The State of Reproductive Health Care in India

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Abstract: This paper focuses on the goals and achievements of the reproductive health care programmes in India. In order to do that it presents a brief review of the history of family planning in India with goals and objectives, highlights the status of reproductive health from the point of view of need for care and its gap with utilisation of antenatal, postnatal, and institutional delivery care services among the women of the rural areas of the Country. The study utilises data from Rapid Household Survey under the Reproductive and Child Health Project-Phase II.

Key words: achievement, antenatal care, delivery care, goal, reproductive health, utilisation

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1. Introduction

The World Health Organisation defined health as "a state of complete physical mental and social well-being and not merely the absence of disease or infirmity" (WHO 1961). Reproductive Health has been defined by the Programme of Action adopted by the delegates to the International Conference on Population and Development (ICPD), Cairo as above "… in all matters relating to the reproductive system and to its function and processes" (United Nations 1994). The ICPD maintained that "People have the ability to reproduce and regulate their fertility, mothers are able to go through pregnancy and child birth safely, the outcome of pregnancy is successful in terms of maternal and infant survival and well-being and couples are able to have sexual relations free of fear of pregnancy and contracting diseases."

In 1951, India became the first country in the world by establishing a nationwide network of family planning services to check population growth. At the beginning, the programme has been the responsibility of the Ministry of Health. In 1966, a full-fledged Department of family Planning was established within the Ministry and it was renamed as Ministry of Health and Family Planning. Initially the programme was started with a very cautious approach namely, the Clinical (Cafeteria) Approach. Under this approach family planning personnel used to wait for eligible couples to come to the clinics for advice and supplies. As the approach could not make any significant achievement due to lack of demand for family planning services in the society, focus has been shifted to a **H**ealth centre operated **I**ncentive based **T**ime bound **T**arget oriented **S**terilisation focused (HITTS) approach (Srinivasan 2000). However, experience gained within the country and outside led the policy makers to realise that the health of women in the reproductive age group and of small children (up to 5 years of age) is of crucial importance for effectively tackling the problem of growth of population. This has led to change of the name of the programme from Family Planning to Family Welfare in 1977 (GOI 1998a). The universal Immunisation Programme (UIP) started in 1985-86 to check mortality and morbidity among infants and young children

due to Vaccine Preventable Diseases. Various other programmes also started under the Maternal and Child Health (MCH) programme during the Seventh Plan. And all these programmes were brought under one umbrella namely, Child Survival and Safe Motherhood Programme (CSSM) and implemented from 1992-93. This was taken a step further when ICPD, Cairo recommended unification of all Reproductive and Child Health care services (GOI 1994) and advocated that the participant countries should implement unified approach for Reproductive Health (United Nations 1994). RCH programme in India is nothing but CSSM programme with two more additional components: specialised health care services for Reproductive Tract Infection (RTI) and Sexually Transmitted Diseases (STD), and specialised health care needs for the adolescents (GOI 1998b).

The rationale behind all such changes can be found from Easterlin's (1975) framework, which attempts to explain human fertility behaviour combining concepts of demography, economics, and sociology. It assumes that parents are more concerned about number of living children, not about number of live births. From this assumption it follows that if infant and / or child mortality rates of one society is high, it would indirectly keep the fertility rate at high level. As the objective of the government in one developing country is to reduce fertility, it should first pay adequate attention on the reduction of such mortality rates. And it can be done through the upliftment of maternal and child health. The Reproductive and Child Health Approach (RCH) has, therefore, become very important from the point of view of a country's social and economic policy.

As a signatory to the ICPD, the Government of India adopted Reproductive and Child Health (RCH) approach for the ongoing family planning programme, the major components for pregnant mothers of which are following (MOHFW 1998):

i) all pregnancies have to be registered by health workers,

ii) pregnant mothers must be given 2 doses of tetanus toxoid immunisation,

iii) pregnant mothers must be given iron folic acid tablets for prevention and treatment of anemia,

iv) pregnant mothers must be given 3 antenatal checkups that include checking their blood pressure and ruling out complications,

v) deliveries by trained personnel in safe and hygienic surroundings must be encouraged,

vi) institutional deliveries should be encouraged for mothers having complications,

vii) referral should be made to first referral units for management of obstetric emergencies,

viii) 3 post-natal checkups should be given to mothers after the delivery, and

ix) spacing of at least three years between children must be encouraged.

India is also a signatory to the Alma Ata Declaration and was committed to attain the goal of 'Health for All' by the Year 2000 through the universal provision of primary health care services. Experience gained within the country and outside led the Government to outline a long-term perspective plan for achieving the 'Health For All' goal (GOI 1997). The National Health Policy was officially adopted by the Parliament in 1983 (see GOI 1983). The Government started concentrating on the development of rural health infrastructure to provide primary health care services, through a network of integrated health and family welfare delivery system, to about 74 per cent rural population, which had by and large remained neglected (GOI 1997). Priority has been accorded to extension, expansion and consolidation of rural health infrastructure with the objective of placing the health of the people in the hands of the people through the primary health care approach. Though health status improved considerably over the decades (VHAI 1997, GOI 2002) and considerable progress has been made in developing infrastructure (GOI 2002), local action for achieving the goal has not been squared up with that global thinking (Singh 2000). There has been a slippage in achieving the goal by 2000 (see Srinivasan 2000, Sood 2000). The call at present is to

achieve it by 2025. This setback draws our attention to examine goals and achievements of the RCH programme in India, particularly by focusing on utilisation of reproductive health care among rural residents in India. The study utilises data from Rapid Household Survey under the Reproductive and Child Health Project-Phase II.

