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**Obstetric Care in Central India**

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## **Introduction**

Obstetric care constitutes a critical component of the health of the women. Females, especially those in the reproductive age group, are regarded as one of the most vulnerable groups of the population in terms of diseases and death. As such, ensuring availability and access to obstetric care services has been an integral component of the strategy and efforts of improving the health of the people in general and health of women in particular. During the 1960s and 1970s, programme activities to improve availability and access to obstetric care services were conceived, planned and organized under the maternal and child health programme. This programme has since been integrated with the National Family Welfare Programme. At present, the National Family Welfare Programme follows the reproductive and child health approach. Obstetric care is a key component of this approach.

Despite the fact that availability and access to obstetric care is an important determinant of the overall health status of the population, especially women in the reproductive age group, complications associated with pregnancy and child birth constitute a major health hazard in the Hindi speaking States of Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh of India. The poor state of obstetric care services in these States can be judged from exceptionally high maternal mortality ratio. Estimates of maternal mortality ratio generated through the sample registration system indicate that these four States occupy the bottom four ranks among the fifteen major States of the country (Government of India, 1999). Information available through the sample registration system also suggests that these four States account for more than 60 per cent of the total maternal deaths identified in the country during the year 1997 with Uttar Pradesh, the most populous State of the country, accounting for more than one fourth of the total maternal deaths.

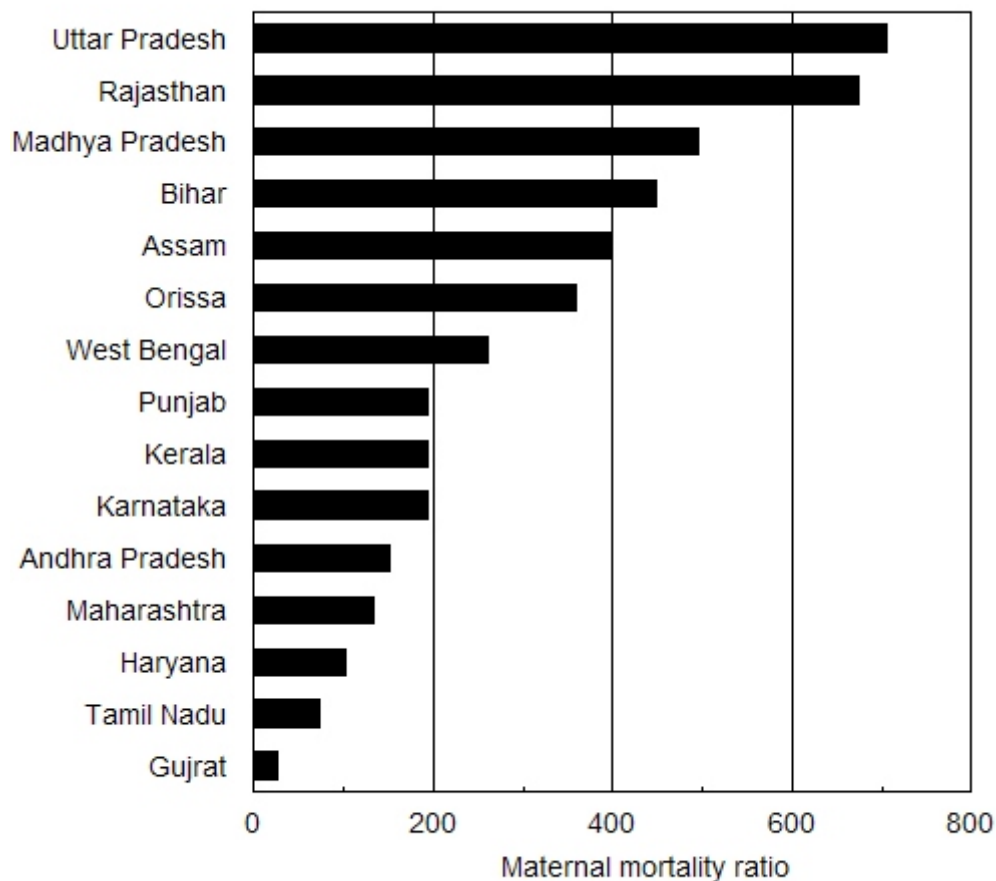
In addition to the estimates based on the sample registration system, Mari Bhat and other have also attempted to estimate the risk of death due to complications of pregnancy and delivery through the application of a regression approach (Mari Bhat, et. al, 1992; Mari Bhat, 2002). These estimates also indicate that the risk of death due to complications of pregnancy and delivery in the four States is among the highest in the country.

District and below district level estimates of maternal mortality ratio are not available in India except for the State of Madhya Pradesh (Ranjan 1999; 2004). These estimates indicate that the risk of death due to complications of pregnancy and delivery varies widely across the districts of Madhya Pradesh.

Information about maternal morbidity in the four States is even more scanty. Most of the information related to sickness and complications during pregnancy and at the time of delivery is hospital-based which does not reflect the actual situation as hospital deliveries constitute only a small proportion of total deliveries and most of the hospital deliveries are concentrated in large urban areas.

Information about the prevalence of anaemia, a common morbid condition during pregnancy is however available through the recently conducted National Family Health Survey (International Institute for Population Sciences and ORC Macro, 2000). According to this survey, in Bihar, more than 63 per cent of the ever-married women surveyed were found to be having some degree of iron-deficiency anaemia with more than one fifth suffering from moderate or severe anaemia. In Madhya Pradesh, the

**Figure 1**  
Maternal Mortality Ratio in India



proportion of ever-married women having anaemia of any degree was found to be 54.4 per cent while in both Rajasthan and Uttar Pradesh, the proportion was 48.7 per cent.

Recently, Government of India has started rapid household survey programme under the Reproductive and Child Health Project. This survey programme provides information about the prevalence of reproductive tract infections and sexually transmitted diseases for each district of the country (International Institute for Population Sciences, *no date*). According to this survey, the prevalence of reproductive tract infections and sexually transmitted diseases has found to be highest in Rajasthan (45.32 per cent) followed by Bihar (37.60 per cent), Uttar Pradesh (35.22 per cent) and Madhya Pradesh (27.11 per cent). However, neither the National Family Health Survey nor the rapid house hold survey carried out under the Reproductive and Child Health Programme provides any information about the nature, extent and quality of obstetric care services in the four States which are of interest here. These four States are regarded as the problem States in terms of the transition in population and health situation as well as in terms of the level of social and economic development.

## **Determinants of Maternal Health**

Maternal morbidity and mortality, in any population, is determined by two groups of factors. The first group consists of a host of social, economic and cultural factors that constitute the environment which shapes the human behaviour including the reproductive behaviour. The second group, on the other hand, is constituted by factors that determine the extent and the nature of obstetric care. The extent and nature of obstetric care, in turn, is determined by the availability of, access to and quality of obstetric care services. It is argued that one of the reasons behind the poor maternal health status in the four States, as reflected by the exceptionally high maternal mortality ratio, is the inadequate availability, very limited access, gross inefficiency and poor quality of obstetric care services. An implication of this inadequacy in availability, limited access, gross inefficiency and poor quality is that the reach of the obstetric care services is extremely limited either because the services are not accessible to majority of women in need of these services or they are not efficient enough to meet the needs of the people or because the people, at large, do not have faith and confidence in these services because of their poor quality. Although, use of obstetric care services, in itself, has been found to be influenced by a host of social, cultural, economic and situational factors, yet improvements in the availability, efficiency and quality of these services have been found to substantially compensate for the adverse effects of a host of exogenous influences on the health of women.

McCarthy and Maine (1992) have developed a framework for analysing the determinants of maternal mortality and morbidity. This framework identifies background and intermediate or proximate variables that determine the level of maternal morbidity and mortality in a population. The framework identifies access to adequate obstetric care services and their use as two of the four intermediate variables that determine the level of maternal morbidity and mortality. Clearly, the availability and access to obstetric care services as well as their efficiency and quality play a crucial role in reducing the risk of death as well as complications associated with pregnancy and child birth and hence in improving the health status of the majority of the women.

