	63.6	68.8	20.7	18	1.9	2.2	44	52	51	48

ground characteristics may influence child health, mostly within the conceptual framework put forward by Mosley and Chen (1984), who argue that mortality is the outcome of a combination of social, cultural, biological, and environmental factors. The abovementioned studies have shown that there is no universal explanation, and that the determinants of utilization of maternal healthcare services are not the same across socioeconomic and cultural factors. In India, there are large inter- and intra-regional variations, especially in education, employment, and health utilization, which are further complicated by variations between the rural and urban population within the same states. The rural population lags far behind the urban one, not only in education but also in utilization of healthcare facilities. The government of India has introduced specific health plans, such as the National Rural Health Mission, for decentralized areas based on the needs assessment in the 10th Five-Year Plan for improving the conditions of rural and tribal populations.

Although numerous studies have been conducted on tribal women regarding their health, cultural practices, work status, and participation in management, etc. (Nongbri 1990; Basu 1993; Maharatna 2005; Mitra and Singh 2008), variation in patterns of maternal health service utilization by women in different tribal areas has not been thoroughly examined. This study addresses this important issue, because the characteristics and problems of tribal women differ from one specific area to another, depending on the geographical location, historical background and the process of social change.

In India, the striking interregional diversity is an important confounding factor. As such, in this study, India's tribal population is divided into three groups: central, northeastern, and remaining states. The states, with tribal populations reported, within each group are as follows: the northeastern group consists of Mizoram (95.4 per cent), Meghalaya (80.5 per cent), Nagaland (72.8 per cent), Arunachal Pradesh (62.4 per cent), Manipur (25.6 per cent), and Tripura (17.1 per cent); the central group includes the states of Chhattisgarh (29.8 per cent), Jharkhand (27.9 per cent), Orissa (23.2 per cent), Madhya Pradesh (21 per cent), and Bihar (0.4 per cent); and the remaining group encompasses Rajasthan (14.3 per cent), Gujarat (10.6 per cent), Maharashtra (10.6 per cent), Andhra Pradesh (6.5 per cent), Karnataka (6.2 per cent), and Goa (4.8 per cent); any other states have a very small proportion of the tribal population (IIPS 2006).

The northeastern and central groups of states are distinctly different socioeconomically and culturally, and are fairly representative of the two tribal groups of India. Northeastern women typically enjoy greater freedom, and as an outcome have higher literacy and employment rates. In contrast, tribal women of the central part of India tend to get married at an early age, are predominantly illiterate or poorly educated, and are less likely to work outside the home. Marriage before attaining the legal age of 18 years varies from 64 per cent in central states to 14 per cent in northeastern India (IIPS 2006). Further, literacy rates among tribal women are significantly higher (73 to 94 per cent) in the northeastern states, such as Mizoram, Manipur, and Nagaland, where tribal groups constitute a large percentage of the general population. On the other hand, tribal literacy rates are much lower (37 to 52 per cent) in the states of Bihar, Orissa, and Madhya Pradesh. In these states the tribal population constitutes a small per cent of the total population, although it represents a large proportion of the total tribal population. Thus, the general statistics that portray the dismal state of education and literacy among tribal groups ignore important demographic, social, cultural, and economic differences among the various tribal groups. The study analyzed 4,843 tribal women surveyed in the NFHS-2

(1998–99), and 6,832 tribal women surveyed in the NFHS-3 (2005–06) who gave birth to a child in the last three years preceding the survey.

The difference between northeastern and central states of India was found not only in education, but also in other socio-demographic characteristics (Table 1). For instance, while 73 per cent of women ages 15–49 years in the state of Arunachal Pradesh were working, only 34 per cent reported working outside the home in Bihar. Further, the north-eastern states were more urbanized, with most households having electricity, whereas 75 per cent of the central states were rural and 50 per cent of the population lives without proper electrical facilities. Improvement over the 7-year period from the NFHS-2 to the NFHS-3 was more in northeastern states like Meghalaya and Nagaland, while the central states were lagging far behind in basic amenities.

The northeastern states also fare better than their central counterparts on infant and child mortality. Although infant and child mortality rates have decreased in the last seven years, estimates are still very high in comparison to the world average. Both infant and under-five mortality rates were higher in the central states than India's national average of 57 and 74 deaths per 1,000 live births, respectively. Estimates for all the northeastern states were in the range of 30 to 61 infant deaths and 42 to 88 child deaths per thousand live births.