2. Objective

The specific objectives of the paper are to:

i) analyse need for reproductive health care in major States and Union Territories of India;

ii) examine the goals and achievements of the reproductive and child health approach in major States and Union Territories of India;

iii) study the major reasons behind non-utilisation of antenatal care in India;

iv) analyse pattern of utilisation of different types of health facilities in major States and Union Territories of India;

v) examine likelihood of utilisation of antenatal care (in contrast to non-utilisation of those) with respect to different socio-economic, demographic, and other characteristics; and

vi) estimate likelihood of institutional deliveries (in contrast to home deliveries) with respect to different socio-economic, demographic, and other characteristics, and / or characteristics of the service.

3. Data

The study utilises data from Rapid Household Survey under Reproductive and Child Health Project-Phase II (RHS-RCH-II). In 1998, the first phase of the survey was conducted in all the States and Union Territories covering 50 per cent of the districts (251) of each State and Union Territory. In 1999, the remaining 50 per cent districts (252) were covered from each State and Union Territory. The phase II of the survey covered 194128 and 48630 currently married mothers in the reproductive span (15-44 age-

group) in the rural and urban areas respectively leading to a total sample size of 242758 cases. We have selected 82773 respondents from rural areas of the country who had experienced any live birth in between 01 January 1996 and 31 December 1998.

The survey provides information on utilisation of different maternal and child health care related services as well as data on various socio-economic, demographic and other aspects. The survey was conducted by 15 regional agencies in different parts of the country and coordinated by the International Institute for Population Sciences, Mumbai. The World Bank provided financial assistance for the survey.

4. Method

In order to fulfill our first objective of analysing need for reproductive health care, we will focus on natality. In the survey all respondents have been asked whether they had experienced any live birth in the reference period. The survey also records number of live births if the answer is positive. We will compute percentage figures of mothers who experienced the event of live birth(s) according to number of births, and cross-tabulate the results with major States and Union Territories of India. We will also present distribution of mothers according to order of last birth in the major States and Union Territories of India.

In order to fulfill the second objective of examining the goals and achievements of the reproductive and child health (RCH) approach of the ongoing family planning programme of India, we will focus on major components of RCH programme for mothers (as mentioned in the introductory section) as follows: whether the respondent (mother) has been attended by auxiliary nurse midwife (ANM), given tetanus toxoid injection during respondent's visit to the health facility, given iron folic acid (IFA) tablets, checked up for blood pressure, treated with abdominal check up, advised for institutional delivery during visit for antenatal care (ANC), attended by ANM at home within six weeks after the delivery, able to make at least one ANC visit, and also whether delivery

has taken place at home or in any health care institution. Percentage figures with respect to each of the variables will be computed and cross-tabulated with major States and Union Territories of India.

The third, and fourth objectives will be fulfilled by focusing on the descriptive statistics of the relevant variables / questions, which will be computed as percentage figures and cross-tabulated with major States and Union Territories of India.

The fifth, and sixth objectives will be fulfilled by estimating binary-multivariate logistic regression models with respect to a set of relevant predictor variables. In order to fulfill these objectives, we may consider utilisation of ANC, and utilisation of delivery care as events (Béland 1988). In each of these cases, the event of utilisation will be binary in nature. We may assign 1 if the event has occurred, 0 otherwise.

If P be the estimated probability of utilising any care, in the standard form of an estimated logistic function, the model is:

$$\Omega = \exp(Z), \qquad \ldots \quad \ldots \quad \text{(i)}$$

where Ω (uppercase omega) $\equiv \frac{P}{1-P}$ (is called the odds), and

$$Z \equiv \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_k X_k . \qquad \ldots \quad \ldots \quad \text{(ii)}$$

Substituting (ii) in (i) we get:

$$\Omega = \exp(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_k X_k) . \qquad \ldots \quad \ldots \quad \text{(iii)}$$

$$\Omega = \exp\left(\beta_0 + \sum \beta_i X_i\right) \qquad \ldots \quad \ldots \quad \text{(iv)}$$

The equation includes a set of predictor variables (X_i). Two different models will be estimated as specified in table 1.

Definitions and coding categories of the predictor variables are shown in table 1. We would like to see how pattern of utilisation of ANC varies with respect to age of the respondent, family size, order of last birth, educational achievements of the respondents as well as their respective husbands, caste / ethnicity, religion, affordability of households, and geographical region of the respondents (Model: I).

The model for utilisation of delivery care (Model: II) will be estimated with the above set of explanatory variables with two more variables: whether auxiliary nurse midwife visited the respondent at home for antenatal care, and the respondent has been advised for institutional delivery during any visit to healthy facility.

5. Results and discussion

5.1. Need for reproductive health care

Table 2 (in the appendix) shows need for reproductive health care as reflected from natality among mothers between 01 January 1996 and 31 December 1998. Results have been arranged in ascending order according those in the column of 'all live births'. We see that 42.64 per cent of the mothers, in the 15-44 age group in rural areas of the country, have had at least one live birth within the reference period. We may comprehend that these mothers had genuine need for antenatal, postnatal, and delivery care services within the three-year reference period. If we assume a uniform distribution of births within the reference period, nearly 14 per cent of the mothers in the reproductive span were in need of the above-mentioned reproductive health care services per year in between 1996 and 1998. Among the States and Union Territories, Arunachal Pradesh (with some other states in the north-eastern hilly region) has the highest level of need for reproductive health care followed by Uttar Pradesh, Bihar, Asom (the major State in the north-eastern hilly region), Madhya Pradesh, Goa (with some other Union Territories), and Rajasthan. Except Goa (with

Pondicherry), all other States and Union Territories, with need higher than the national average, are demographically backward (in the sense that those are far away from the demographic transition).

