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Maternal Health in India

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**MATERNAL HEALTH
IN
INDIA**
Policies, Programmes, Achievements

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Historical Perspective

The constellation of the provision of maternal health services has evolved in India under the influence of diverse factors. The first reference to the provision of maternal health services in the modern India dates back to 1866 when there was an attempt to train the traditional birth attendants popularly known as *dai* for the practice of better standards of midwifery than those she had been accustomed to practice. In 1885, the Dufferin Fund Committee was established with the objective of providing medical aid to women through medical doctors. This Fund started training of health visitors in 1918. In 1919, the Lady Chelmsford All-India League for maternal and child welfare was founded and, in 1930, a Maternity and Child Welfare Bureau was established under the India Red Cross Society for promoting the maternity and child welfare work throughout the country.

In 1943, Government of India appointed the first Health Survey and Development Committee which is popularly known as the Bhore's Committee. The Committee submitted its report in 1946 (Government of India 1946). The Committee observed that, on a conservative estimate, about 200 thousand women died annually from causes arising out of child birth in a year in British India and conjectured that the number of those who suffered from varying degrees of disability resulting from the same cause must be many times from that figure. By a crude estimate, the Committee observed that the number of women who were made to suffer ill-health as the result of pregnancy and childbearing would each year be about four million. The Committee was of the view that apart from the sufferings and loss that these figures for maternal morbidity and mortality reveal, the adverse effect produced on home life by the continued illness of the mother or by her death at a comparatively early age could hardly be estimated. The Committee, therefore, recommended that measures for the reduction of sickness and mortality among mothers should be among the highest priority issues in any programme of health development.

Following the recommendations of the first Health and Survey and Development Committee, the Government of India impressed upon the constituent States, in 1948, the need of strengthening their maternity and child health services. Attention was primarily paid to the training of health workers to man the services. Maternity and Child Health Bureaus were set up in the States and maternity and child welfare projects were undertaken in 12 States with the aim of improving and increasing the training of health personnel, establishing model health services and strengthening the administration of maternity and child welfare services at State and local levels (Government of India 1961).

During the First Five-year Development Plan, specific provisions were made for the expansion of maternity and child welfare services particularly in the backward areas. Government of India extended financial assistance to States for

establishing maternity and child welfare units. Assistance also came from the United Nations Children's Fund in terms of equipments. At the same time, improvements and expansion of institutions providing training to health visitors, midwives and auxiliary nurse midwives was also carried out.

In the Second Five-year Development Plan, maternity and child health services were made integral part of the primary health services. The Health Survey and Planning Committee constituted by the Government of India in 1959 observed that 90 per cent of the deliveries took place at home in the rural areas and, of these, not more than 20 per cent were attended by the trained staff from Primary Health Centres and Sub-health Centres. The Committee, therefore, recommended that every effort should be made to develop and expand the network of Primary Health Centres so that within a period of 10 years one midwife was in position for every 5,000 to 6,000 rural people supported by a Public Health Nurse and an Auxiliary Health Worker for twice that number (Government of India 1961). Another major recommendation of the Committee was that the training in maternal health care should not be only institutional. A major part of this training should be domiciliary in view of the fact that majority of the confinements continued to take place at home. As such, the Committee recommended that a well staffed and supervised domiciliary maternal health care unit should form part of each teaching unit in maternal health care. The Committee was also aware of the paucity of better qualified staff in maternal health care and recommended that until better qualified and trained staff was available, training of indigenous *dai* should be continued. The Committee was however very specific in recommending that as soon as sufficient number of trained doctors and midwives were available, the practice of midwifery by persons other than those registered for the purpose should be stopped and made a penal offence.

The recommendations of the Health Survey and Development Committee, 1946 and the Health Survey and Planning Committee, 1961 constitute the basis for developing and strengthening the maternal and child health services as an essential component of health services development in India. Subsequent to the Health Survey and Planning Committee, 1961, maternal and child health services were identified as a priority by all Committees constituted by the Government of India for health services development. Maternal and child health services have also been identified as priority health concerns in all Five-year Development Plans since independence. Maternal and child health services have also been identified among the important areas of concern in the 1983 National Health Policy (Government of India 1983) and again in the recently announced National Health Policy 2000 (Government of India 2000) as well as in the National Population Policy 2000 (Government of India 2000a).

Although, maternal health concerns facing people have been promptly reflected in all population and health related policies and programmes in India since independence, yet the focus of the evolution of maternal and child health services has primarily been on the child health and survival and not on maternal health and reduction in the risk of death associated with pregnancy and childbirth. For example, the programme of training of indigenous birth attendants, *Dai*, started as early as in 1952 with support from United Nations Children's Fund was primarily designed to prevent the death of the new born to improve infant and child survival. Even today, the training programme for traditional birth attendants continues to be focussed on 'clean' delivery rather than on 'safe' delivery.

The maternal health concerns in India received its long overdue attention for the first time in the 1990s when Child Survival and Safe Motherhood Programme was launched (Government of India 1991). The safe motherhood component of this programme included (a) essential obstetric care services for all; (b) early detection of obstetric complications through regular checkups as well as through community awareness; and (c) emergency obstetric care services. The programme strategy revolved round the 'enabling' institutional build-up for total care of the most vulnerable group of population - pregnant women and children below 5 years of age - so as to have a significant reduction in infant, child and maternal mortality. Interestingly, the focus in this programme also was on 'clean' deliveries rather than on 'safe' deliveries. During the implementation stage, however, the child survival component of the programme did well; the safe motherhood component did not, as the planned piloting activities for safe motherhood were less successful (World Bank 1997).