Little is currently known about the availability, access, efficiency and quality of obstetric care services in India in general and in the four States of Central India in particular. Maternal health has been a component of the health agenda of the country even before independence. The Report of the first Health Survey and Development Committee constituted during the colonial rule has dealt, at length, the need of strengthening obstetric care services (Government of India, 1946). There has however been little systemic investigation of the impact of these services on the maternal health. There has been little systematic analysis to measure the availability, access and quality of obstetric care services and to monitor changes in these services over time. Similarly, there is little information to assess the efficiency and effectiveness of available obstetric care services in addressing the maternal health needs of the people. At the policy level, an integrated approach has been adopted throughout the country for the development of the health care delivery system with obstetric care services being one of the many components of the integrated health care services delivery network. This integration of obstetric care services with the general health care delivery system has made the task of measuring the availability, access and quality of obstetric care services even more difficult.

In the absence of the detailed information about the availability, access and quality of obstetric care services and their effectiveness in reducing maternal morbidity and mortality, an indirect assessment of the state of obstetric care services can be made through the analysis of the reach or coverage of these services. The reach or the coverage of obstetric care services as obtained through population-based surveys is the combined result of the availability of, access to and quality of these services. Although, the reach or the coverage of obstetric care services also depends upon social, cultural and economic factors that constitute the exogenous environment to maternal morbidity and mortality, yet it is well known that the adverse exogenous environment can be compensated by efficient and effective service delivery system.

Information on selected indicators related to the coverage or reach of obstetric care services is available either through the programme services statistics or through the statistically representative population-based surveys like National Family Health Survey and the rapid household survey carried out under the Reproductive and Child Health Project. Programme service statistics are not appropriate for assessing the state of obstetric care services because of a number of reasons, the most important of which is that these statistics are associated with errors of duplication and false reporting. Another reason for not using the programme service statistics is that these statistics do not provide any information about the reach or coverage of non-programme obstetric care services.

In the discussion that follows, information on selected indicators related to the reach of obstetric care services available through the National Family Health Survey and rapid household survey carried out under the Reproductive and Child Health Programme has been used to assess the state of obstetric care services in the four States that constitute most of the central India. The National Family Health Survey was launched in the year 1992-93 and the second round of the survey has been completed in 1998-99. This survey provides State level estimates related to the reach and use of the available obstetric care services. The rapid household survey, organised under the Reproductive and Child Health Programme, on the other hand, was launched in the year 1998-99. This survey provides, for the first time, district level population-based estimates of the reach of obstetric care services. Information available through this survey has been used for analysing the within State, inter-district inequality in the reach of obstetric care services.

McCarthy and Maine (1992) have subdivided the use of obstetric care services into five categories: use of family planning methods; use of prenatal care; use of modern care during labour and delivery; use of harmful traditional practices; and practice of illicit induced abortion. Out of these five categories, information related to the use of prenatal services, use of modern care during pregnancy and delivery; and the use of family planning methods is available through both the National Family Health Survey and the rapid household survey under the Reproductive and Child Health Programme. The two surveys, however, do not provide information about the use of harmful traditional practices and information about the practice of illicit induced abortion. As such, the discussion that follows is limited to the use of prenatal care, use of modern care during labour and delivery and use of family planning methods only.

In the discussion that follows, the use of prenatal care services has been measured in terms of antenatal care, immunization against tetanus and iron supplementation during pregnancy. Similarly, the use of modern care during labour and delivery has been measured in terms of proportion of institutional deliveries and

proportion of non-institutional deliveries attended by professionally trained persons. Finally, use of the family planning services has been measured in terms of contraceptive prevalence rate which is the proportion of women surveyed or their husband using any family planning method.

### **Prenatal Care**

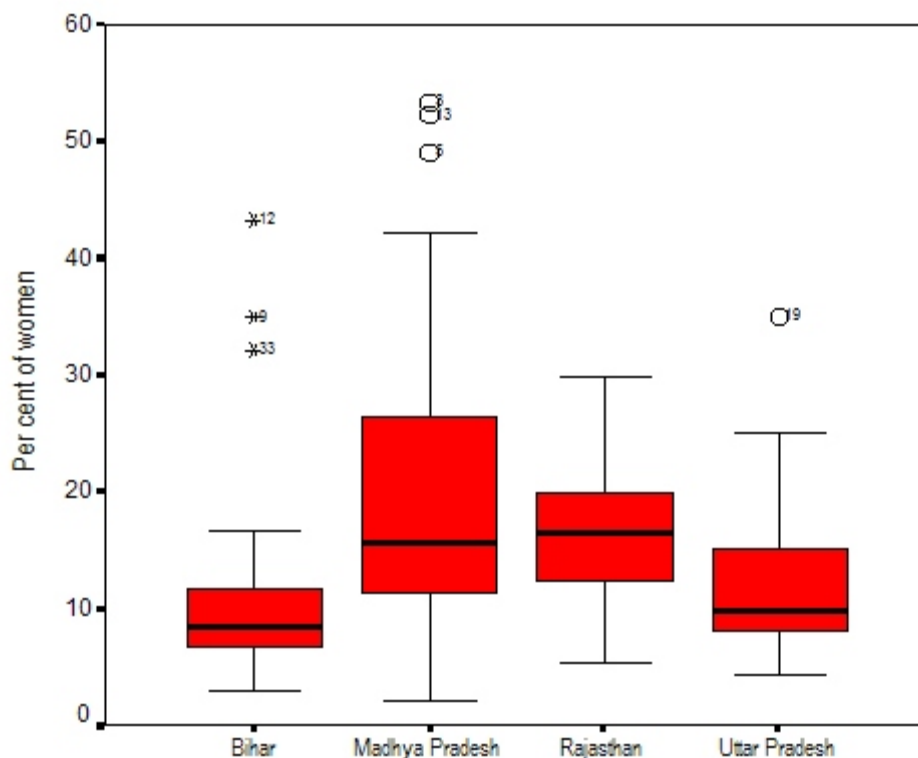
Information on the three indicators of prenatal care - proportion of women having antenatal checkup during pregnancy; proportion of pregnant women receiving two doses of tetanus toxoid and proportion of women given iron supplementation during pregnancy as obtained from the National Family Health Survey is given in table 1 for the four States. If the information given in the table is any indication, then, it is clear that, in all the four States, prenatal care services are able to reach only a small section of the population. This indicates that majority of the population in these States does not have access to even the basic obstetric care services. The situation appears to be worst in Bihar where less than one fourth of the women surveyed reported to have received iron supplementation during pregnancy while only about one third had antenatal checkup. However, immunization of pregnant women for tetanus has been found to be highest amongst the four States. By contrast, the reach of prenatal care services appears to be the best in Madhya Pradesh. In this State, more than 60 per cent of the women interviewed in 1998-99 reported that they had received full antenatal care during pregnancy. Similarly, approximately 55 per cent reported to have received two doses of tetanus toxoid and almost 49 per cent reported to have received iron supplementation.

A comparison of the information on the use of prenatal services available through the first and second round of the National Family Health Survey suggests that the progress towards universalization of the reach of prenatal services appears to be tardy in all the four States. In Bihar, there has virtually been no change in the reach of antenatal care as well as in iron supplementation during pregnancy in the 7 years between 1992-93 and 1998-99, although there has been a significant increase in the proportion of women receiving two doses of tetanus toxoid during the same period. In Madhya Pradesh, on the other hand, there has been only a marginal increase in the proportion of women undergoing antenatal checkup and receiving iron supplementation during pregnancy. In Rajasthan, however, this increase has been relatively faster. In Uttar Pradesh, by contrast, the proportion of women receiving antenatal care during pregnancy has decreased over time.