The concept of need for health care is not homogeneous. It varies sharply according to characteristics of the disorder (Kroeger 1983), or more specifically, severity of the problem (Pathak et al. 1981, Sauerborn et al. 1989, Dunlop et al. 2000). We have considered 'order of last birth' to highlight severity or complexity during pregnancy with the assumption that these increase with order of birth. Table 3 shows distribution of mothers according to order of last birth in major States and Union Territories of India. Results have been arranged according 'third & higher' order of births in ascending order. The table shows 26 per cent of the mothers in India enjoyed motherhood for the first time within the three-year reference period. Nearly 22 per cent became mother for the second time. If we look at the results across States and Union Territories, we see similar results as in the previous section. Though we have seen that more than 42 per cent of the mothers in the reproductive span need for antenatal, postnatal, and delivery care services, quite a big portion of them has severe need, because of complexities associated with higher orders of birth.

5.2. Goals and achievements of the reproductive and child health programme in India

Tables 4A and 4B show goals and achievements of the reproductive and child health programme in India. Results have been arranged according to 'all care (average)' in descending order. The tables include nine basic components of RCH package (we may also comprehend those as functionings) as mentioned in the introductory section. The first component is related to registration of all pregnancies by health workers, particularly by auxiliary nurse midwife (ANM) through home visit. We see that nearly 18 per cent of the respondents have answered that they have been visited by ANM at home. So, nearly 82 per cent of the pregnancies did not receive any attention from the primary health care system. In other words, a major portion of the pregnancies remained unidentified or unregistered due to poor functioning of the

public / primary health care system. However, the picture is not uniform in all parts of the country. In two south Indian States (Andhra Pradesh, and Tamil Nadu), more than 60 per cent of the respondents have mentioned that they have been attended by ANM at home. They results are very depressing for Jammu & Kashmir and Arunachal Pradesh (with some other north-eastern hilly states), Bihar, Asom, Himachal Pradesh, and Punjab.

According to RCH package, one pregnant mother should be given two doses of tetanus toxoid injections. We have considered one variable / question where respondents have mentioned whether they had been given injection or not to prevent tetanus in arms during ANC visit. We see that nearly 68 per cent of the respondents have given positive answer. Results are satisfactory in the demographically advanced (in the sense that most of the States or Union Territories have either completed demographic transition or about to finish it) south Indian, and in some north Indian States. Again, results of Arunachal Pradesh (with some other north-eastern hilly states), Asom, and other (above-mentioned) demographically backward States are not satisfactory.

The third component of the RCH programme is to give iron folic acid (IFA) tablets to all pregnant mothers even if someone has no anaemia. We see that more than 57 per cent of the mothers did not receive IFA tablets. Results of the States and Union Territories follow similar pattern as mentioned above.

Results with respect to the question of check up of blood pressure are quite depressing. Nearly 72 per cent of the respondents did not utilise this crucial service. However, most of the mothers in Kerala, Tamil Nadu and Andhra Pradesh have gone through check up of blood pressure.

We observe similar results with respect to the question of abdominal check up where with Kerala, Tamil Nadu and Andhra Pradesh, performance of another south Indian State, Karnataka is also satisfactory.

Nearly 75 per cent of the respondents have mentioned that they have not been advised for institutional delivery.

Nearly half of the respondents have not made any antennal visit, which is the most important component of RCH programme. We will look at the major reasons behind non-utilisation of antenatal care in the next section.

Results with respect to post-natal visit are also very depressing. According to RCH package, there should be at least 3 post-natal visits. However, we would like to see whether at least one such visit has been made. We found that nearly 88 per cent of the mothers have responded negatively.

As of utilisation of delivery care, nearly 22 per cent deliveries were institutional and the remaining 78 per cent took place at home. Kerala is the only State in India, where nearly all deliveries were institutional. In Tamil Nadu nearly 74 per cent of the deliveries were institutional. Findings of all other States and Union Territories are dreadful.

On an average, nearly 34 per cent of the mothers have utilised essential reproductive health care services in India. Average performance is the best in Tamil Nadu, followed by Kerala, Andhra Pradesh, and other south Indian States and Union Territories. Average performance is the worst in Bihar, followed by Uttar Pradesh, Arunachal Pradesh (with some other north-eastern hilly States), Madhya Pradesh, Asom, and Rajasthan.

5.3. Reasons behind non-utilisation of antenatal care

Table 5 shows reasons behind non-utilisation of antenatal care. The most important one of them is - 'do not feel necessary' followed by 'lack of knowledge of services', and 'financial cost'. More than 60 per cent of the respondents (who did not utilise ANC despite real need) have mentioned that they did not feel necessary to utilise ANC. We may comprehend that there is no felt need or demand for reproductive health care among this particular section of population. As a large fraction of the respondents remain

unattended by the ANMs through home visits, probably they were unaware of evils of non-utilisation of antenatal care.

5.4. Pattern of utilisation of different types of health facilities for ANC

Table 6 shows pattern of utilisation of different types of health facilities for antenatal care (ANC). Results have been arranged according those in the column of 'public facilities' in ascending order. We see that among the mothers who utilised ANC in India, around 63 per cent utilised public health facilities, and the remaining 37 per cent utilised private health facilities. Among the users of public health facilities, more than 31 per cent have utilised government hospitals, followed by primary health center, sub-centre, and government dispensary. Among the States and Union Territories, rate of utilisation of government hospitals is the highest in Himachal Pradesh. The same for primary health centers is the highest in Orissa. Utilisation rate of sub-centres, which are run by paramedical and voluntary workers only without any medical professional, is the highest in West Bengal. Nearly 35 per cent of the mothers in West Bengal, probably who had to overcome lots of barriers to reach such publicly funded health centres, could not meet any medical professional. Obviously these mothers are deprived due to health service system related factors. However, the over all situation in West Bengal is not too very hopeful as only 12.68 percent of mothers utilised Government hospitals (which is far bellow the national average), and 40.8 per cent private hospitals. Utilisation rates of private health facilities are high in the demographically advanced southern States and in some quarters of the north.