Maternal and child healthcare (MCH) during pregnancy is an important component of primary healthcare in India. Women can access antenatal care services at health centres, where such services are available, or from health workers during their home visits. One of the most important components of antenatal care services is to provide information and advice about pregnancy-related complications, and recommend possible strategies for the early detection and management of problems. Investigating the health centres provides data on the voluntary utilization of services by women, while examination of home visits gives us information on the quality of available services.

Methodology

This study uses secondary data from the National Family Health Survey 2 and 3 of India conducted in 1998–99 and 2005–06, respectively. The National Family Health Survey (NFHS) of India is one of the largest surveys conducted worldwide in the field of population and health. NFHS surveys are conducted under the Ministry of Health and Family Welfare (Government of India), with the International Institute for Population Sciences (Mumbai) as a nodal agency. ORC Marco (USA) provided the technical assistance for the survey and the dataset for download through the Demographic Health Survey data distribution system (www.measuredhs.com).

The second national family health survey (NFHS-2) covered approximately 90,000 ever married women aged 15–49. And the NFHS-3 covered a sample of 124,384 women aged 15–49. The survey was conducted in 29 states of India, where about 99 per cent of country's total population live. In addition, the NFHS-2 collected information on 32,393 children born in the three years preceding the survey, and the NFHS-3 gathered data on 39,677 children born in the five years preceding the survey. Both surveys were carried out in two phases, with three questionnaires administered in each phase: household women's and village questionnaires for the NFHS-2 and household men's and village questionnaires for the NFHS-3. The base sample consisted of "ever married" tribal women aged 15–49 who gave birth to children in three years preceding the survey—4,843 in the NFHS-2

and 6,832 in the NFHS-3. Information on various household and individual background characteristics was obtained from merging the household and the women's datasets.

For this study, we utilized data gathered from the women's questionnaire on respondent background characteristics and their health service seeking patterns. Information was collected on various aspects of maternal healthcare utilization for live births in the three years preceding the survey. Specifically, a woman was asked whether she received antenatal care (ANC), and if yes, who administered the care, how many months she was pregnant when she first received ANC, how many ANC visits she had all together, whether she received an anti-tetanus injection during her pregnancy, where she gave birth, who assisted in childbirth, etc.

Dependent variable

For measuring the extent of utilization of maternal healthcare services, three dependent variables were analyzed, including the following: complete antenatal check-up, institutional delivery, and assistance by a trained health professional. The five main indicators of maternal care service utilization are: antenatal care visits, tetanus-toxoid vaccine, receipt of iron/folic-acid tablets, place of delivery, and assistance during delivery. A woman is said to have received complete antenatal care if she received at least three antenatal check-ups, two tetanus-toxoid injections, and a full course (minimum 90 days) of iron/folic-acid supplementation. Safe deliveries are [defined as] deliveries conducted by trained health professionals in an institute or at home; trained health professionals include doctors, nurses, trained midwives, and other medically trained personnel.

Multivariate logistic regression analysis is used to analyze the utilization of health facilities in different parts of the country, after statistically controlling for demographic and background variables. A logistic regression model has been run for three dependent dichotomous variables for maternal health care utilization: whether the respondent had received complete antenatal care, whether the delivery was attended by trained health professionals, and whether the delivery took place in a health institution. With the help of logistic regression, differences were identified in utilization patterns in different parts of the country and improvement within seven years.

Independent variables

It is understood that the likelihood of utilization of maternal health care is influenced not only by the availability of health facilities but also by such potentially confounding factors as mother's education, employment status, religion, rural/urban residential pattern, household standard of living and the child's birth order. It is usually assumed that women tend to give greater attention to their first pregnancy. Due to a lack of knowledge and experience, women are more likely to utilize health care facilities during their first pregnancy (Elo 1992; Bhatia and Cleland 1995; Raghupathy 1996). On the other hand, it is also assumed that women with prior experience of delivery complications, stillbirths and abortions are more likely to utilize health facilities (Navaneetham and Dharmalingam 2002). Birth order was broken down into three categories: only child, 2–3 children and 4 or more children. Mother's education was categorized into three groups: illiterate, less than secondary school, and completed secondary school and above. Mother's employment status was categorized as not working, working without cash, and working for

Table 2. Per cent distribution of scheduled tribe women who gave birth to a child in last three years preceding the survey according to their background characteristics.