In all the four States, increase in the proportion of women immunized for tetanus toxoid has been substantially larger as compared to the increase in proportion of women undergoing antenatal checkup and proportion of women receiving iron supplementation during pregnancy during the 7 years period between 1992-93 and 1998-99. The reason probably is that immunization of women against tetanus is linked with the immunization of children under both Universal Immunization Programme and Child Survival and Safe Motherhood Programme.

The rapid house hold survey under the Reproductive and Child Project, on the other hand, provides information about the proportion of women surveyed receiving 'full' antenatal care during pregnancy for all the 186 districts of the four States as they existed at the time of the survey. An unweighted average of these proportions suggests that in none of the four States, more than one fifth of the women had received 'full'

**Figure 2**  
**Proportion of Women Receiving 'Full' Antenatal Care during Pregnancy**



antenatal care during pregnancy. In Bihar, only one in every 10 women were estimated to have received 'full' antenatal care during pregnancy while in Uttar Pradesh, this proportion was just about 13 per cent. By comparison, proportion of women receiving full antenatal care during pregnancy was 16.35 per cent in Rajasthan and 19.37 per cent in Madhya Pradesh. Clearly, coverage of women through comprehensive antenatal care is extremely limited in all the four States.

Within each State, the extent of 'full' antenatal care varies widely as may be seen from figures 2 which present the box plots of inter-district distribution of the proportion of women receiving 'full' antenatal care during pregnancy as obtained through the Reproductive and Child Health Survey 1998-99. Out of 186 districts in the four States, in 118 districts, proportion of women reported to have received 'full' antenatal care during pregnancy has been found to be less than 15 per cent whereas in another 56 districts, this proportion ranged between 15-30 per cent. There were only 12 districts where this proportion was 30 per cent and more. Of these 23 districts, 7 are in Madhya Pradesh, 3 in Bihar and 2 in Uttar Pradesh. There was no districts in Rajasthan where the proportion of women receiving 'full' antenatal care during pregnancy was more than 30 per cent.

Another interesting observation of figure 2 is the presence of outlier districts in Bihar, Madhya Pradesh and Uttar Pradesh. In these districts, very high proportion of women receiving 'full' antenatal care during pregnancy has been reported through the



Reproductive and Child Health Survey. These districts are East Singhbhooni, Dhanbad and Ranchi in Bihar, Betul, Durg and Bhopal in Madhya Pradesh and Dehradun in Uttar Pradesh. Factors behind exceptionally high proportion of women receiving 'full' antenatal care during pregnancy in these districts in comparison to other districts are not known at present.

In addition to the information on the reach of 'full' antenatal care, information on the reach of 'any' antenatal care was also collected during the rapid house hold survey. The information available through the survey indicates that there exists a wide gap between the proportion of women receiving 'any' antenatal care and the proportion of women receiving 'full' antenatal care during pregnancy (International Institute for Population Sciences *no date*). This gap in the reach of 'any' antenatal care and the reach of 'full' antenatal care services clearly reflects the poor efficiency and quality of obstetric care services in the four States and reflects towards the poor efficiency of the available services.

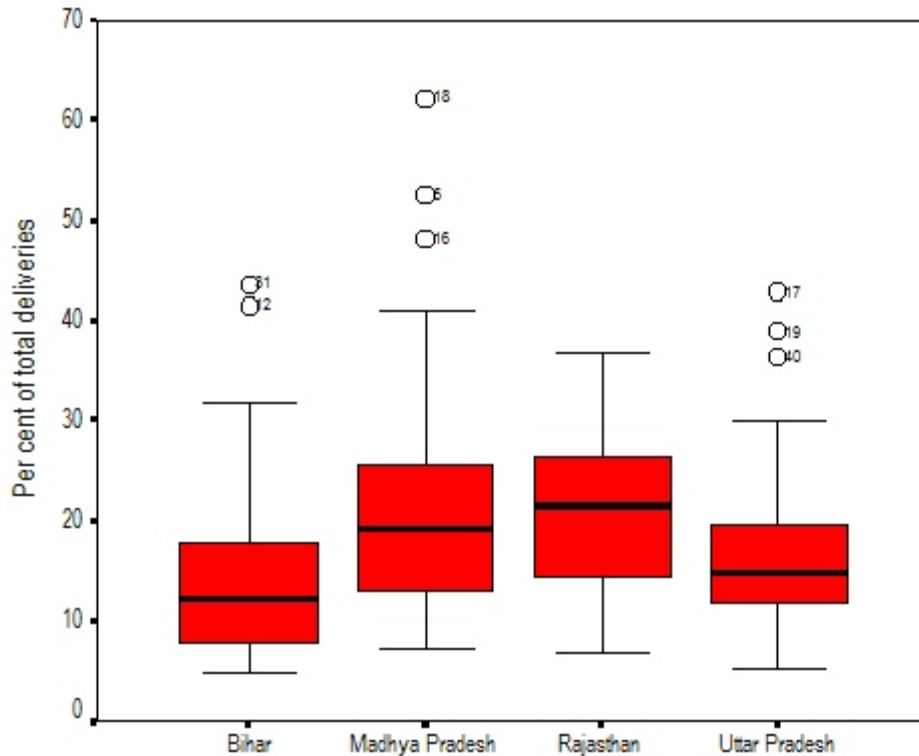
### **Care during Labour and Delivery**

Promotion of safe deliveries is one of the key interventions to reduce maternal morbidity and mortality. Safe deliveries include institutional deliveries and non-institutional deliveries attended by trained health professionals. However, as may be seen from table 3, the situation in this regard is a matter of serious concern in all the four States. Institutional deliveries, in all the four States, constitute less than one fourth of total deliveries reported according to the National Family Health Survey. In Bihar, less 15 per cent of the total deliveries have been found to be the institutional deliveries. Moreover, there has been only a very marginal increase in this proportion over time in this State. By comparison, the situation appears to be relatively better in Rajasthan, where the proportion of institutional deliveries nearly doubled from just 11.6 per cent in 1992-93 to 21.7 per cent in 1998-99. However, in Madhya Pradesh and Uttar Pradesh, the increase in the proportion of institutional deliveries has been very slow.

As regards deliveries outside health institutions but attended by trained health professionals, the National Family Health Survey data surprisingly show a very substantial decline in the proportion of deliveries outside health institutions but attended by trained health professionals in all the four States. In Madhya Pradesh, for example, a comparison of the estimates available from the first and the second round of the National Family Health Survey reveals that the proportion of deliveries outside health institutions but assisted by health professionals decreased from 30 per cent in 1992-93 to just 9.2 per cent in 1998-99. Similarly, in Bihar, this proportion decreased from 18.9 per cent in 1992-93 to 8.8 per cent in 1998-99 while in Uttar Pradesh, it decreased from 17.2 per cent to just 7.3 per cent. This decrease in the proportion of deliveries outside the health institutions but attended by trained health professionals was relatively slower in Rajasthan where it decreased from 21.8 per cent in 1992-93 to 14.5 in 1998-99.

Table 3 also suggests that the increase in the proportion of institutional deliveries between 1992-93 and 1998-99 has not been sufficient enough to compensate for the decrease in the proportion of deliveries assisted by health professionals during the same period. As the result, the proportion of safe deliveries decreased over time in Bihar, Madhya Pradesh and Uttar Pradesh. In Rajasthan, on the other hand, the proportion of safe deliveries increased marginally over time because the increase in the

**Figure 3**  
**Inter-district Variations in the Proportion of Institutional Deliveries**



proportion of institutional deliveries in this State was larger than the decrease in the proportion of deliveries by professionally trained persons. This means that in terms of care at the time of labour and delivery, the reach of obstetric care services in Bihar, Madhya Pradesh and Uttar Pradesh, instead of increasing has actually decreased over time. In Rajasthan, however, there has been only a very marginal increase in the proportion of safe deliveries between 1992-93 and 1998-99.