5.5. Multivariate analyses on utilisation of ANC and institutional delivery care

In this section we will examine how different socio-economic, demographic, and other factors affect utilisation of antenatal care, delivery care, and public health facilities for ANC. Table 7 shows odds ratios of utilisation of above-mentioned services. When all other variables are held constant (henceforth we will not mention it), as compared to young mothers (in the 15-29 age group), aged mothers (in the 30-44 age-

group) are less likely to utilise ANC (as odds ratio decreases from 1.00 to 0.834). On the contrary, aged mothers are likely to utilise delivery care more (as odds ratio increases by 16.1 per cent).

Odds ratios of utilisation of ANC and institutional delivery care decrease sharply with the increase in family size and birth order. Standard literature on economics of health care theorises that a larger family has less income per capita (although not necessarily proportionately less) than does a small family with the same income (Feldstein 1979). So, demand for medical care may be less in larger families. As reproductive health care services are delivered at free of cost through primary health care institutions, probably utilisation of these services from such institutions is independent of household income. However, as the public / primary health care system in India has a very unflattering image (Banerjee 1981) with shortage of stuff, availability of drugs, services, etc. (Majumder and Upadhyay 2004), probably rural people tend to avoid primary health care institutions and are compelled to go to private facilities or secondary public health care institutions in towns. In such situations household income may matter and members of the large households may utilise ANC and institutional delivery cares less.

Odds ratios of utilisation of ANC and institutional delivery care increase sharply with education. These indicate that educated mothers are more likely to utilise these services relative to less educated ones. Impact of education towards utilisation of health services is universally acceptable (Gobindasamy and Ramesh 1997). Education of a person is an important determinant of values, beliefs, attitudes and goals. Since these factors influence behaviour, education influences the use of health services through similar mechanism (Pathak et al. 1981).

Ethnicity also plays important role towards utilisation of ANC and delivery care. As compared to the mothers of the general caste category, scheduled caste mothers are more likely to utilise ANC. This finding is, however, contradictory with findings of other important studies, which found that non-scheduled caste mothers utilised maternal health services more than scheduled caste mothers

(Gobindasamy and Ramesh 1997, Trakroo 1993, and Majumder 2005). Scheduled tribe mothers are significantly less likely to utilise ANC. In case of utilisation of institutional delivery care, mothers from both the scheduled caste and tribe categories are significantly less likely to utilise care as compared to the mothers belonging to general caste category.

With affordability of household likelihood of utilisation of ANC and institutional delivery care increase sharply. The most important factor in the model of delivery care is the advice for institutional delivery. Odds ratio of utilisation increases tremendously (multiplied by 8.269) when respondents mentioned that they had been advised for institutional delivery by health professional.

As compared to the people of the south, people of the north and east are very less likely to utilise ANC and institutional delivery care.

6. Summary, conclusion, and policy prescriptions

We have found that on an average in India, 14 per cent of the mothers in the reproductive span experienced natality per year in the reference period, from 1996 to 1998. We have comprehended this rate of natality as real need for antenatal, postnatal, and delivery care services. We have also identified some States and Union Territories where need for reproductive health care as well as severity of it are quite high. These States and Union Territories include those in the north-eastern hilly region (Arunachal Pradesh Asom, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura), north and central Indian demographically backward States (Bihar, Madhya Pradesh, Uttar Pradesh, and Rajasthan), and some other Union Territories (Andaman & Nicober Islands, Daman & Dieu, Goa, and Pondicheri). Among the Union Territories, Goa, and Pondicheri are demographically advanced, though we have clubbed them with some other Union Territories for computational advantage.

After examining the goals and achievements of the Reproductive and Child Health (RCH) approach, we see very dreadful pictures in terms of utilisation of essential health care services in the

so-called demographically backward States and Union Territories as mentioned above. On an average, nearly 34 per cent of the mother utilised reproductive health care services in the country. The programme could not generate demand for reproductive health care services among needy people employing its machinery, particularly through home visit by auxiliary nurse midwives (ANMs) in the rural areas of the country. Most of the persons who did not utilise care, felt that those were not necessary for them. We may recall that the family planning programme in India in its first decade (1951-1961) failed, as there was no demand for family planning services. The Government started the programme with cafeteria approach assuming that there was real need for family planning services and people would come to utilise those from the family planning centers. However, as the initiative failed, the Government put stress on extension activities and recruited field workers, who would generally talk to eligible couple about family planning services in order to generate demand for those. We see that RCH programme is also based on the idea that ANMs would make home visits, and generate demand for antenatal, post-natal, and institutional delivery care services. However, we see almost a total failure of the programme with respect to this point. From the multivariate analysis we have seen that such an instrument would lead the programme to a grand success (in the model of institutional delivery care). So, appropriate measures should be taken in order to generate demand for reproductive health care among rural people.

Also, as the utilisation of ANC and institutional delivery care varies with some demographic characteristics, some intervention is necessary to bring uniformity in that.

Rate of utilisation of public health facilities for antenatal care is 63.26 per cent, and that of private health facilities is 36.74 per cent. Utilisation rates of public health facilities in the previously mentioned severely needy States and Union Territories and in some other States are quite high. In all other States public health care system is underutilised towards fulfilling reproductive health related goals. However,

higher rates of utilisation of public health facilities do not always necessarily mean a good progress in the reproductive health related goals. One must consider the aspect of quality of care of public health care system. For example, in one recent study the Pratichi Trust (a Trust set up by Amartya Sen with his Nobel money) found very dreadful state of the public health care system in the eastern India (Sen 2005).