Recent Developments

In 1997, there was a major paradigm shift in the delivery of maternal and child health services with the introduction of the reproductive and child health approach for the implementation of the National Family Welfare Programme following the recommendations of the World Bank and the consensus arrived at the International Conference on Population and Development at Cairo in 1994 (Meashan and Heaver 1996; United Nations 1995). Reproductive health services were made an integral component of the National Family Welfare Programme to focus attention on reproductive health which addresses the reproductive processes, functions and systems at all stages of life. Maternal care which included prenatal, natal and postnatal services became one of the essential components of the reproductive and child health approach.

In order to operationalise the reproductive and child health approach, the Government of India launched the Reproductive and Child Health Programme in 1997. In the context of the burden of diseases on women and children, the programme aims at upgrading the prevailing configuration of family planning and

child survival and safe motherhood services to an essential package of reproductive and child health services. In the area of maternal health, the programme envisages movement towards providing essential obstetric care which includes information and counselling, community mobilisation, prenatal care and defined referral procedures, community transportation for emergency referrals, and client-oriented gender-sensitive first referral facilities (World Bank 1997).

A unique feature of the Reproductive and Child Health Programme is the categorizing of the States and Union Territories and their constituent districts into “A, B and C” categories and giving a differential implementation focus of reproductive and child health services in different categories on the basis of the prevailing levels of total fertility rate, female literacy, institutional delivery, prenatal care registration and deliveries by untrained persons (World Bank 1997). Table 1 provides a summary of maternal health services proposed to be provided in different categories of States, Union Territories and districts. Out of 32 States and Union Territories that existed in the country at the launch of the programme, 8 States and Union Territories put in “A” category, 16 States and Union Territories in “B” Category and 8 States and in the “C” category. The 8 States in the “C” category accounted for nearly half of the population of India as enumerated at the 2001 population census (Government of India 2001). Similarly, out of the 507 districts that existed at that time, 58 districts were categorized as “A” category, 183 districts as “B” category and 263 districts were categorised as the “C” category districts. More than two third (177) of the “C” category districts are located in the central Indian States of Bihar, Chhattisgarh, Jharkhand Madhya Pradesh, Orissa, Rajasthan, Uttaranchal and Uttar Pradesh. In these States, only one out of the total 216 districts that existed in 1997 was classified as the “A” category district. In Rajasthan, for example, not a single district was categorised as either “A” or “B” category district. These 8 States accounted for nearly 45 per cent of the population of the country according to the 2001 population census. These States are also amongst the poorest States of the country in terms of social and economic development.

Levels of Maternal Mortality

Despite the fact that maternal health services have been an essential component of all health care development plans and activities in India since independence, the current maternal health scenario in the country continues to be a cause of serious concern. The risk of death associated with the complications of pregnancy and childbirth, measured in terms of the number of maternal deaths per 100,000 live births per year according to the World Health Organization and popularly known as the maternal mortality ratio, is the most widely used indicator reflecting the state of maternal health in any population. According to the latest estimates, this risk in India, around the year 2000, is estimated to be approximately 374 maternal deaths for every 100,000 live births per year (Ranjan

2004). This maternal mortality ratio is compatible with a ratio of 408 maternal deaths per 100,000 live births derived from the sample registration system for the year 1997 (Government of India, 1999) and a ratio of 440 maternal deaths per 100,000 live births estimated by Mari Bhat for the period 1992-96 (Mari Bhat 2002). In any case, the prevailing level of the maternal mortality ratio in India is well above the goal of a maternal mortality ratio of 200 maternal deaths per 100,000 live births by the year 2000 set under the Child Survival and Safe Motherhood Programme (Government of India, 1991) and a goal of 100 maternal deaths per 100,000 live births set under the Reproductive and Child Health Programme (World Bank, 1997). There is a wide gap between the maternal mortality ratio in the rural and urban areas of the country. The maternal mortality ratio in rural India is estimated to be approximately three times the maternal mortality ratio in the urban India (Ranjan 2004).

As regards the trends in maternal mortality, the evidence appears to be conflicting. According to the National Family Health Survey, 1992-93 and 1998-99, the maternal mortality ratio in the country appears to have increased from approximately 424 during 1990-91 to approximately 540 during 1996-97 (International Institute for Population Sciences and ORC Macro 2000). By contrast, according to Mari Bhat, maternal mortality in India decreased from around 1300-1400 maternal deaths per 100,000 live births during the 1950s to around 440 during the 1990s (Mari Bhat 2002).

Like the other demographic indicators, maternal mortality has also been found to vary widely across the constituent States and Union Territories. Most recent estimates of maternal mortality ratio based on the infant mortality rate from the sample registration system and the proportion of safe deliveries from the rapid household survey suggest that this ratio varies from around 621 in Orissa, to just about 37 in Kerala around the year 1999 (Ranjan, 2004). The problem appears to be particularly severe in central India comprising of the States of Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh and Uttaranchal. These eight States are also the least developed States of the country with the result that the necessary infrastructure required for the effectiveness of the traditional maternal health approaches is seriously lacking in these States. The culture and the society of these States are drastically different from the other parts of India. The society in these States is largely built upon a very strong kinship structure dominated by religion and caste considerations, an implication of which is that females have got a low to very low status in the family and the society. A reflection of the poor status of females in the society and the family is that female health problems, including problems and complications associated with pregnancy and delivery receive a neglected attention at the community level. This situation minimises the impact of the available maternal health services. The situation is further aggravated by the extremely poor quality of services.