Like the inter-district variations in the reach of prenatal services, the reach of care during labour and delivery in terms of proportion of institutional deliveries also varies widely across the districts of all the four States. Madhya Pradesh presents the extreme case in this regard. In district Indore of Madhya Pradesh, institutional deliveries constitute more than 62 per cent of the total deliveries whereas in district Sidhi, this proportion is just 7.3 per cent. In Uttar Pradesh, the proportion of institutional deliveries varies from 42.90 per cent in district Kanpur City to 5.30 per cent in district Hardoi whereas, in Bihar, this proportion varies from 43.60 per cent in district Patna to only 4.50 per cent in district Gumla. In Rajasthan, however, the proportion of institutional deliveries varies from 36.90 per cent in district Jaipur to 7.0 per cent in district Churu.

The distribution of districts in the four States on the scale of the proportion of institutional deliveries is however relatively less skewed than the distribution of the proportion of women receiving 'full' antenatal care during pregnancy as may be seen

from table 4. However, the poor reach of obstetric care services can be judged from the fact that in 169 of the 186 districts in the four States, the proportion of institutional deliveries constitute less than 30 per cent of the total deliveries. In only 17 districts in the four States, the proportion of institutional deliveries was found to be more than 30 per cent and out of these districts, 7 districts were in Madhya Pradesh. Moreover, in three districts of Madhya Pradesh, institutional deliveries accounted for at least 45 per cent of the total deliveries according to the rapid household survey organised by the Government of India under the Reproductive and Child Health Programme (International Institute for Population Sciences *no date*). These districts are Bhopal, Gwalior and Indore. In the other three States, there was no district where institutional deliveries constituted 45 per cent and more of the total deliveries. District Indore, in Madhya Pradesh, is the only district in the four States where the proportion of institutional deliveries accounted for more than 60 per cent of the total deliveries reported during the Reproductive and Child Health Survey.

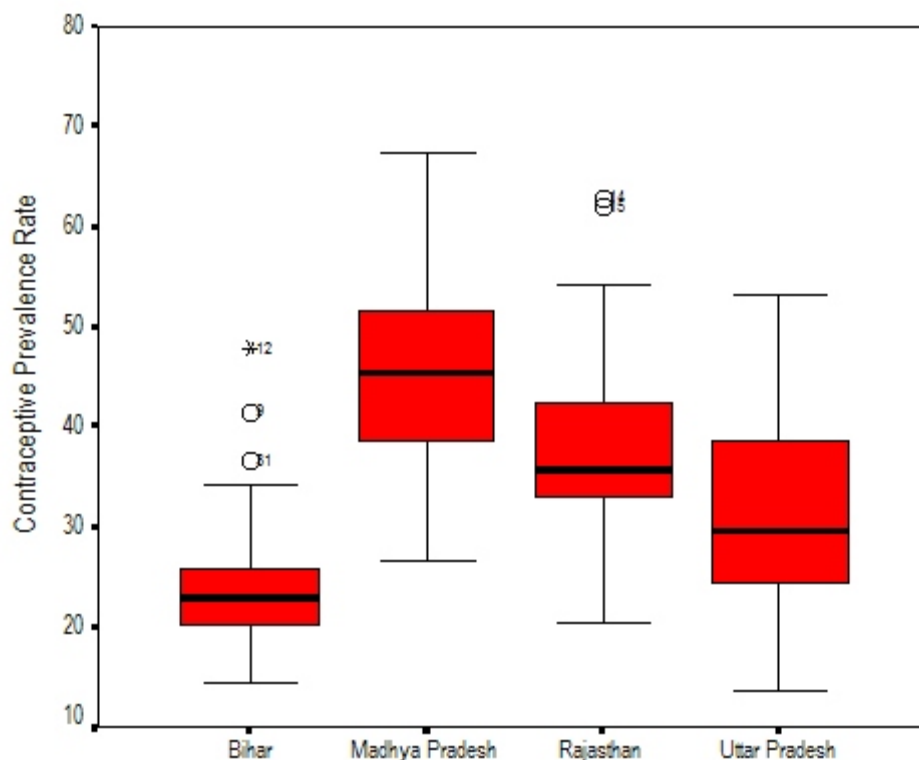
### **Use of Family Planning Services**

The history of organized activity to promote the use of family planning methods in India dates back to 1950s when the National Family Planning Programme was launched throughout the country. This programme is now known as the National Family Welfare programme. However, the conceptualization, organization and implementation of the National Family Planning or Welfare Programme has, for most of the time, been guided by the concern of rapid population growth rather than the health of woman. It is only recently that the maternal health context of family planning use has been recognised.

Information about the use of family planning methods is available from the National Family Health Survey for different States of the country and from Reproductive and Child Health Survey for all the districts in the country. The proportion of currently married women in the age group 15-49 years who were using any family planning method at the time of the first round of National Family Health Survey (1992-93) and at its second round (1998-99) is given in table 5 separately for the four States. Highest contraceptive prevalence rate among the four States have been observed in Madhya Pradesh where slightly more than 44 per cent of the currently married women in the age group 15-49 years were found to be using some family planning method around the year 1998-99. By contrast, in Bihar, this proportion was less than 25 per cent. Use of family planning methods is relatively better in Rajasthan and poor in Uttar Pradesh.

An important observation of table 5, especially in the context of maternal health, is that most of the contraceptive use in all the four States is limited to just one method - sterilization - which is a terminal method of family planning and is used for birth limitation rather than birth spacing. Clearly, the basic orientation of the National Family Welfare Programme in the country is towards birth limitation and not towards birth spacing. This orientation is expected as the Programme was launched in the country context of reducing birth rate and curbing rapid population growth. In any case, this preoccupation has resulted in a virtual overlooking of the promotion of the use of spacing or barrier methods of family planning under the programme.

**Figure 4**  
**Inter-district Variations in Contraceptive Prevalence Rate**



The dominance of terminal methods of contraception in the practice of family planning in the country as well as in the four States suggests that the current pattern of the use of family planning methods has only a limited relevance as regards improvements in maternal health. In the context of maternal health, adequate spacing between consecutive births is very crucial. This fact is recognised in the Safe Motherhood and Child Survival Programme also in which proper birth spacing has been recognised as one of the key strategies to achieve the programme goals (Government of India, 1994). However, table 5 clearly indicates that the Programme has not succeeded in any substantial increase in the practice of spacing method of contraception in the four States. In fact, increase in modern spacing methods of contraception between 1992-93 and 1998-99 has been slower than that in the terminal methods in Madhya Pradesh, Rajasthan and Uttar Pradesh while, in Bihar, there has been a decrease in the use of modern spacing methods of contraception.

Inter-district variations in the contraceptive prevalence rate in all the four States are remarkable for their strength as may be seen from figure 4. The situation appears to be most revealing in Bihar where a relatively very high contraceptive prevalence rate has been reported in some districts while in other districts use of family planning methods is very poor.

The distribution of districts according to the extent of the family planning use indicates that out of 186 districts, contraceptive prevalence rate was less than 30 per cent in 80 districts. All but 7 of these 80 districts are in Bihar and Uttar Pradesh. By contrast, in 38 districts, it was 45 per cent and more; 24 of these 38 districts were in Madhya Pradesh. Moreover, there were 5 districts - 3 in Madhya Pradesh and 2 in Rajasthan where a contraceptive prevalence rate of more than 60 per cent has been estimated. The highest contraceptive prevalence rate of 67.40 per cent has been recorded in district Indore of Madhya Pradesh, according to the rapid household survey.

### **Inequality in the Reach of Obstetric care Services**

Inter-district variations in the use of prenatal services as well as in the use of modern care during labour and delivery in the four States indicate that the reach of obstetric care services within each State is highly unequal. In table 7, estimates of the index of inter-district inequality in the reach of obstetric care services are presented separately for the four States. Theoretically, the index varies from 0 to 1. A value of 0 for a State indicates that there is no inequality across the districts in that State while a value of 1 indicates that there is perfect inequality. This means, higher is the value of the index the larger is the inequality in the reach of obstetric care services across the districts of a given State.