We have seen that more than half of the mothers in India are deprived, as they did not make any antenatal visit. In such a situation, it is to be understood that making such visit is very worthy, and precious. However, we see that quite a good percentage of mothers who made such visits are too deprived as they utilised sub-centres as compared to others who utilised properly equipped other health facilities with doctors and medical specialists. If the objective of the Government is to reduce inequalities in access to reproductive health care services, it must be removed first from the system itself. In other words, all types health care institutions (including the private ones) must be well equipped with physical inputs, manpower (with competency), and intermediary goods and services to deliver the complete package of reproductive health care services.

We know that utilisation of health care or any specific behaviour or action depends on a set of need (severity, etc.), predisposing (background characteristics, etc.), and enabling (health service system related factors) factors (Kroeger 1983). However, we have seen that inequalities in utilisation of reproductive health care in Indian context are mainly due to the enabling factors, or more specifically, poor functioning of the health care system. In the present study we have considered people with real need only. And we have seen that where need is very high and severe, rates of utilisation are very poor. This is the most crucial problem of the RCH programme in India.

On the question of need we should make one judgment – whether there is any evil with high and severe need. As the RCH approach maintained that people are free to exercise their choices, there is nothing wrong with high and severe need. However, we must realise that whether the observed level of

natality corresponds to real psychological need or resultant of unmet need for reproductive health care. We know that unmet need contribute to many social evils, such as death, disability, etc., which may again increase natality and lead to rapid population growth (it's a social evil in Indian context). So, we have two options: either we must reduce natality to a minimum acceptable limit or make health care infrastructure competent enough to serve the unmet need. If the objective of the government is to reduce natality, it should take a long-term policy (as demographic factors are not subject to sudden change) and initiate developmental activities to bring change in the pre-disposing factors such as education, economic status, etc. It will also reduce public expenditure to a great extent in the long term, as educated and affordable households prefer private health care (Majumder 2006). Otherwise, if the objective of the Government is to serve the deprived population, it should take urgent action for rejuvenating the public health care system immidiately.

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Table 1. Response and predictor variables in the logistic regression models and definitions

Response variable	Predictor variables: definition / coding categories
(Model II) Utilisation of institutional delivery care: Whether the delivery has taken place in any health facility. (Model I) Utilisation of ANC: Whether the respondent visited any health facility for antenatal care (ANC) in the reference period (between 01 January 1996 and 31 December 1998).	Age of the mothers in 2 categories: 15 - 29, 30 - 44. Coding: 1 if age 30-44, 0 otherwise. Family size: Number of persons in the household. Coding: 1 if size > 5, 0 otherwise. Order of last birth in two categories. Coding: 1 if order > 2, 0 otherwise. Respondent's education in completed years in 3 categories: ≤ 3, 4-10, 10+. Coding: 1 if 4 ≤ years ≤ 10, 0 otherwise; 1 if years > 10, 0 otherwise. Husband's education: Whether husband can read or write. Coding: 1 if yes, 0 otherwise. Caste / Ethnicity: Caste / ethnicity of the respondent in 3 categories: general, scheduled caste (SC), scheduled tribe (ST). Scheduled categories are mentioned in one of the schedules of the Indian Constitution. They are considered to be weaker sections of society whose interests need to be safeguarded and promoted. Coding: 1 if SC, 0 otherwise; 1 if ST, 0 otherwise. Religion of the respondent in 3 categories: Hindu, Muslim, other (Christian, Sikh, Buddhist, Jain, Zoroastian, No religion, and other). Coding: 1 if Muslim, 0 otherwise; 1 if other religion, 0 otherwise. Affordability: It has been measured by type of house in 3 categories: low (Kachcha / muddy floor / structure), medium (Semi-pucca / cement-floor but roof is made of other material), and high (Pucca / fully concrete structure). Coding: 1 if medium, 0 otherwise; 1 if high, 0 otherwise. Geographical region: Southern (Andaman & Nicobar Islands, Andhra Pradesh, Daman & Diu, Dadra & Nagar Haveli, Goa, Karnataka, Kerala, Lakshadeep & Minicoi, Maharashtra, Pondichery, Tamil Nadu) / Eastern (Arunachal Pradesh, Asom, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Sikkim, Tripura, West Bengal) / Northern (Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Madhya Pradesh, Punjab, Rajasthan, Uttar Pradesh). Coding: 1 if East, 0 otherwise; 1 if North, 0 otherwise. Home visit by ANM: Whether auxiliary nurse midwife (ANM) visited the respondent at home for antenatal care (ANC). Coding: 1 if yes, 0 otherwise. Advice for institutional delivery: Whether the respondent has been advised for institutional delivery during any visit to healthy facility. Coding: 1 if yes, 0 otherwise.

Table 2. Need for reproductive health care as reflected from natality in between 01/01/1996 and 31/12/1998[1]