Causes of Maternal Death

Information about causes of maternal death India is incomplete and fragmented because of the poor death registration and inefficient system of medical certification of the cause of death. It may be stressed here that classification of a death as a maternal death is not easy and is quite difficult even in countries where the death registration is complete and where all deaths are medically certified for the cause of death. It is generally argued that majority of maternal deaths are due to direct obstetric causes, most of which erupt suddenly at the onset of the labour or immediately after delivery. In general, they cannot be predicted in advance. Information available from the Registrar General of India about the medically certified causes of death supports this observation as more than 70 per cent of the maternal deaths in the country medically certified for the cause of death in 1995 were due to direct obstetric causes and an additional 12 per cent were from abortion related complications (Government of India 1999). Moreover, just three direct causes of maternal death: haemorrhage, toxæmia and complications of puerperium were found to be responsible for more than half of the total maternal deaths due to direct obstetric causes. The survey of causes of death carried out in the rural areas of the country also supports this observation (Government of India 1997).

Determinants of Maternal Health

The level of maternal morbidity and mortality is determined by two groups of factors. The first group of factors consists of a host of social, economic and cultural factors that constitute the environment which shapes the human reproductive behaviour. The second group consists of the factors that determine the extent and the nature of obstetric care which, in turn, is largely 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 situation in the many States of the country, as reflected by the exceptionally high maternal mortality ratio, is inadequate availability, very limited access, gross inefficiency and extremely poor quality of obstetric care services. An implication of this situation is that the reach of the existing obstetric care services is extremely limited either because the services are not accessible to majority of women or they are not efficient enough to meet the needs of the women or because the quality of services is very poor. 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 the 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. The access to and use of obstetric care services have been further subdivided into five categories: access to and use of prenatal care services; access to and use of modern care during labour and delivery; access to and use of family planning; harmful traditional practices during delivery; and practice of illicit induced abortion.

In this paper, we focus on the first two categories of obstetric care services - access to and use of prenatal services and access to and use of modern care during pregnancy and delivery - as they are directly related to maternal health. The discussion that follows is primarily based on the information available through the rapid household survey conducted under the Reproductive and Child Health Programme throughout the country (International Institute for Population Sciences *no date*). The practice of harmful traditional practices and the practice of illicit induced abortion are also important determinants of maternal health particularly maternal mortality but information about these determinants of maternal health is extremely limited in the country. Moreover, improvements in prenatal care and modern care during pregnancy and delivery is expected to automatically result in a decrease in the practice of harmful traditional practices as well as the practice of illicit induced abortion.

The State of Maternal Health Services

The following discussion about the state of maternal health services in India and in its States and Union Territories is based on four indicators of maternal health, information about which is available from the rapid households survey for each State and Union Territory of the country and for each district within the States and Union Territories: 1) proportion of women receiving any (at least one) prenatal care; 2) proportion of women receiving 'full' (at least three prenatal care visits and at least one dose of tetanus toxoid and iron folic acid tablets) prenatal care; 3) proportion of institutional deliveries; and 4) proportion of safe deliveries (institutional deliveries plus deliveries in out of hospital settings attended by a doctor/nurse/auxiliary nurse cum midwife).

Prenatal Care. According to the rapid household survey, in the country as a whole, more than 65 per cent of the women were found to have received at least one prenatal care service. However, the proportion of women receiving 'full' prenatal care was estimated to be just about 31 per cent suggesting that although the maternal health care service delivery system in the country is able to reach almost two third of the women, it is able to provide 'full' prenatal services to only less than one third of the women only. This gap between 'any' and 'full' prenatal coverage reflects the poor organisational efficiency and administrative

capacity of the existing maternal health care services delivery system. This gap between the 'any' and the 'full' prenatal coverage may also be viewed as a reflection of the very poor quality of the maternal health care services currently available.

Among the States and Union Territories of the country, the proportion of women receiving 'any' prenatal care and proportion of women receiving 'full' prenatal care vary widely. In Kerala, almost all women appear to have received at least one prenatal care whereas in Bihar this proportion is only 26 per cent. Similarly, in Kerala, more than 86 per cent of women reported to have received 'full' prenatal care but in Bihar, this proportion was only about 8 per cent. In fact, as may be seen from figures 4 and 5, the problem of poor prenatal coverage either in terms of 'any' prenatal care or in terms of 'full prenatal care is largely confined to the central Indian States and in some of the States of the north-east region of the country. By contrast, in Kerala, more than 80 per cent of the women have been found to have received 'full' prenatal care.

The pattern of the gap between 'any' and 'full' prenatal coverage is interesting. This gap has been found to be highest in Punjab where more than 87 per cent women received at least one prenatal care but only about 25 per cent received 'full' prenatal care. Similarly, in Haryana, Andaman and Nikobar Islands and West Bengal, this gap between the proportion of women receiving 'any' prenatal care and proportion of women receiving 'full' prenatal care has been found to be more than 50 per cent. By contrast, in Kerala, this gap was only about 13 per cent. This gap has also been found to be surprisingly low in Bihar probably because of very low coverage of prenatal care services (Figure 6). Incidentally, Kerala and Bihar are the only two States of the country where, this gap has been found to be less than 20 per cent. Interestingly, Kerala is the best performing and Bihar is the worst performing State.