Interestingly, inequality in the reach of obstetric care services varies across the States as well as in different components of obstetric care and there is no clear pattern. In case of antenatal care, the index of inequality is not only highest but its variation across the States is also largest. By contrast, in case of contraceptive prevalence rate, not only the level of inequality across districts is low but its variation across the States is also not very large. A very high value of the index of inequality in antenatal care in Bihar indicates that there is very high concentration of facilities of modern care during labour and delivery in a few districts. By comparison, inter-district inequality in the reach of modern care during labour and delivery in Rajasthan is relatively low.

The index of inequality has also been found to vary between different components of obstetric care within the same State. This shows that even within the same State, the uniformity in the reach of different obstetric care service is not the same. Thus, a relatively low index of inter-district inequality in contraceptive prevalence rate in all the four States indicates that inter-district inequality in the reach of family planning services is lowest in all the four States. By contrast, the inter-district inequality in the reach of antenatal care services is highest in three of the four States - Bihar, Madhya Pradesh, and Uttar Pradesh. It is only in Rajasthan that the inter-district inequality in the reach of modern care during labour and delivery is marginally higher than the inter-district inequality in antenatal care.

There has been little investigation of the reasons or factors associated with the inter-district inequality in the reach of obstetric care services. Theoretically, a uniform, normative approach has been applied for the development of health care delivery system in the country. This means that, according to the norms laid down, the availability of obstetric care services is same in all States and districts of the country. This implies that the observed inequality in the reach of obstetric care services is either due to inter-district variations in the efficiency and quality of maternity care services or due to the exogenous factors that influence the use of available obstetric care services. At present, little is known about the inter-district variations in the efficiency and quality of obstetric

care services in the country. In any case, one way of increasing the reach of obstetric care services is to reduce the inequality in the reach of these services across geo-administrative units in each State.

### **Issues in Improving Maternal Health**

Maternal health has always been a priority area of the health and family welfare agenda of the country. However, real impetus to maternal health could be given in 1992 when the Child Survival and Safe Motherhood Programme was launched throughout the country. The programme primarily focussed on the provision of essential obstetric care to the community and identified the following interventions for improving maternal health situation by reducing maternal morbidity and mortality:

1. Early registration of pregnancy
2. Universal coverage of all pregnant women by two doses of tetanus toxoid and through iron supplementation
3. Timely identification and treatment of complications during pregnancy
4. Promotion of clean deliveries and deliveries by trained persons
5. Promotion of institutional deliveries
6. Management of obstetric emergencies
7. Birth spacing

Interventions identified and applied under the Child Survival and Safe Motherhood Programme are part of the 'risk approach in maternal and child health and family planning' developed by the World Health Organization as part of the strategy to achieve the goal of Health for All by the Year 2000 (Backett et al., 1984; World Health Organization, 1984). Based on the risk approach, a community-based maternity care system has been evolved in the country for the delivery of maternity care services to. This community-based maternity care system revolves round the traditional birth attendants who are given training in conducting clean and safe deliveries. The traditional birth attendants have also been trained to identify high risk pregnant women and refer them for adequate treatment and care well before the onset of labour as the risk of complications at the time of labour and delivery has been found to be high among the high risk pregnant women.

Development of the aforesaid community-based approach to combat maternal morbidity and mortality has been on the lines of community-based approaches developed to combat infant mortality, such as GOBI-FFF (Growth monitoring, Oral rehydration, Breastfeeding, Immunization, Family planning, Food security, Female education). However, the role of community-based approach to address maternal health problems is, at best, limited because of at least two counts. First, simple low-cost interventions to address complications related to pregnancy and delivery are not available as they are available in case of complications and disease conditions related to infant health. Second, the nature of complications related to pregnancy and delivery are such that they require immediate emergency care. In case of maternal health, there is relatively little that can be done at the community level to combat maternal morbidity and mortality - the interventions available to those who work in the area of child survival and health simply do not exist in case of maternal health. It is argued that, to be effective, the community-based maternity care services must be backed up by efficient and effective institutional maternity care services that can provide emergency

obstetric services so as to manage and treat the complications that emerge suddenly at the time of labour and delivery. The emergency obstetric services that are need to effectively take care of maternal emergencies are different from essential obstetric care services. The essential obstetric care is based on the idea that obstetric complications can be predicted and prevented by employing the concept of “high risk”. The emergency obstetric care, on the other hand, focusses on prompt identification, referral and treatment of women with obstetric complications. It is stressed that once emergency obstetric care is in place then related array of maternity care services may be developed but availability of essential maternity care services cannot ensure emergency obstetric care. Maternal mortality is ‘curable,’ that is, most deaths are preventable, even if the conditions leading to death usually are not. Preventing maternal deaths, therefore, is critical to any maternal health improvement programme.

Recognizing the importance of institutional care in addressing the maternal health problems, the Child Survival and Safe Motherhood Programme provided equipments and technical guidelines for establishing First Referral Units. However, no systematic investigation of the effectiveness of these referral units in meeting the needs of the community has so far been undertaken. At the same time, little is known at present about the access of the community to these referral units in case of obstetric emergencies.

Experiences from different parts of the world in addressing the maternal health issues have provided important lessons that can be useful in the development of obstetric care services that can efficiently and effectively address the felt obstetric care needs of the people. These experiences are:

- a. To be effective, programmes and activities directed towards improving the obstetric care must reach every one in the community. Ensuring universal availability of a basic set of essential obstetric services is crucial to the efficiency and effectiveness of obstetric care services.
- b. Practice of family planning is one of the essential requirements for addressing the maternal health problems but family planning alone is not sufficient to ensure a reduction in maternal morbidity and mortality. In view of the fact that practice of family planning plays a crucial role in lowering maternal risk, promotion of family planning must be an integral component of obstetric care services.
- c. Prenatal care is linked to improved maternal health but prenatal care alone is not enough to ensure a reduction in maternal risk. To be effective, prenatal care must be back-up by efficient and institutional services of high quality.
- d. Community access to emergency obstetric care must be ensured in order to reduce the toll of death from unpredicted and unpredictable complications associated with pregnancy and delivery.
- e. Maternity care in pieces will not work. It is important that there must be a continuum of care, moving from the community to skilled medical back-up.
- f. Community-based obstetric care services can help educating people about safe delivery practices, how to recognize complications and where to go if they arise but these services cannot treat the complications. Success of the community-based services depends upon the availability of and access to services that can treat the complications arising out of pregnancy and delivery.

Based on the experience gained from different parts of the world, at least two issues can be identified that are critical to improving maternal health status of the people: proper medical attention and care during pregnancy and delivery and social and economic conditions and life style patterns. Among the two, the importance of proper medical care and attention lies in the fact that most of the effects of social and economic conditions and life style patterns operate via attention and care during pregnancy and at the time of delivery. Efficient maternity care services of good quality can, therefore, compensate for the adverse effects of social and economic conditions on maternal health to a significant extent. Another reason for relatively more important to proper medical attention and care during pregnancy and delivery is that even those women who have no signs of high risk during pregnancy may develop complications at the time of labour and delivery and may require immediate emergency medical care and attention. Lastly, in comparison to social and economic conditions and life style patterns, improving access to and quality of maternity care services is always subject to effective managerial innovation and control.

Proper medical attention and care during pregnancy and delivery depend upon three critical factors: adequacy of maternity care services to meet the maternal health needs of the people in a comprehensive manner; efficiency and quality of these services; and their universal access. Adequacy of the maternity care services in the context of prevailing maternal health situation and maternal morbidity profile is very important in ensuring that maternity care services are able to provide proper medical attention and care during pregnancy and delivery. This requires institutionalisation of a system of regularly collecting and analysing information on maternal mortality and morbidity and an assessment of the adequacy and appropriateness of available maternity services to address the observed situation. At present, no such system exists in the country at any tier of the health care delivery system. Till very recently, some information about causes of maternal death was generated through the Annual Survey of Causes of Death in the rural areas by the Registrar General of India but this survey has since been discontinued.