States / Union Territories	Number of live births						All live births		N^S
	1		2		3+				
	n	%	n	%	n	%	N*	%	
Andhra Pradesh	1953	22.08	477	5.39	87	0.98	2517	28.45	8846
Tamil Nadu	1308	22.23	427	7.26	43	0.73	1778	30.22	5883
Kerala	986	22.41	312	7.09	86	1.95	1384	31.45	4400
Punjab	1269	20.57	584	9.47	156	2.53	2009	32.57	6169
Karnataka	1418	21.62	614	9.36	141	2.15	2173	33.13	6559
Maharashtra	2101	23.2	786	8.68	190	2.1	3077	33.97	9057
Himachal Pradesh	1249	24.92	416	8.3	56	1.12	1721	34.33	5013
Haryana	1440	21.5	699	10.44	224	3.34	2363	35.28	6698
Jammu & Kashmir	2240	31.54	320	4.51	24	0.34	2584	36.39	7101
Orissa	3609	26.96	1195	8.93	183	1.37	4987	37.26	13385
Gujarat	1279	24.88	583	11.34	109	2.12	1971	38.34	5141
West Bengal	1992	29.31	642	9.45	74	1.09	2708	39.84	6797
India	**56527**	**29.12**	**21045**	**10.84**	**5201**	**2.68**	**82773**	**42.64**	**194128**
Rajasthan	3120	24.79	1807	14.36	692	5.5	5619	44.64	12586
Goa[3]	927	30.68	333	11.02	94	3.11	1354	44.8	3022
Madhya Pradesh	4713	29.48	2033	12.72	565	3.53	7311	45.74	15985
Asom	3464	38.87	632	7.09	57	0.64	4153	46.6	8912
Bihar	6526	31.59	2547	12.33	807	3.91	9880	47.82	20659
Uttar Pradesh	10216	32.82	4654	14.95	1476	4.74	16346	52.52	31124
Arunachal Pradesh [2]	6717	40	1984	11.82	137	0.82	8838	52.64	16791

$N^*=\Sigma n$; N^S: sampled respondents. [1] Arranged in ascending order according to all live births.
[2] Includes Meghalaya, Manipur, Mizoram, Nagaland, Sikkim, and Tripura
[3]Includes Andaman & Nicober, Daman & Dieu, Pondicheri

Table 3. Order of last birth among the respondents who became mother in between 01/01/1996 and 31/12/1998[1]

States / Union Territories	Order of last birth						N*
	First		Second		Third & higher		
	n	%	n	%	n	%	
Kerala	712	51.45	437	31.58	235	16.98	1384
Tamil Nadu	811	45.61	485	27.28	482	27.11	1778
Andhra Pradesh	942	37.43	818	32.5	757	30.08	2517
Karnataka	798	36.72	624	28.72	751	34.56	2173
Punjab	679	33.8	587	29.22	743	36.98	2009
Maharashtra	1102	35.81	823	26.75	1152	37.44	3077
Goa[3]	491	36.26	345	25.48	518	38.26	1354
Himachal Pradesh	520	30.21	540	31.38	661	38.41	1721
Haryana	727	30.77	623	26.36	1013	42.87	2363
Gujarat	603	30.59	453	22.98	915	46.42	1971
West Bengal	789	29.14	662	24.45	1257	46.42	2708
Orissa	1319	26.45	1265	25.37	2403	48.19	4987
India	**21539**	**26.02**	**18142**	**21.92**	**43092**	**52.06**	**82773**
Madhya Pradesh	1794	24.54	1545	21.13	3972	54.33	7311
Asom	992	23.89	892	21.48	2269	54.64	4153
Rajasthan	1306	23.24	1130	20.11	3183	56.65	5619
Jammu & Kashmir	521	20.16	594	22.99	1469	56.85	2584
Arunachal Pradesh [2]	2012	22.77	1627	18.41	5199	58.83	8838
Bihar	2191	22.18	1804	18.26	5885	59.56	9880
Uttar Pradesh	3230	19.76	2888	17.67	10228	62.57	16346

$N^*=\Sigma n$. [1] Arranged in ascending order according to third and higher of births.
[2] Includes Meghalaya, Manipur, Mizoram, Nagaland, Sikkim, and Tripura
[3] Includes Andaman & Nicober, Daman & Dieu, Pondicheri.

Table 4A. The goals and reality: achievements in different fronts of RCH programme[1]

States / Union Territories	Home visit by ANM				Given tetanus toxoid injection				Given IFA tablets				Check up of blood pressure				Abdominal check up			
	No		Yes		No		Yes		No		Yes		No		Yes		No		Yes	
	1				2				3				4				5			
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Tamil Nadu	587	33.01	1191	66.99	21	1.18	1757	98.82	458	25.76	1320	74.24	273	15.35	1505	84.65	206	11.59	1572	88.41
Kerala	893	64.52	491	35.48	59	4.26	1325	95.74	150	10.84	1234	89.16	87	6.29	1297	93.71	186	13.44	1198	86.56
Andhra Pradesh	993	39.45	1524	60.55	341	13.55	2176	86.45	656	26.06	1861	73.94	444	17.64	2073	82.36	492	19.55	2025	80.45
Karnataka	1089	50.12	1084	49.88	284	13.07	1889	86.93	521	23.98	1652	76.02	725	33.36	1448	66.64	403	18.55	1770	81.45
Goa[3]	1063	78.51	291	21.49	165	12.19	1189	87.81	217	16.03	1137	83.97	347	25.63	1007	74.37	326	24.08	1028	75.92
Maharashtra	1916	62.27	1161	37.73	389	12.64	2688	87.36	728	23.66	2349	76.34	1477	48	1600	52	754	24.5	2323	75.5
Himachal Pradesh	1592	92.5	129	7.5	233	13.54	1488	86.46	294	17.08	1427	82.92	717	41.66	1004	58.34	428	24.87	1293	75.13
Punjab	1834	91.29	175	8.71	270	13.44	1739	86.56	1086	54.06	923	45.94	1056	52.56	953	47.44	810	40.32	1199	59.68
West Bengal	2265	83.64	443	16.36	464	17.13	2244	82.87	1279	47.23	1429	52.77	1690	62.41	1018	37.59	1703	62.89	1005	37.11
Gujarat	1250	63.42	721	36.58	584	29.63	1387	70.37	763	38.71	1208	61.29	1469	74.53	502	25.47	1239	62.86	732	37.14
Jammu & Kashmir	2554	98.84	30	1.16	818	31.66	1766	68.34	1549	59.95	1035	40.05	1377	53.29	1207	46.71	1221	47.25	1363	52.75
Orissa	3497	70.12	1490	29.88	1051	21.07	3936	78.93	2037	40.85	2950	59.15	3915	78.5	1072	21.5	2953	59.21	2034	40.79
Haryana	2227	94.24	136	5.76	392	16.59	1971	83.41	1180	49.94	1183	50.06	1806	76.43	557	23.57	1447	61.24	916	38.76
India	**67587**	**81.65**	**15186**	**18.35**	**26216**	**31.67**	**56557**	**68.33**	**47651**	**57.57**	**35122**	**42.43**	**59493**	**71.87**	**23280**	**28.13**	**49718**	**60.07**	**33055**	**39.93**
Rajasthan	3877	69	1742	31	2120	37.73	3499	62.27	3567	63.48	2052	36.52	4733	84.23	886	15.77	3899	69.39	1720	30.61
Asom	3941	94.9	212	5.1	1638	39.44	2515	60.56	2122	51.1	2031	48.9	3003	72.31	1150	27.69	2527	60.85	1626	39.15
Madhya Pradesh	5911	80.85	1400	19.15	2431	33.25	4880	66.75	4375	59.84	2936	40.16	6438	88.06	873	11.94	5139	70.29	2172	29.71
Arunachal Pradesh [2]	8684	98.26	154	1.74	4944	55.94	3894	44.06	5924	67.03	2914	32.97	6086	68.86	2752	31.14	5364	60.69	3474	39.31
Uttar Pradesh	13970	85.46	2376	14.54	6578	40.24	9768	59.76	12384	75.76	3962	24.24	15398	94.2	948	5.8	12848	78.6	3498	21.4
Bihar	9444	95.59	436	4.41	3434	34.76	6446	65.24	8361	84.63	1519	15.37	8452	85.55	1428	14.45	7773	78.67	2107	21.33