Modern Care during Pregnancy and Delivery. Information available through the rapid household survey also suggests that about 40 per cent of the deliveries in the country are 'safe' deliveries as they either take place in an institution or are attended by some professionally trained person. On the other hand, one third of the total deliveries are institutional deliveries. This means that only about 6 per cent of the deliveries in the country are attended by professionally trained persons in out of hospital settings. In Kerala, Goa and Pondicherry, more than 90 per cent of the deliveries have been reported to be safe deliveries according to the rapid household survey. By contrast, in Jharkhand and Bihar, less than 20 per cent of the deliveries have been reported to be the safe deliveries.

The pattern of the difference between the proportion of safe deliveries and the proportion of institutional deliveries across the States and Union Territories of the

country is more interesting. In only four States of the country - Punjab, Rajasthan, Manipur and Nagaland - this difference is in double figures with the largest difference of 15.8 absolute points recorded in Manipur. In rest of the States and Union Territories of the country, this difference is in single digits with the lowest difference 0.4 absolute points recorded in Kerala. In fact, in majority of the States and Union Territories of the country, the difference between the proportion of safe deliveries and the proportion of institutional deliveries is less than 5 absolute points. This means that throughout the country, there are very few safe deliveries in out of hospital settings and nearly all deliveries in out of hospital settings are unsafe deliveries (Figure 9). This means that modern care during delivery in the existing maternal health care system is virtually confined to health care institutions. Outside the health care institutions, there is practically no modern care during pregnancy and at the time of delivery. This is especially the case in States like Uttar Pradesh, Bihar, Jharkhand, and to some extent in Madhya Pradesh, Chhattisgarh and Orissa where the proportion of institutional deliveries is very low and, at the same time, the proportion of safe deliveries in out of hospital settings is also very low indicating very low levels of modern care during delivery.

The above observations suggest two dimensions of the maternal health care delivery system as they influence the maternal health status of the population. The first dimension is related to the efficiency and capacity of the existing maternal health care delivery system. The very fact that the system is able to reach nearly two third of the women implies that, ideally, nearly two third of the total deliveries should be safe deliveries. The difference between the proportion of women receiving any prenatal care and the proportion of safe deliveries is a reflection of the poor efficiency and capacity of the system because of which all pregnancies covered in terms of at least one prenatal care service are not resulting in the safe deliveries. This difference is primarily the result of the inefficiencies of the existing maternal health care services delivery system which are endogenous to the system. It can be reduced only by improving the organisational efficiency and administrative capacity of the system and the quality of maternal health care services.

The second dimension of maternal health, on the other hand, is related to the reach of the existing maternal health care delivery system. Information available through the rapid household survey suggests that for the country as a whole, the existing maternal health care delivery system is not able to reach nearly 35 per cent of the pregnant women; for Bihar, this proportion is almost 75 per cent and in 10 other States, it is more than 40 per cent. Clearly, in these States, the existing system needs to be strengthened and the extension services need to be augmented to improve maternal health outcomes so that it is able to reach all women in need of some maternal health care services. In addition to endogenous factors, a

number of exogenous factors are also responsible for the observed reach of the maternal health care delivery system.

The above analysis makes it possible to decompose the proportion of unsafe deliveries in the country and in its constituent States and Union Territories. For the country as a whole, about 34.7 per cent of the women are not reached by the existing maternal health care system whereas the difference between the proportion of women receiving any prenatal care and the proportion of safe deliveries is 25.1 per cent. The sum of these two is 59.8 per cent which is the proportion of unsafe deliveries. Obviously a two dimensional strategy is required to ensure a substantial decrease in the proportion of unsafe deliveries in the country as well as in many of its States and Union Territories.

It will be interesting to analyse how the reach of the maternal health care services delivery system as measured by the proportion of women receiving any prenatal care service influences the proportion of safe deliveries and the proportion of institutional deliveries on the basis of the district level data available through the rapid household survey. These relationships are presented in figures 10 and 11 respectively. Similarly, the relationship of the proportion of women receiving 'full' prenatal care with the proportion of safe deliveries and proportion of institutional deliveries is presented in figures 12 and 13 respectively. The relationship between the proportion of women receiving any prenatal care and the proportion of safe deliveries and the proportion of institutional deliveries is not linear. Rather, there exists some threshold in terms of the proportion of women receiving any prenatal care which is necessary for increasing the proportion of safe deliveries and proportion of institutional deliveries beyond a certain limit. This minimum threshold appears to be a coverage of approximately 70-80 per cent of any prenatal care. On the other hand, there appears to be a linear relationship between the proportion of women receiving 'full' prenatal care and the proportion of safe deliveries as well as the proportion of institutional, although the value of R^2 in both the cases is less than 70 per cent. A low deterministic value of the regression is expected as 'full' prenatal care is not the only determinant of safe and institutional deliveries.