An important requirement for improving the maternal health situation, therefore, is the establishment and maintenance of a comprehensive data base on maternal health and maternity care. Once established, this data base may provide the empirical basis for the development of maternal health services at the level of the community as well as at the level of health care delivery institutions. Development of such a data base will also help in defining the maternity care process by identifying the type, time and place of care to be given to women on the basis of their maternal health status. The proposed data base will also ensure availability of and access to good and relevant information to both seekers and providers of obstetric care services when and where it is needed.

The second important issue in ensuring proper medical attention and care during pregnancy and delivery is the efficiency and quality of obstetric care services either at the level of the community or at the level of health care delivery institutions. Efficiency and quality of obstetric care services are essential to make these services effective in reducing the maternal risk. At the same time, efficiency and quality of services also play a vital role in building up the confidence of the people in the services available. The availability of maternity care services carries no meaning in terms of reduction in maternal risk if these services are not used by the people. Efficiency and quality is one of the important factors in the use of available obstetric care services.



Recently, Hulton, Mathews and Stones (2000) have developed an analytical framework for evaluating the quality of care in maternity services. This framework distinguishes between the quality of the provision of care and quality of the care as experience by the user. For quality of care to be meaningful it is necessary that the two components are consistent. The framework identifies six elements related to provision of care: human and physical resources; the referral system; management information system; the use of appropriate technologies; internationally recognised good practice; and the management of emergencies. Four elements of related to the experience of care by the user are also identified namely human and physical resources; cognition; respect; dignity and equity; and emotional support.

The analytical framework developed by Hulton and others can be a very good basis for improving the quality of maternity care services and in improving their efficiency. The framework may be operationalised by instituting a continuous quality improvement programme for obstetric care services in particular and general health services in particular within the health care delivery system. Operationalising the framework may also help in regularly monitoring the quality of maternity care services and relating the use of maternity care services with the quality of these services.

Another framework for improving quality of obstetric care services has been developed by the India office of United Nations Population Fund. This framework identifies nine elements for improving quality of obstetric care services. These elements are:

- a. Access to services
- b. Service environment
- c. Client-provider interaction
- d. Informed decision making
- e. Equipment and supplies
- f. Professional standards and technical competence
- g. Continuity of care
- h. Integration of services
- i. Women's participation in decision making.

The author has developed an implementation framework for instituting a continuous quality improvement programme within the health care delivery system (Ranjan, 2000). The framework has three components: a long term strategy for quality improvement; a short term strategy for quality improvement; and a quality improvement infrastructure. The system suggests a hierarchical approach for instituting the continuous quality improvement programme. This implementation framework can be used in operationalising the framework of quality of maternity services developed by Hulton and others.

The third critical element in addressing the maternal health issues is the universal access to maternity care services. If maternity care services are beyond the reach of the common people, they will contribute little to addressing their maternal health problems and hence in reducing maternal morbidity and mortality. There is now ample evidence to suggest that the medical technology has the potential of reducing the risk of death due to complications of pregnancy and delivery by at least 70 to 80 per cent if it can be made available to all sections of the community and that this reduction is independent of the social and economic conditions and life style patterns. However, as the information available through the National Family Health Survey and the

Reproductive and Child Survey indicates, the access of maternity care services is still extremely limited in the four States reviewed here.

One possible approach to improving access to quality maternity care services is to strengthen midwifery services through an appropriate infrastructure and human resources development programme. Strengthening midwifery services may go a long way in extending emergency obstetric services nearer to the community. Moreover, by linking the midwifery services network with the existing health care delivery system, an effective and efficient referral network can be established. Midwifery services are classified as intermediate level obstetric care services. They fill the gap between the community-based maternity care that is provided by the minimally trained health care services providers like traditional birth attendants and grass roots level health workers and institutional maternity services. They constitute an important link between the nursing services provided by community-based health services providers and doctors and experts in gynaecology and obstetrics who work in health care delivery institutions. The development of midwifery services will result in a continuum in maternity services from the community level right up to the tertiary level medical care. This continuum in maternity care does not exist at present but is critical for the effectiveness of maternity services in addressing the maternal health problems.

Finally, a reorientation of the National Family Welfare Programme is urgently required to effectively address the maternal health problems in the four States. It is true that family planning alone is not sufficient to address the maternal health problems but the experience world over do suggest that promotion of the use of family planning methods is an essential condition for improving the maternal health status. Practice of family planning in the four States as well as in the country, because of its basic orientation, is directed towards reduction in the birth rate and curbing the population growth. For addressing maternal health issues, the National Family Welfare Programme is to be given a new, maternal health oriented direction. Some initiative has been taken in this direction by introducing a decentralized, community needs based approach of programme implementation. However, the experience with this new approach is not very encouraging in the four States.

## **Conclusions**

The foregoing discussions clearly reveal a very unsatisfactory situation of maternal health in the four States. The available evidence suggests that, despite all efforts, the available obstetric care services in the four States are still able to reach only a very small proportion of population. Moreover, there is little indication of any improvement in the efficiency and quality of obstetric care services. Even the National Family Welfare Programme which is the mainstay of efforts to promote the use of family planning methods is not oriented towards addressing maternal health issues.

Perhaps, the most formidable problem in analysing the State of obstetric care services in India is a serious paucity of adequate information on different components of maternal health. Although, improvements in maternal health has been a priority area in the development of health and family welfare services in the country right since independence, yet there is very little empirical evidence to analyse the reach of these services in terms of their availability, access and use as well as in terms of their impact on maternal health of the people. In the absence of the necessary information about

obstetric care services, use rates of different components of obstetric care services, as obtained from the National Family Health Survey and the Reproductive and Child Health Survey have been used to assess and analyse the reach of these services in Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh. The analysis suggests that there is considerable scope for improving obstetric care services and, at present, obstetric care services are reaching only a small proportion of the population in the four States. Moreover, there are some very sharp differentials in the reach of these services across districts within each State reviewed. Unfortunately, little is known at present about the reasons behind the observed inter-district inequality in the reach of obstetric care services. Since, the use of obstetric care services is influenced by the availability, access and quality of these services, an investigation into the extent of availability and access and measurement of the levels of the quality of obstetric care services in different geo-administrative units may contribute significantly in reducing the inequality in the reach of these services.

There are two critical issues in an accelerated improvements in the maternal health status in the four States and which are endogenous to the health and family welfare services delivery system. The first is ensuring universal availability of basic essential and emergency maternity care services while the second one is improving the quality of available maternity care services. Focussing on the two is essential to ensuring universal access to maternity care and ensuring universal access to maternity care is perhaps most important in reducing maternal morbidity and mortality as a universal access to high quality maternity care only can compensate for the adverse social, economic and cultural environment that prevails in the four States.

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Table 1: Extent of the use of prenatal services in central India				
Indicator	Bihar	Madhya Pradesh	Rajasthan	Uttar Pradesh
Received antenatal care				
1992-93	36.3	52.3	30.7	44.4
1998-99	36.2	61.1	47.6	34.6
Received two doses of tetanus toxoid				
1992-93	30.7	42.8	28.3	37.4
1998-99	57.8	55.0	52.1	51.4
Received iron/folic acid tablets				
1992-93	21.4	44.3	29.2	29.5
1998-99	24.1	48.9	39.3	32.4

Source: International Institute for Population Sciences (1997)  
International Institute for Population Sciences and ORC Macro (2001)

Remarks: Figures in the table are percentages  
  
Bihar includes Jharkhand  
Madhya Pradesh includes Chhattisgarh  
Uttar Pradesh includes Uttaranchal

Table 2: Distribution of districts according to the proportion of women receiving 'full' antenatal care during pregnancy					
Proportion of women receiving 'full' antenatal care <i>per cent</i>	Number of districts				
	Bihar	Madhya Pradesh	Rajasthan	Uttar Pradesh	Four States
Less than 15	88.37	44.44	33.33	73.53	63.44
15-30	4.65	40.00	66.67	23.53	30.11
30-45	6.98	8.89	0.00	0.00	4.30
45 and more	0.00	6.67	0.00	1.47	2.15
Total number of districts	43	45	30	68	186

Source: International Institute for Population Sciences (*No date*)

Remarks: Figures in the table are percentage.