	NFHS-2				NFHS-3			
	Central	Northeastern	Other	All India	Central	Northeastern	Other	All India
Age								
15–19	16.6	5.9	13.6	11	8.1	3.9	9	6.1
20–24	36.7	28	39.5	34	36.3	25.1	40.5	31.4
25–29	27.6	33.8	26	29.7	28.7	32.6	29.5	31
30–39	17.6	28.4	18.5	22.5	24.2	34	19.3	28.3
40–49	1.5	3.8	2.4	2.8	2.7	4.4	1.7	3.4
Education								
No Schooling/Illiterate	83.6	27.9	71.1	55.9	75	29.1	59.1	46.9
Less than secondary school	14.7	59.6	23.2	36.5	24	60.8	35.7	46.3
Secondary or higher	1.7	12.5	5.7	7.6	1	10.1	5.2	6.8
Work Status								
Not working	40.7	48.1	50.9	47.3	30.2	50.5	50.8	45.8
Working without cash	24.1	25.3	25.2	25.0	34.4	27.8	22.4	28.1
Working for cash	35.2	26.6	23.9	27.8	35.4	21.7	26.7	26.1
Standard of Living index								
Low	61.5	33.5	45.8	44.5	61.7	27.5	42.6	38.8
Medium	35.6	57.6	46.7	48.5	31.0	45.0	35.4	39.6
High	2.9	8.8	7.5	6.9	7.3	27.4	22.1	21.6
Religion								
Hindu	95.1	7.5	88.2	55.8	86.8	3.8	80.4	41.2
Christian	3.2	77.7	1.2	34	4.3	84.9	4.3	47.1
Others	1.7	14.8	10.7	10.3	8.9	11.2	15.3	11.7
Place of Residence								
Urban	7.3	22.2	11.4	15	9.7	29.3	17.1	21.9
Rural	92.7	77.8	88.6	85	90.3	70.7	82.9	78.1
Birth Order								
1	20.9	24.2	26.8	24.3	25.3	27.8	32.9	28.4
2–3	38.7	39.2	42.6	40.2	37.1	39.8	42	39.8
4+	40.4	36.6	30.6	35.5	37.6	32.4	24.8	31.9
Total Female	**1172**	**2045**	**1626**	**4843**	**1600**	**3627**	**1605**	**6832**

Table 3. Percentage of births during three years preceding survey for which mothers received antenatal and delivery care for NFHS-2 and NFHS-3.

	NFHS-2				NFHS-3			
	Central	Northeastern	Other	All India	Central	Northeastern	Other	All India
ANC visit								
None	53.3	33.2	40.5	40.5	28.6	32.4	24	29.4
1–2	29.9	24.5	26.4	26.5	34.1	20.6	23.5	24.5
3+	16.7	42.3	33.1	33	37.3	47	52.6	46.1
Tetanus Toxoid Injection								
None	47.3	35.1	38.4	39.1	24	31.1	22.2	27.3
1	14.2	23.5	11	17	12.8	16.4	9.1	13.8
2+	38.6	41.4	50.6	43.8	63.2	52.4	68.7	59
Per cent received/bought IFA tablets/Syrup	38.9	52.4	52.8	49.3	66.8	46.8	66.6	56.4
Per cent consumed IFA tablets/Syrup (90 days)	30.5	42.2	43.9	39.9	18.1	22.3	15.9	16
Place of delivery								
Home	92.9	71.1	77.4	78.4	90.6	71.5	67.9	75.2
Public Hospital/Health Centre	5.7	22	14.3	15.5	6.2	22.6	23.3	18.9
Private/NGO hospital	1.5	6.9	8.3	6.1	3.2	5.9	8.8	5.9
					9.4	28.5	32.1	24.8
Assistance during Delivery								
Untrained Person	87.7	60.7	71.5	70.9	82.8	61.8	60.7	66.5
Trained Health professional	12.3	39.3	28.5	29.1	17.3	38.2	39.3	33.5
Full/Complete ANC	11.1	19.5	22	18.3	31.9	26.7	41.2	31.5

cash. It is expected that education and financial independence enhance women's status, and hence are more likely to associate with use of proper and timely healthcare facilities (Caldwell 1979; Mosley and Chen 1984; Desai and Jain 1994; Raghupathy 1996). Religion was classified into Hindu, Christian, and Others. Household standard of living index was grouped into low, medium, and high, according to the household characteristics and amenities. Better household conditions reduce the problems of high-cost and travelling times in the utilization of healthcare services. Along with the above-mentioned variables, place of residence was used for the comparative analysis. Exposure to mass media, even though an important source of information and having a positive influence on the utilization of contraceptives and healthcare services (Rao et al. 1998) was not included in the analysis, due to its high correlation with the household standard of living variable. Further, listening to radio or watching television does not necessarily result in exposure to safe motherhood practices.