In any case, the analysis highlights the need of both improving the organisational efficiency and administrative capacity of the maternal health care delivery system in meeting the maternal health needs of the women in a manner that a comprehensive set of quality maternal health care services is made accessible to all women in need of these services. The importance of improving the organisational efficiency and administrative capacity of the maternal health care services delivery system is further increased in view of the fact that improving the organisational efficiency and the administrative capacity may also contribute significantly in extending the reach of the system in those States where the reach

is currently very limited. Improving the organisational efficiency and administrative capacity, incidentally, is a challenge endogenous to the system itself as issues related to administration and efficiency are always subject to managerial interventions.

Emergency Obstetric Care Services. The approach to maternal health in India has traditionally followed the 'risk approach' which is a component of the framework developed by the World Health Organization as part of the strategy to achieve the goal of 'Health for All' (Backett et al. 1984; WHO 1984). It is based on the concept that vulnerability to illness results from the possession of a number of interacting biological, genetic, environment, psycho-social and other characteristics that can be measured and converted into scores as 'shorthand expression of the probability of future needs and care'. The 'risk approach' uses these estimates of a woman's need for help as 'guides to action, resource allocation, better coverage and referral and family and clinical care'. It may be viewed as both a method of measuring the need of the individuals and groups for care thus providing means of assisting them to determine their priorities and a tool for reappraisal and reorganization of health care services, especially reproductive health care services (Backett et al. 1984). The concept of reproductive risk that has been used in designing and delivering maternal health care services in the country is a logical outcome of the conceptual foundations of this 'risk approach'.

However, it is now increasingly being recognized that the 'risk approach' has only a limited role in preventing most of the maternal deaths for a variety of reasons (Rooks and Winikoff 1990, Winikoff et al. 1991). Empirical evidence suggests that while it is possible to identify a group of women that will experience a higher or lower incidence of problems and bad outcomes associated with pregnancy, it is not possible to predict accurately which individual woman will experience serious complications during labour and at delivery. In other words, it is possible to make predictions for a group but not for individuals who comprise the group. The available empirical evidence also suggests that women in the so-called low-risk group have relatively higher chances of experiencing severe complications at the time of delivery than the women in the high-risk group. As such, focussing mainly on high risk pregnancies may not be the right strategy for reducing maternal mortality in those areas where the prevailing risk continues to be high. Substantial reduction in maternal mortality, requires that all pregnancies should be treated as 'at risk.'

Because of the unpredictability of obstetric complications and because of the fact that these complications leave little time to act, they are popularly termed as obstetric emergencies. In order to address these emergencies effectively, it is necessary that emergency obstetric care services are made universally available

and are easily accessible to the people when emergencies leading to death are most likely to occur - near the time of the labour and the delivery.

Emergency obstetric care services have further been classified into basic, extended basic and comprehensive emergency obstetric care services (Table 6). Availability of comprehensive emergency obstetric care requires an elaborate service delivery infrastructure and highly trained staff normally available at secondary and tertiary level health care delivery institutions. By contrast, basic emergency obstetric care services can be delivered with effectiveness by primary level health care delivery institutions and by professionally trained service providers in out of hospital settings. This is important in a country like India where most of the deliveries take place in out of hospital settings and majority of the maternal deaths are the result of the delay either in identifying a complication that requires emergency care or in transporting the woman in distress to a place where emergency obstetric care services are available. The presence of a 'skilled' attendant at the time of the delivery in such situations can help in reducing both the delay in identifying an obstetric emergency and the delay in referring the woman to a health facility where emergency obstetric care services are available.

Information about the availability of emergency obstetric care services in India, especially in States where maternal mortality continues to be high is very limited. A survey carried out in selected districts of Madhya Pradesh to explore the availability of emergency obstetric care services may be illustrative in this regard (Ranjan et, al 2003). In the five districts covered in this study, the availability of both basic and comprehensive emergency obstetric care services has been found to be extremely limited (Table 7). Whatever emergency obstetric services were found in these districts, they were basic in nature. Comprehensive emergency obstetric care services were found in district hospitals only. The official approach to address the problem is to develop first referral units in each development block. However, limiting the availability of emergency obstetric care services to the development block only may not help much in preventing maternal mortality, especially in States like Madhya Pradesh where the primary health care delivery system remains weak and where most of the deliveries take place in out of hospital settings. In these States, it is important to develop local level competence and skills to manage obstetric emergencies so that the women in distress reach a referral unit in a manageable condition.

Options for Improving Maternal Health

Options for improving the maternal health status in those States and Union Territories where the current levels and patterns of maternal health are unacceptable can broadly be grouped into two sets. The first set of options are primarily related to improving the organisational efficiency and administrative capacity of the existing maternal health care services delivery system. The

available evidence is sufficient to point out that the current organisational efficiency and administrative capacity of the system are extremely poor. There is a wide gap between the proportion of women receiving any prenatal care and the proportion of women receiving 'full' prenatal care. Similarly, a very small proportion of the safe deliveries are conducted by professionally trained persons in out of hospital settings. Obviously, the focus of maternal health care services should be on full prenatal care services rather than on any prenatal care service and on safe deliveries rather than on institutional deliveries. The empirical evidence also indicates towards the possibility that the increase in the proportion of women receiving full prenatal care coverage also contributes to increase in safe deliveries. Converting any prenatal care into full prenatal care is perhaps the first and the most important strategy for improving the maternal health status and for reducing the risk of maternal death.