'Full' antenatal care means three or more antenatal check-ups (with first check-up within the first trimester of pregnancy), two or more tetanus toxoid injections and iron folic acid tablets or syrup for three or more months.

Bihar includes Jharkhand  
 Madhya Pradesh includes Chhattisgarh  
 Uttar Pradesh includes Uttaranchal

Table 3: Extent of the use of modern care for labour and delivery				
Indicator	Bihar	Madhya Pradesh	Rajasthan	Uttar Pradesh
Institutional deliveries				
1992-93	12.1	15.9	11.6	11.2
1998-99	14.7	20.4	21.7	15.7
Deliveries outside institutions but assisted by health professionals				
1992-93	18.9	30.0	21.8	17.2
1998-99	8.8	9.2	14.5	7.3
Safe deliveries				
1992-93	31.0	45.9	33.4	28.4
1998-99	23.5	29.6	36.2	23.0

Source: International Institute for Population Sciences (*No date*)

Remarks: Figures in the table are percentage.

Safe delivery includes delivery at a health institution and delivery assisted by professionally trained persons - doctor, auxiliary nurse midwife, nurse, midwife, lady health visitor, or other health professional in care of non-institutional delivery.

Bihar includes Jharkhand  
 Madhya Pradesh includes Chhattisgarh  
 Uttar Pradesh includes Uttaranchal

Table 4: Distribution of districts according to the proportion of institutional deliveries					
Proportion of institutional deliveries <i>per cent</i>	Number of districts				
	Bihar	Madhya Pradesh	Rajasthan	Uttar Pradesh	Four States
Less than 15	29	16	8	35	88
15-30	11	22	18	30	81
30-45	3	4	4	3	14
45 and more	0	3	0	0	3
Total	43	45	30	68	186

Source International Institute for Population Sciences (*no date*).

Remarks Bihar includes Jharkhand  
 Madhya Pradesh includes Chhattisgarh  
 Uttar Pradesh includes Uttaranchal



Table 5: Proportion of currently married women in the age group 15-49 years using family planning method				
Indicator	Bihar	Madhya Pradesh	Rajasthan	Uttar Pradesh
Any method				
1992-93	23.1	36.5	31.8	19.8
1998-99	24.5	44.3	40.3	28.1
Sterilization (Female and male)				
1992-93	18.6	31.5	27.7	13.1
1998-99	20.2	37.9	32.3	15.6
IUD				
1992-93	0.5	1.1	1.2	1.1
1998-99	0.5	0.8	1.2	1.0
Pill				
1992-93	1.1	0.7	0.5	1.0
1998-99	1.0	1.0	1.5	1.2
Condom				
1992-93	1.3	2.2	1.5	3.2
1998-99	0.7	2.9	3.1	4.2
All other methods				
1992-93	1.6	1.0	0.9	1.4
1998-99	2.1	1.7	2.2	5.1

Source International Institute for Population Sciences (1995)  
International Institute for Population Sciences and ORC Marco (2000)

Table 6: Distribution of districts according to the level of contraceptive prevalence rate					
Contraceptive prevalence rate	Number of districts				
	Bihar	Madhya Pradesh	Rajasthan	Uttar Pradesh	Four States
Less than 15	1	0	0	2	3
15-30	37	3	4	33	77
30-45	4	18	21	25	68
45 and more	1	24	5	8	38
Total	43	45	30	68	186

Source International Institute for Population Sciences (*No date*)

Remarks Bihar includes Jharkhand  
 Madhya Pradesh includes Chhattisgarh  
 Uttar Pradesh includes Uttaranchal

Table 7: Inter-district inequality in the reach of obstetric care services				
Obstetric care service	Bihar	Madhya Pradesh	Rajasthan	Uttar Pradesh
'Full' antenatal care	0.743	0.677	0.372	0.685
Institutional pregnancy	0.606	0.542	0.377	0.467
Contraceptive prevalence rate	0.267	0.213	0.264	0.317

Table 8: Summary measures of inter-district variations in the indicators of obstetric care in central India

Measure	Proportion of women with full antenatal coverage during pregnancy	Proportion of institutional deliveries	Contraceptive prevalence rate
Bihar			
Minimum	3.10	4.90	14.40
Q1	6.80	8.05	20.35
Median	8.30	12.30	22.80
Q3	11.75	17.85	26.00
Maximum	43.30	43.60	47.90
Mean	10.69	14.61	24.09
SD	7.94	8.86	6.42
Madhya Pradesh			
Minimum	2.10	7.30	26.80
Q1	11.40	12.90	38.80
Median	15.60	19.10	45.40
Q3	26.40	25.60	51.70
Maximum	53.40	62.30	67.40
Mean	19.37	21.68	45.36
SD	13.12	11.74	9.64

Measure	Proportion of women with full antenatal coverage during pregnancy	Proportion of institutional deliveries	Contraceptive prevalence rate
Rajasthan			
Minimum	5.30	7.00	20.40
Q1	12.48	14.85	33.30
Median	16.50	21.50	35.70
Q3	19.73	26.30	42.35
Maximum	29.90	36.90	62.90
Mean	16.35	21.18	38.20
SD	6.08	7.98	10.02
Uttar Pradesh			
Minimum	4.30	5.30	13.80
Q1	8.08	11.88	24.55
Median	9.95	14.80	29.70
Q3	15.30	19.65	38.48
Maximum	66.60	42.90	53.10
Mean	12.76	16.41	31.31
SD	8.74	7.67	9.94

Appendix Table 1 District level indicators of status of obstetric care in Bihar			
District	Proportion of women with full antenatal coverage during pregnancy	Proportion of institutional deliveries	Contraceptive prevalence rate
Araria	6.90	6.70	28.10
Aurangabad	4.60	18.70	21.80
Begusarai	12.40	15.70	23.10
Bhagalpur	10.40	14.10	27.50
Bhojpur	11.10	31.80	23.40
Buxar	6.90	28.20	20.30
Darbhanga	8.60	11.90	27.10
Deoghar	14.30	12.50	30.50
Dhanbad	35.00	24.00	41.50
Dumka	10.90	7.70	26.40
E Champaran	8.40	9.60	22.50
E Singhbhoomi	43.30	41.50	47.90
Gaya	6.60	12.00	22.00
Girdih	12.80	13.30	20.50
Godda	6.40	7.00	20.20
Gopalganj	7.50	16.90	15.90
Gumla	13.10	4.90	18.10
Hazaribagh	9.70	14.90	24.70
Jehanabad	6.80	25.90	21.20
Katihar	7.00	6.10	18.80
Khagaria	10.40	10.40	28.80
Kishanganj	6.50	6.70	16.10
Lohardagga	14.90	9.10	20.30
Madhepura	3.70	9.00	25.00
Madhubani	5.90	7.40	22.80
Munger	8.00	17.90	23.10
Muzaffarpur	7.50	10.50	25.30
Nalanda	9.60	23.10	25.60
Nawada	7.20	17.80	20.40
Palamau	7.10	7.30	23.00
Patna	15.20	43.60	36.60
Purnia	3.90	5.20	23.70