Findings

The mother's background characteristics, such as education, employment status, and household standard of living, play a very important role in the utilization of various maternal healthcare services. A comparative analysis of selected demographic characteristics of mothers who gave birth to a child in three years preceding the survey is shown in Table 2. The majority of tribal mothers were between the ages of 20 and 30 for each phase of data collection. Over the past 7 years, the overall illiteracy rate dropped from 56 per cent to 47 per cent; however, illiteracy rates were still much higher for the central states of the country (75 per cent) compared to northeastern states (29 per cent) or the country as a whole (59 per cent). Regional variation in the educational attainment of tribal women could be explained due to differences in religion. The northeastern states of India are predominantly Christian, and Christian missionaries encouraged women to pursue an education, whereas the central region and other parts of the country are predominantly Hindu and their women's role is primarily confined to household work.

Although the proportion of working women was higher among tribal women in the central states (70 per cent), only 35 per cent of the women earn cash for their work. While 29 per cent of tribal women in the northeastern states live in urban areas, only 10 per cent of tribal women from central India live in urban areas. The proportion of women who ranked medium or high on the standard of living index was also higher among northeastern states of India (45 per cent and 27 per cent) in comparison to central states of the country (31 per cent and 7 per cent). Two-fifths of the births in the three years preceding the surveys were of second or third order birth and another one-third was of fourth or higher birth order.

Utilization of maternal healthcare facilities has improved in the last 7 years; the inconsistency between different parts of country is still prevalent (Table 3). Overall, 46 per cent of tribal women in India have received more than three antenatal check-ups, whereas 47 and 37 per cent of tribal women from the northeastern and central states, respectively, have received the same service. The majority of deliveries (91 per cent) to tribal women in central India took place at home, a much higher rate in comparison to the national average (75 per cent), the northeastern states (72 per cent), and the remaining states (68 per cent). In the central states of India only 17 per cent of the deliveries to tribal women were attended by trained health professionals, compared to 38 per cent of deliveries to

Table 4. Reasons for non-utilization of healthcare facility.

	NFHS-2			
	Central	Northeastern	Other	All India
Not necessary	57.1	49.1	59.2	54.7
Not customary	4.4	1.4	5.8	3.9
Cost too much	18.8	9.4	8.8	11.9
Inconvenient/too far	7.6	14.1	8.3	10.3
Poor quality/service	0.3	1.9	0.4	1
No time to go	4.4	9.5	7.7	7.4
Family did not allow	2.8	0.6	4	2.4
Lack of knowledge	0.6	1.5	0.4	0.8
No Female provider	-	-	-	-
Other	0.6	2.4	1	1.5
	NFHS-3			
	Central	Northeastern	Other	All India
Not necessary	72	65.8	71.2	68.8
Not customary	7.9	0.5	7.4	4.2
Cost too much	28.9	15	15.4	19.2
Inconvenient/too far	14.6	18.6	23.7	20.2
Poor quality/service	1.1	2.7	2.4	2.2
No time to go	-	-	-	-
Family did not allow	5.3	1	4.9	3.1
Lack of knowledge	-	-	-	-
No Female provider	2.3	0.3	0.9	1
Other	1.5	3.8	4.9	3.3

tribal women in the northeastern states. These percentages were relatively high compared to figures from the NFHS-2 that show only 29 per cent of deliveries were conducted by trained health professional across India, and 12 per cent in the central region. A woman is said to receive complete/full antenatal care if she received three or more antenatal check-ups, had two or more tetanus-toxoid injections, and consumed iron/folic acid tablets for a minimum of 90 days. In India, only 18 per cent of tribal mothers in the NFHS-2 and 32 per cent in NFHS-3 received complete antenatal care. The complete/full antenatal care rate was higher for the remaining states of India (41 per cent) compared to the central states (32 per cent) and the northeastern states (27 per cent) of the country in the NFHS-3.