[1] Arranged in ascending order according to all care (average) of table 5B.
[2] Includes Meghalaya, Manipur, Mizoram, Nagaland, Sikkim, and Tripura.
[3] Includes Andaman & Nicober, Daman & Dieu, Pondicheri

Table 4B. The goals and reality: achievements in different fronts of RCH programme[1]

States / Union Territories	Advice for inst. Delivery				ANC visits / Utilisation				Delivery care				Post natal visit by ANM				All care (average)				N
	No		Yes		No		Yes		Home		Inst.		No		Yes		No		Yes		
	6				7				8				9				10: average (1:9)				11
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	-
Tamil Nadu	534	30.03	1244	69.97	186	10.46	1592	89.54	467	26.27	1311	73.74	862	48.48	916	51.52	399	22.46	1379	77.54	1778
Kerala	447	32.3	937	67.7	21	1.52	1363	98.48	45	3.25	1339	96.75	1200	86.71	184	13.29	343	24.79	1041	75.21	1384
Andhra Pradesh	809	32.14	1708	67.86	385	15.3	2132	84.7	1542	61.26	975	38.74	1302	51.73	1215	48.27	774	30.74	1743	69.26	2517
Karnataka	846	38.93	1327	61.07	409	18.82	1764	81.18	1279	58.86	894	41.13	1154	53.11	1019	46.89	746	34.31	1427	65.69	2173
Goa[3]	645	47.64	709	52.36	135	9.97	1219	90.03	704	51.99	650	48.01	1012	74.74	342	25.26	513	37.86	841	62.14	1354
Maharashtra	1741	56.58	1336	43.42	740	24.05	2337	75.95	1888	61.36	1189	38.63	2098	68.18	979	31.82	1303	42.36	1774	57.64	3077
Himachal Pradesh	1214	70.54	507	29.46	234	13.6	1487	86.4	1287	74.78	434	25.22	1550	90.06	171	9.94	839	48.74	882	51.26	1721
Punjab	1249	62.17	760	37.83	201	10	1808	90	1242	61.82	767	38.17	1809	90.04	200	9.96	1062	52.86	947	47.14	2009
West Bengal	1984	73.26	724	26.74	643	23.74	2065	76.26	2028	74.89	680	25.1	2434	89.88	274	10.12	1610	59.45	1098	40.55	2708
Gujarat	1332	67.58	639	32.42	1030	52.26	941	47.74	1417	71.89	554	28.12	1605	81.43	366	18.57	1188	60.26	783	39.74	1971
Jammu & Kashmir	1863	72.1	721	27.9	1139	44.08	1445	55.92	1395	53.99	1189	46.01	2558	98.99	26	1.01	1608	62.24	976	37.76	2584
Orissa	3888	77.96	1099	22.04	2536	50.85	2451	49.15	4051	81.23	936	18.77	4018	80.57	969	19.43	3105	62.26	1882	37.74	4987
Haryana	1834	77.61	529	22.39	331	14.01	2032	85.99	1889	79.94	474	20.05	2175	92.04	188	7.96	1476	62.45	887	37.55	2363
India	**61763**	**74.62**	**21010**	**25.38**	**42311**	**51.12**	**40462**	**48.88**	**64331**	**77.72**	**18442**	**22.27**	**73071**	**88.28**	**9702**	**11.72**	**54682**	**66.06**	**28091**	**33.94**	**82773**
Rajasthan	4754	84.61	865	15.39	2774	49.37	2845	50.63	4698	83.61	921	16.39	4831	85.98	788	14.02	3917	69.71	1702	30.29	5619
Asom	2913	70.14	1240	29.86	2412	58.08	1741	41.92	3670	88.37	483	11.63	3994	96.17	159	3.83	2913	70.15	1240	29.85	4153
Madhya Pradesh	6195	84.74	1116	15.26	5187	70.95	2124	29.05	6382	87.29	929	12.71	6638	90.79	673	9.21	5411	74.01	1900	25.99	7311
Arunachal Pradesh [2]	7236	81.87	1602	18.13	5379	60.86	3459	39.14	7376	83.46	1462	16.55	8621	97.54	217	2.46	6624	74.95	2214	25.06	8838
Uttar Pradesh	14064	86.04	2282	13.96	10995	67.26	5351	32.74	14345	87.76	2001	12.24	15529	95	817	5	12901	78.92	3445	21.08	16346
Bihar	8215	83.15	1665	16.85	7574	76.66	2306	23.34	8626	87.31	1254	12.69	9681	97.99	199	2.01	7951	80.48	1929	19.52	9880