At the same time, there is a need to increase the proportion of deliveries conducted by the professionally trained persons in out of hospital settings. There is a huge army of female health workers, female health assistants and medical officers to provide safe delivery services in out of hospital settings but the very low proportion of safe deliveries in out of hospital settings casts doubts about their professional skills and competence. Since the expansion of institutional delivery facilities is constrained by a number of factors, promotion of safe deliveries in out of hospital settings appears to be the only answer to convert unsafe deliveries into safe deliveries.

The second set of options is related to the universalisation of emergency obstetric care services necessary to save lives of women in distress. Emergency obstetric care services can be as simple as obstetric first aid to stabilise the patient before referral (Post 1997). At the same time, they can be as complicated as a cesarean-section which requires availability of a specialist, an army of the support staff and a comprehensive set of infrastructure and facilities. What is important is that every pregnant woman needs access to some emergency obstetric care. In order to meet this emergency obstetric care needs of women, some emergency obstetric care service provider must be available within the easy reach of the woman and her family. Neither the effective prenatal care nor the identification of women having a relatively high 'reproductive risk' and referring these women to a health care services delivery institution will help if emergency obstetric care services are either missing or are beyond the reach of the women when they are needed most. Since majority of deliveries are home deliveries, these services must be nearest to the community.

Ranjan and Gulati (2004) have developed an integrated framework for universalising the availability of emergency obstetric care services right up to the grass roots level. This framework is presented in figure 12 along with its linkages

with the existing health care delivery system. This framework is an attempt to ensure that obstetric emergencies are identified at the community level at the earliest possible; treated when possible; and referred to a referral institution in a manageable condition. It ensures that the chances of proper management of obstetric emergencies increase significantly even in situations where most of the deliveries take place in out of hospital settings and are attended by non-professionals.

The framework given in figure 14 highlights the importance of providing obstetric first aid at the community level through skilled birth attendants. At present, this 'last mile linkage' of the maternal health care delivery system with the community is missing. Non-availability of skilled birth attendant at the level of the community results in two types of delay in dealing with obstetric emergencies - delay in identifying the emergency and the delay in referring the woman in distress to a referral institution in a manageable condition.

The basic requirements for making available a skilled birth attendant at the grass roots level is a formal education and training programme and a system of regulation and registration of these skilled birth attendants so that the services being provided by these skilled attendants are regulated and effectively monitored. It is important that the education and training programme for skilled birth attendants should focus on conducting delivery and managing obstetric emergencies in out of hospital settings. Incidentally, these recommendations are in line with the recommendations of the Health Survey and Planning Committee constituted immediately after independence. The Committee had recommended that a major part of this training in maternal health care should be domiciliary in view of the fact that majority of the confinements continued to take place at home and recommended that a well staffed and supervised domiciliary obstetric care unit should form part of each teaching unit in obstetric care. The Committee was also very specific in recommending that the practice of midwifery by persons other than those registered for the purpose should be stopped and made a penal offence (Government of India, 1961). Unfortunately, these recommendations which are of critical importance to improving the maternal health status of the population have been given little serious consideration in the development of the health care delivery system in India right since independence.

In the above context, the current approach of training of traditional birth attendants needs a serious rethinking. In the current training programme, the traditional birth attendants are given very informal training on selected aspects of a normal delivery. They are not trained for managing obstetric complications. Traditionally also, the traditional birth attendants have only a limited role in managing delivery. In the context of the health of the woman, a delivery spans from the time of the conception to 42 days post partum, a period of approximately

10 months. Against this period, a traditional birth attendant, in typical country settings, is normally called when the labour starts and her primary responsibility is to cut the umbilical chord and dispose the placenta. Moreover, quite a substantial proportion of these attendants continue to believe that certain practices help women during delivery and keep on practising these practices causing more harm than good to the women.

The skilled birth attendants, on the other hand, may take care of the woman throughout the period of delivery. They may remain in constant touch with the woman and her family members and may provide necessary counselling and information about important aspects of care of the mother and the new born as well as accurate information about absolute rather than the relative risk associated with pregnancy and delivery. At the onset of the labour, these skilled birth attendants may readily identify the emergency, provide some emergency care and may refer the women to a referral facility in a manageable condition. After the delivery, they can contribute substantially to postnatal care and the care of the new born.

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Table 1: Maternal health services proposed to be provided under the Reproductive and Child Health Programme in different category State.		
Category	States	Services to be provided
“A”	Tamil Nadu Mizoram Kerala Goa Chandigarh Pondicherry D & N Haveli Daman & Diu	<ul style="list-style-type: none"> • Additional investments to make first-referral care more accessible and effective. • Programme of quality assurance of clinical care. • Maternal death audit.
“B”	Andhra Pradesh Arunachal Pradesh Gujarat Himachal Pradesh Jammu & Kashmir Karnataka Maharashtra Manipur Meghalaya Punjab Sikkim West Bengal A & N Islands Delhi Lakshadweep Tripura	<ul style="list-style-type: none"> • Re-activating PHC and Urban Post-Partum Centres to make institutional delivery more accessible and acceptable to rural and urban poor. • Strengthening of the links between PHCs and FRUs.
“C”	Assam Bihar Madhya Pradesh Haryana Rajasthan Nagaland Orissa Uttar Pradesh	<ul style="list-style-type: none"> • Ensure that every childbirth is attended by a person with midwifery skills, and delivery takes place in clean surroundings. • Upgrading the clinical midwifery skills of ANM. • Establish private midwifery practices in under-served villages. • Clean delivery rooms managed by the community.