Women who did not utilize health facilities for antenatal check-up or delivery were asked about their reason for not utilizing such services. Almost 69 per cent of women in the NFHS-2 and 55 per cent in the NFHS-3 reported that it is "not necessary" to utilize such health facilities for prenatal and delivery care (Table 4). Other frequently mentioned reasons were "costs too much," "very far away/inconvenient to go," "not customary to go," and "husband/family member does not allow." The least frequently mentioned reasons were "poor quality of health services" and "no female health provider."

Table 5. Odds ratio of utilizing maternal health care services for births to tribal women during three years preceding the survey, NFHS-2 and NFHS-3.

Characteristics	NFHS-2			NFHS-3		
	Complete ANC	Deliveries assisted by Trained health Professional	Births delivered in Medical Institution	Complete ANC	Deliveries assisted by Trained health Professional	Births delivered in Medical Institution
States (rc: Central)						
Northeastern states	1.066	1.928**	3.042***	0.445***	1.538**	2.533***
Remaining states	1.728***	2.316***	3.187***	0.973	2.135***	3.338***
Education (rc: Illiterate)						
Less than secondary school	2.255***	1.975***	2.029***	1.756***	2.471***	2.417***
Secondary or higher	3.595***	5.763***	3.782***	3.003***	5.295***	3.683***
Work Status (rc: Not Working)						
Working without cash	0.9	0.763**	0.655***	0.757**	0.582***	0.534***
Working for cash	1.265*	1.241*	1.215	1.026	0.878	0.783**
Standard of Living index (rc: Low)						
Medium	1.247*	1.967***	1.950***	1.477***	1.677***	1.406**
High	1.910***	4.182***	3.739***	2.607***	3.592***	2.613***
Religion (rc: Hindu)						
Christian	0.764	1.241	0.749	0.731*	0.705*	0.567*
Others	1.291	0.602**	0.709	0.998	0.734*	0.804
Place of Residence (rc: Rural)						
Urban	2.279***	5.239***	7.391***	1.800***	3.849***	3.430***
Birth Order (rc: First)						
2–3	0.599***	0.548***	0.522***	0.735***	0.516***	0.488***
4+	0.408***	0.393***	0.382***	0.591***	0.370***	0.3401***

Note: ***p<.001;**p<.01;*p<.05

Multivariate analysis

For a complete understanding of the differences in utilization patterns of maternal healthcare services by tribal women in the different states of India, a binary logistic regression analysis model was utilized. Through binary logistic regression, we estimated the extent of difference among various parts of the country, after controlling for the effect of all maternal demographic and background characteristics.

Data show that, after controlling for background demographic variables, women in the northeastern and remaining states of India were more likely to utilize maternal healthcare facilities, particularly for deliveries and assistance during delivery. Specifically, tribal women of the northeastern states were twice as likely to give birth to a child in a medical institution, compared to women in central India. Also, tribal women of the northeastern states were 54 per cent more likely to receive assistance from trained health professionals for delivery; however, it is surprising to find that women in this area were less likely to receive complete antenatal care services than the women of central states.

Education was found to be the most significant factor, with the increase in odds from two to five times for different indicators. Specifically, the odds of giving birth in health institutions were 2.4 and 3.6 times higher for women with some education and secondary or higher education, respectively, compared to illiterate women. Also, in 2005/06 women with secondary school or higher education were five times more likely than illiterate women to give birth with assistance from trained health professionals. The odds have fallen slightly, from 5.8 to 5.3, in the last seven years. The odds of receiving complete antenatal care were almost three times higher for women with secondary or higher education, compared to illiterate women.

Women from households ranking medium or higher on the standard of living index were two to three times more likely to utilize health facilities, compared to women on a lower standard of living scale in 2005/06. These odds were reduced from a high of four times in 1998/99, indicating an improvement in accessibility for lower-class women. Religion was also utilized as a controlling variable, but found to be statistically insignificant. Similarly, the odds of utilizing maternal health services were reduced from seven times in 1998/99 to three times in 2005/06 for women from urban areas, indicating an increase in the utilization of health services in rural areas.