[1] Arranged in ascending order according to all care (average).
[2] Includes Meghalaya, Manipur, Mizoram, Nagaland, Sikkim, and Tripura.
[3] Includes Andaman & Nicober, Daman & Dieu, Pondicheri

Table 5. Major reasons behind non-utilisation of antenatal care

Reasons	Frequency	Percent
Do not feel necessary	25520	60.3
Lack of knowledge of services	6654	15.7
Financial cost	3406	8.1
Distantly located	1788	4.2
Not customary	1290	3.0
No time to go	1061	2.5
Not permitted to go	982	2.3
Poor quality of service	868	2.1
Other	728	1.7
Total	**42297**	**100.0**

Table 6. Utilisation of different types of health facilities for antenatal care[1]

States / Union Territories	Govt. hospital[2]		Govt. dispensary		Primary health centre		Sub-centre		Public facilities		Private facilities[3]		N
	1		2		3		4		5: (1+2+3+4)		6		7
	n	%	n	%	n	%	n	%	n	%	n	%	-
Bihar	448	19.69	13	0.57	68	2.99	107	4.7	636	27.95	1639	72.04	2275
Kerala	348	26.26	14	1.06	18	1.36	2	0.15	382	28.83	943	71.17	1325
Gujarat	192	20.94	16	1.74	70	7.63	77	8.4	355	38.71	562	61.29	917
Andhra Pradesh	714	35.02	14	0.69	50	2.45	33	1.62	811	39.78	1228	60.23	2039
Tamil Nadu	296	25.65	2	0.17	124	10.75	128	11.09	550	47.66	604	52.34	1154
Haryana	344	18.09	161	8.46	154	8.1	266	13.99	925	48.64	977	51.37	1902
Maharashtra	457	20.16	84	3.71	393	17.34	242	10.67	1176	51.88	1091	48.13	2267
West Bengal	239	12.68	25	1.33	200	10.61	652	34.59	1116	59.21	769	40.8	1885
Karnataka	660	38.98	14	0.83	300	17.72	39	2.3	1013	59.83	680	40.17	1693
Punjab	381	21.39	190	10.67	287	16.11	259	14.54	1117	62.71	664	37.28	1781
India	**12193**	**31.62**	**1268**	**3.29**	**5749**	**14.91**	**5181**	**13.44**	**24391**	**63.26**	**14168**	**36.74**	**38559**
Madhya Pradesh	772	36.97	155	7.42	202	9.67	260	12.45	1389	66.51	699	33.48	2088
Uttar Pradesh	1522	29.06	85	1.62	1074	20.5	908	17.33	3589	68.51	1649	31.48	5238
Asom	687	40.27	80	4.69	310	18.17	186	10.9	1263	74.03	443	25.97	1706
Goa[5]	329	28.29	4	0.34	259	22.27	278	23.9	870	74.8	293	25.19	1163
Arunachal Pradesh[4]	1244	37.16	112	3.35	839	25.06	439	13.11	2634	78.68	714	21.33	3348
Jammu & Kashmir	550	46.22	46	3.87	256	21.51	86	7.23	938	78.83	252	21.18	1190
Orissa	859	37.12	20	0.86	606	26.19	370	15.99	1855	80.16	459	19.84	2314
Rajasthan	1373	48.98	98	3.5	316	11.27	576	20.55	2363	84.3	440	15.7	2803
Himachal Pradesh	778	52.89	135	9.18	223	15.16	273	18.56	1409	95.79	62	4.21	1471

[1] Arranged in ascending order according to public facilities.
[2] Includes community health centres, and rural hospitals.
[3] Includes private doctors also.
[4] Includes Meghalaya, Manipur, Mizoram, Nagaland, Sikkim, and Tripura.
[5] Includes Andaman & Nicober, Daman & Dieu, Pondicheri.

Table 7. Odds ratios of utilising antenatal care (ANC), institutional delivery care in India

Predictor variables	Antenatal care (ANC)	Institutional delivery care
Age of the respondent (rc: 15 - 29)		
30 - 44	0.834[1]	1.161[1]
Family size (rc: ≤ 5)		
5 +	0.910[1]	0.869[1]
Birth order (rc: ≤ 2)		
3 +	0.651[1]	0.598[1]
Respondent's education (rc: ≤ 3 years)		
4 -10	2.242[1]	1.832[1]
10 +	4.631[1]	3.869[1]
Husband's education (rc: illiterate)		
Literate	1.564[1]	1.267[1]
Caste / ethnicity (rc: general)		
Scheduled caste	1.201[1]	0.886[1]
Scheduled tribe	0.585[1]	0.647[1]
Religion (rc: Hindu)		
Muslim	0.965	1.415[1]
Other religion	1.309[1]	1.406[1]
Affordability (rc: low)		
Medium	1.582[1]	1.599[1]
High	2.519	2.683[1]
Auxiliary nurse midwife visited home for ANC (rc: no)		
Yes	-	0.706[1]
Advised for institutional delivery while ANC visit (rc: no)		
Yes	-	8.269[1]
Geographical region (rc: South)		
East	0.252[1]	0.425[1]
North	0.151[1]	0.405[1]
n	**82773**	**82773**

rc: reference category, [1]p<0.01, [2]p<0.05, [3]p<0.10