Source: World Bank (1997)

Table 2: Maternal mortality ratio in India: Levels and trends			
Year/Period		Maternal deaths per 100,000 live births	Source
1943-46		2000	Government of India (1946)
1957-60		1355	Mari Bhat, Navaneetham, Rajan (1995)
1963-64		1216	Mari Bhat, Navaneetham, Rajan (1995)
1972-76		814	Mari Bhat, Navaneetham, Rajan (1995)
1977-81		776	Mari Bhat, Navaneetham, Rajan (1995)
1982-86		591	Mari Bhat, Navaneetham, Rajan (1995)
1982-86	Total	580	Mari Bhat (2002)
	Rural	638	
	Urban	389	
1987-91	Total	519	Mari Bhat (2002)
	Rural	563	
	Urban	299	
1992-93	Total	424	International Institute for Population Science and ORC Macro (2000)
	Rural	434	
	Urban	385	
1992-93	Total	479	Ranjan (2004)
	Rural	584	
	Urban	234	
1992-96	Total	440	Mari Bhat (2002)
	Rural	498	
	Urban	321	
1997		408	Government of India (1999)
1998-99	Total	540	International Institute for Population Science and ORC Macro (2000)
	Rural	619	
	Urban	267	
1998-99	Total	373	Ranjan (2004). Based on NFHS data.
	Rural	450	
	Urban	170	

Year/Period		Maternal deaths per 100,000 live births	Source
1999	Total	396	Ranjan (2004). Based on IMR data from SRS and data on safe deliveries from rapid household survey.
1999	Total	334	Ranjan (2004). Based on SRS data
	Rural	399	
	Urban	134	
2000	Total	374	Ranjan (2004). Based on IMR data from SRS and data on safe deliveries from multi-indicator cluster survey.
	Rural	451	
	Urban	164	

Table 3: Maternal mortality ratios in States and Union Territories of India, 1999.			
Country/State/Union Territory	Maternal deaths per 100,000 live births		
	Level	Lower bound	Upper bound
India	396	159	987
Andhra Pradesh	298	103	858
Arunachal Pradesh	267	134	533
Assam	477	200	1133
Bihar	448	220	914
Jharkhand	517	247	1077
Goa	59	20	169
Gujarat	296	107	815
Haryana	418	179	971
Himachal Pradesh	363	155	848
Jammu and Kashmir	266	109	648
Karnataka	258	92	721
Kerala	37	14	99
Madhya Pradesh	605	252	1448
Chhattisgarh	548	247	1210
Maharashtra	207	77	557
Manipur	117	56	244
Meghalaya	327	144	741
Mizoram	76	35	164
Nagaland	na	na	na
Orissa	621	243	1581
Punjab	248	95	649
Rajasthan	503	205	1230
Sikkim	279	126	618
Tamil Nadu	178	54	581
Tripura	208	89	485
Uttar Pradesh	604	270	1344
Uttaranchal	343	169	695
West Bengal	270	111	650
Andman and Nikobar Islands	92	37	229
Chandigarh	104	41	265
Dadra and Nagar Haveli	358	168	759
Daman and Diu	133	49	356

Country/State/Union Territory	Maternal deaths per 100,000 live births		
	Level	Lower bound	Upper bound
Delhi	113	43	301
Lakshadweep	116	43	313
Pondicherry	63	22	181

Source: Ranjan (2004)

Remarks: Upper and lower bounds are 95 per cent confidence intervals.

Table 4: Utilisation of maternal health care services in India and States, 1998-99.								
	Proportion of women receiving		Proportion of institutional deliveries <i>per cent</i>	Proportion of safe deliveries <i>per cent</i>	Difference between any prenatal care and full prenatal care <i>per cent</i>	Difference between safe deliveries and institutional deliveries <i>per cent</i>	Difference between any prenatal care and safe delivery <i>per cent</i>	
	At least one prenatal care <i>per cent</i>	Full prenatal care <i>per cent</i>						
Andhra Pradesh	94.2	63.4	50.6	59.8	30.8	9.2	34.4	
Assam	56.0	24.8	23.8	31.9	31.2	8.1	24.1	
Bihar	26.1	7.8	15.0	19.0	18.3	4.0	7.1	
Gujarat	79.1	42.7	46.1	55.9	36.4	9.8	23.2	
Haryana	77.7	23.9	25.7	32.7	53.8	7.0	45.0	
Karnataka	88.9	60.1	50.0	59.9	28.8	9.9	29.0	
Kerala	99.3	86.1	97.0	97.4	13.2	0.4	1.9	
Madhya Pradesh	52.8	19.3	23.5	28.7	33.5	5.2	24.1	
Maharashtra	87.8	54.8	57.1	61.2	33.0	4.1	26.6	
Orissa	72.9	32.5	23.4	32.7	40.4	9.3	40.2	
Punjab	87.2	25.4	40.5	54.7	61.8	14.2	32.5	
Rajasthan	62.0	16.6	22.5	33.4	45.4	10.9	28.6	