Women's employment status was also found to be a significant factor, with the odds of utilizing health services reducing significantly, from 44 per cent to 25 per cent, for women who do not earn money or cash for their work outside home. Child's birth order was also a highly significant factor in the analysis; the odds of utilizing maternal health services are reduced to one-half and two-thirds with the increase in birth order. Specifically, fourth- or higher-order birth is 66 per cent less likely to be delivered in a health institution compared to a first-order birth. This reduction in odds can be due to a limited availability of time as the number of children increases, or the experience of having no difficulties with the previous births.

Discussion and conclusion

Studies over the past decade have identified differences in tribal women's utilization of healthcare facilities when compared to the general population. The present study has further identified differences among the tribal women from different geographic regions

of the country. The study found significant variations among the tribal women of India. Women from the northeastern states of India were more likely to utilize maternal health services in comparison to tribal women from central India, even after accounting for the effects of background characteristics. The variation between northeastern and central states in the utilization of maternal health care services is likely due to differences in the availability and accessibility of health facilities in different tribal areas of the country. The northeastern states of India have high urbanization, which reduces the problem of availability and accessibility. On the other hand, tribal people in the central states are geographically scattered and live in areas which are not easily accessible. Due to a lack of comparable data on the availability of health facilities among different tribal areas in two surveys, its effect cannot be measured statistically in this study.

However, a recent evaluation report on the status of family welfare services in tribal areas of the country can shed some light on the situation. A reproductive and child healthcare programme was launched by the Government of India in 1997 all over the country to provide high quality health and family welfare services, and its effectiveness was evaluated both quantitatively and qualitatively at regular intervals. The evaluation committee found that tribal areas around the country are lacking in infrastructure. Further, government healthcare centres in tribal rural areas are lacking proper medical equipments and face high instances of absenteeism among their health professionals (Saha 2003). In fact, thirty-five per cent of tribal women have reported their concern about the non-availability of health providers as a major problem in accessing health facilities overall. Also, forty-four per cent of tribal women reported long distance to the health facility as being an obstacle in accessing health facilities (IIPS 2006). The situation is the same for both the health and education sectors in India, with a larger number of positions for doctors, nurses, and teachers remaining vacant in rural areas, thus affecting the implementation of any welfare and development programmes. Though the report found no discrimination by government towards tribal people, fear of discrimination, especially among the scattered tribal groups of the central states, may prompt hesitation in the utilization of healthcare services among some tribal groups, whereas a higher proportion of tribal population in the smaller northeastern states reduces these chances or fear of discrimination.

Along with highlighting differences in the utilization of health facilities among the tribal women belonging to two different tribal dominated areas, the study indicated the extent and effect of different socioeconomic and demographic variables on the utilization of maternal healthcare facilities. Using data from the NFHS-2 and NFHS-3, this analysis provides further support to the positive relationship between mother's education, household standard of living, place of residence, and utilization of services. The positive influence of education is highest for seeking trained assistance during delivery, with an overall increase of 2 to 5 per cent with increased level of education. One important finding of our analysis is that working status has a negative effect on the utilization of healthcare services. In theory, working women are assumed to have greater freedom, more knowledge about pregnancy, and greater control over resources, and hence are more likely to utilize healthcare facilities (Desai and Jain 1994). However, the study found lower utilization of maternal healthcare services among working women. This contradictory finding is related to the fact that women's work in developing countries is often poverty-driven. Tribal women are found mostly working in construction or agriculture on daily wages, and hence are less likely to visit a healthcare centre during working hours (Desai

and Jain 1994). It is further possible that non-working women belong to households with high standards of living, and hence are more likely to seek medical care. On the other hand, illiterate working women from poor households are less likely to utilize healthcare services, as it involves opportunity and monetary costs.

In conclusion, the paper reinforces the need for different strategies in the implementation of family welfare and healthcare services in different tribal regions of India. Along with infrastructure development, attention should also be given to regular availability of doctors, nurses, and evening clinic hours for improving the availability and accessibility of healthcare services. Incentives and better facilities, like transportation vehicles, should be provided to health personnel working in tribal areas of the country. The study further calls for continued investments in education, with a special focus on tribal dominated areas for both men and women in order to reduce maternal, infant, and child mortality. Public policy should also focus on other factors, such as quality and accessibility of health facilities, which may affect healthcare utilization. In a country like India, where illiteracy and poverty are still high, improving access to health facilities should go hand in hand with infrastructure development for schools, roads, public transportation, and emergency services, etc., especially in tribal areas.

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