District	Proportion of women with full antenatal coverage during pregnancy	Proportion of institutional deliveries	Contraceptive prevalence rate
Ranchi	32.20	18.50	34.40
Rohtas	9.20	21.00	21.00
Saharsa	6.50	9.40	28.40
Sahibganj	11.70	7.90	14.40
Samastipur	3.10	6.50	22.70
Saran	8.30	14.80	18.20
Sitamarhi	3.10	8.20	16.80
Siwan	11.80	14.40	21.80
Vaishali	6.80	13.90	24.30
W Champaran	7.80	12.30	21.80
W Singhbhooni	16.70	9.90	20.00

Appendix Table 2: District level indicators of obstetric care status in Madhya Pradesh, 1998-99			
District	Proportion of women with full antenatal coverage during pregnancy	Proportion of institutional deliveries	Contraceptive prevalence rate
Balaghat	42.30	12.30	54.50
Bastar	18.20	11.80	36.30
Betul	53.40	25.20	61.80
Bhind	4.80	14.10	43.70
Bhopal	49.10	52.50	63.50
Bilaspur	11.10	13.40	35.10
Chhatarpur	15.20	19.10	32.80
Chhindwara	16.00	18.90	51.70
Damoh	12.20	8.50	41.60
Datia	6.50	23.70	40.20
Dewas	15.70	35.70	58.20
Dhar	15.50	17.50	45.80
Durg	52.20	21.10	52.20
E Nimar	26.80	21.90	51.50
Guna	13.10	29.00	39.00
Gwalior	2.10	48.20	51.70
Hoshangabad	38.50	32.60	48.60
Indore	35.00	62.30	67.40
Jabalpur	26.40	31.60	48.80
Jhabua	12.20	18.00	26.80
Khargone	18.80	19.40	48.90
Mandla	28.80	10.70	58.20
Mandsaur	17.20	25.60	48.70
Morena	15.60	26.40	48.60
Narsimhapur	20.00	17.80	54.10
Panna	9.20	10.10	26.80
Raigarh	12.60	8.30	34.80
Raipur	42.30	11.70	43.10
Raisen	27.30	15.90	52.50
Rajgarh	15.00	18.90	33.30
Rajnandgaon	17.50	10.50	45.00
Ratlam	23.90	30.00	53.10



District	Proportion of women with full antenatal coverage during pregnancy	Proportion of institutional deliveries	Contraceptive prevalence rate
Rewa	3.60	12.90	38.80
Sagar	25.20	24.40	44.10
Satna	4.30	13.30	35.10
Sehore	14.00	23.10	45.40
Shahdol	11.40	11.70	39.70
Shajapur	12.60	29.20	45.40
Shivpuri	9.50	23.10	34.10
Sidhi	2.50	7.30	29.50
Seoni	9.70	13.90	50.80
Surguja	22.00	11.80	34.80
Tikamgarh	2.50	21.50	45.50
Ujjain	28.00	41.10	58.60
Vidisha	11.80	19.60	40.90

Appendix Table 3: District level indicators of status of obstetric care in Rajasthan, 1998-99			
District	Proportion of women having full antenatal coverage during pregnancy	Proportion of institutional deliveries	Contraceptive prevalence rate
Ajmer	22.20	29.80	41.20
Alwar	10.20	15.90	45.90
Banswara	28.30	32.90	34.30
Barmer	5.30	7.90	20.40
Bharatpur	11.70	22.70	33.10
Bhilwara	19.20	17.90	35.70
Bikaner	17.90	25.00	41.90
Bundi	12.70	34.00	39.40
Chittorgarh	15.40	13.30	33.10
Churu	5.50	7.00	39.60
Dausa	18.30	24.70	34.60
Dhaulpur	16.30	25.70	21.50
Dungarpur	29.90	18.70	38.60
Ganganagar	12.90	21.30	62.90
Hanumangarh	6.10	13.40	61.90
Jaipur	11.70	36.90	50.80
Jaisalmer	6.90	8.80	21.50
Jalore	16.70	11.00	33.90
Jhalawar	20.80	21.00	43.00
Jhunjhunu	16.20	30.00	54.20
Jodhpur	15.80	24.80	35.70
Kota	16.20	32.50	44.00
Nagaur	12.40	16.30	35.30
Pali	19.90	14.50	35.00
Rajsamand	23.80	17.00	32.40
Sawaimadhopur	16.70	26.50	26.00
Sirohi	19.10	23.50	30.10
Sikar	17.50	27.40	42.50
Tonk	20.80	13.40	37.20
Udaipur	24.10	21.70	34.30

Appendix Table 4: District level indicators of status of obstetric care in Uttar Pradesh, 1998-99			
District	Proportion of women receiving full antenatal care during pregnancy	Proportion of institutional deliveries	Contraceptive prevalence rate
Agra	8.80	29.90	39.10
Aligarh	9.70	15.40	23.50
Allahabad	14.50	17.80	30.00
Almora	17.30	11.90	41.70
Ambedkar Nagar	9.80	12.60	29.00
Azamgarh	7.70	25.00	17.80
Badauin	4.30	5.90	16.70
Baharaich	12.50	5.90	16.20
Balia	9.30	28.80	30.70
Banda	9.40	13.20	24.60
Bara Banki	8.00	11.30	27.00
Barelli	8.10	10.10	20.10
Basti	13.70	14.00	19.10
Bhadohi	4.70	15.10	31.00
Bijnor	10.70	19.80	23.00
Bulandshahar	8.70	13.60	26.20
C Kanpur	25.10	42.90	53.10
Chamoli	17.10	11.80	51.50
Dehradun	35.10	38.90	49.40
Deoria	9.30	16.10	27.70
Etah	5.90	11.10	14.30
Etawah	5.80	8.70	33.60
Faizabad	8.70	18.50	34.60
Farrukhabad	5.80	9.80	28.70
Fatehpur	16.20	16.00	30.70
Firozabad	5.00	14.20	28.20
Gazipur	13.10	20.30	28.30
Ghaziabad	20.50	27.10	43.70
Gonda	7.20	7.50	19.80
Gorakhpur	15.90	18.50	31.80
Hamirpur	8.60	12.30	38.30
Hardoi	9.40	5.30	13.80
Hardwar	17.40	23.50	39.00

District	Proportion of women receiving full antenatal care during pregnancy	Proportion of institutional deliveries	Contraceptive prevalence rate
Hathras	6.20	14.00	33.00
Jalaun	15.20	21.80	43.30
Jaunpur	8.00	22.10	31.20
Jhansi	11.00	29.00	51.10
Kheri	7.30	7.60	25.20
Lalitpur	22.70	15.90	27.00
Lucknow	22.70	36.40	49.60
Maharajganj	12.20	8.70	35.60
Mahoba	9.40	20.90	37.10
Mainpuri	5.40	7.50	28.90
Mathura	9.40	21.10	22.10
Mau	13.30	19.60	26.30
Meerut	15.00	22.60	31.20
Mirzapur	6.10	14.80	32.90
Muradabad	8.00	12.40	27.40
Muzaffarnagar	9.40	19.10	33.70
Nainital	16.90	19.30	40.50
Pauri Garhwal	23.30	18.60	49.90
Pilibhit	8.30	12.50	28.10
Pithoragarh	19.50	12.70	43.30
Pratapgarh	23.10	14.60	24.20
R Kanpur	66.60	9.70	42.60
Raibareli	10.10	15.40	20.80
Rampur	7.90	9.80	25.60
Saharanpur	11.10	14.10	29.40
Shahjehanpur	4.70	6.20	21.30
Siddarth Nagar	13.40	5.90	19.00
Sitapur	11.30	15.30	24.40
Sonbhadra	8.80	14.80	30.50
Sultanpur	12.70	19.30	19.00
Tehri Garhwal	15.60	13.20	41.30
Udham Singh Nagar	12.40	18.10	47.00
Unnao	11.10	12.00	25.00
Uttarkashi	16.70	12.70	48.50
Varanasi	9.70	25.70	30.70