	Proportion of women receiving		Proportion of institutional deliveries <i>per cent</i>	Proportion of safe deliveries <i>per cent</i>	Difference between any prenatal care and full prenatal care <i>per cent</i>	Difference between safe deliveries and institutional deliveries <i>per cent</i>	Difference between any prenatal care and safe delivery <i>per cent</i>
	At least one prenatal care <i>per cent</i>	Full prenatal care <i>per cent</i>					
Tamil Nadu	98.4	75.3	78.8	82.4	23.1	3.6	16.0
Uttar Pradesh	47.0	11.4	16.2	20.7	35.6	4.5	26.3
West Bengal	84.1	33.4	38.9	45.6	50.7	6.7	38.5
Arunachal Pradesh	44.4	19.8	26.3	28.1	24.6	1.8	16.3
Chhattisgarh	51.5	25.9	12.7	22.0	25.6	9.3	29.5
Goa	98.3	80.3	93.8	95.1	18.0	1.3	3.2
Jharkhand	40.8	17.7	13.7	18.1	23.1	4.4	22.7
Himachal Pradesh	87.1	52.7	31.7	36.3	34.4	4.6	50.8
Jammu & Kashmir	58.0	23.8	44.4	46.8	34.2	2.4	11.2
Manipur	77.0	30.9	34.1	49.9	46.1	15.8	27.1
Meghalaya	55.0	30.9	33.4	35.6	24.1	2.2	19.4
Nagaland	45.7	15.6	13.4	25.1	30.1	11.7	20.6
Sikkim	63.1	31.9	32.3	36.7	31.2	4.4	26.4

	Proportion of women receiving		Proportion of institutional deliveries <i>per cent</i>	Proportion of safe deliveries <i>per cent</i>	Difference between any prenatal care and full prenatal care <i>per cent</i>	Difference between safe deliveries and institutional deliveries <i>per cent</i>	Difference between any prenatal care and safe delivery <i>per cent</i>
	At least one prenatal care <i>per cent</i>	Full prenatal care <i>per cent</i>					
Tripura	69.1	34.8	46.1	48.3	34.3	2.2	20.8
Uttaranchal	45.4	20.2	18.1	24.3	25.2	6.2	21.1
Mizoram	80.3	84.4	68.4	71.3	-4.1	2.9	9.0
A & N Island	95.9	43.7	58.9	62.9	52.2	4.0	33.0
Dadra & Nagar Haveli	90.6	62.0	25.9	27.6	28.6	1.7	63.0
Daman and Diu	95.1	71.1	63.2	70.6	24.0	7.4	24.5
Delhi	89.5	73.1	70.0	73.7	16.4	3.7	15.8
Pondicherry	99.8	83.8	92.2	93.4	16.0	1.2	6.4

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

Table 5: Classification of States and Union Territories according to proportion of women receiving no prenatal care and proportion of women receiving at least one prenatal care but not having safe delivery					
Proportion of women receiving no prenatal care <i>per cent</i>	Proportion of women receiving at least one prenatal care but not having safe delivery <i>per cent</i>				
	0-15	15-30	30-45	45-60	>= 60
0-15	Kerala Goa Pondicherry	Karnataka Maharashtra Tamil Nadu Daman & Diou Delhi	Andhra Pradesh Punjab A & N Islands	Himachal Pradesh	Dadra & Nagar Haveli
15-30	Mizoram	Gujarat Manipur	Assam Haryana Orissa West Bengal		
30-45	Jammu & Kashmir	Rajasthan Sikkim Tripura			
45-60		Madhya Pradesh Uttar Pradesh Arunachal Pradesh Chhattisgarh Jharkhand Meghalaya Nagaland Uttaranchal			
>= 60	Bihar				

Table 6: Classification of emergency obstetric care services	
Category	Description
Obstetric First Aid	<ul style="list-style-type: none"> • Limited identification of the problem • Bimanual massage • Fluids by mouth • Oxytocin • Referral
Basic Emergency Obstetric Care Services	<ul style="list-style-type: none"> • Identification of the problems • Bimanual massage • IV fluids • Oxytocin • Manual removal of retained placenta • Suturing perineum (up to 3rd degree) • Initial treatment of sepsis with injectable antibiotics and referral • Management of preeclampsia and eclampsia through initial dose(s) of diazepam or MGS and referral
Expanded Basic Emergency Obstetric Care Services	<ul style="list-style-type: none"> • Basic emergency obstetric care, and • Suturing cervix • Abortion (incomplete and elective) • Vacuum extraction • Essential newborn care, resuscitation
Comprehensive Obstetric Care Services	<ul style="list-style-type: none"> • Expanded basic emergency obstetric care and • Surgical obstetrics including caesarean-section, laparotomy for ectopic pregnancy, repair of vaginal and cervical tears, evacuation of retained products of incomplete abortion, amniotomy with or without oxytocin infusion to augment labour. • Safe blood • Anaesthesia • Medical treatment of shock, sepsis, eclampsia • Safe abortion • Essential newborn care, resuscitation.

Table 7: Availability of emergency obstetric care services by category of health care institution in five districts of Madhya Pradesh			
Category	Proportion of health care institutions having the facility		N
	Basic Emergency Obstetric Care <i>per cent</i>	Comprehensive Emergency Obstetric Care <i>per cent</i>	
All categories	29.8	3.5	114
District hospital	100.0	80.0	5
Civil hospital	100.0	0.0	2
Community health centre	66.7	0.0	24
Primary health centre	18.5	0.0	81
Non-government hospital	0.0	0.0	2

Source: Ranjan et, al (2003)

Figure 1
Maternal Mortality in India, 1957-2000

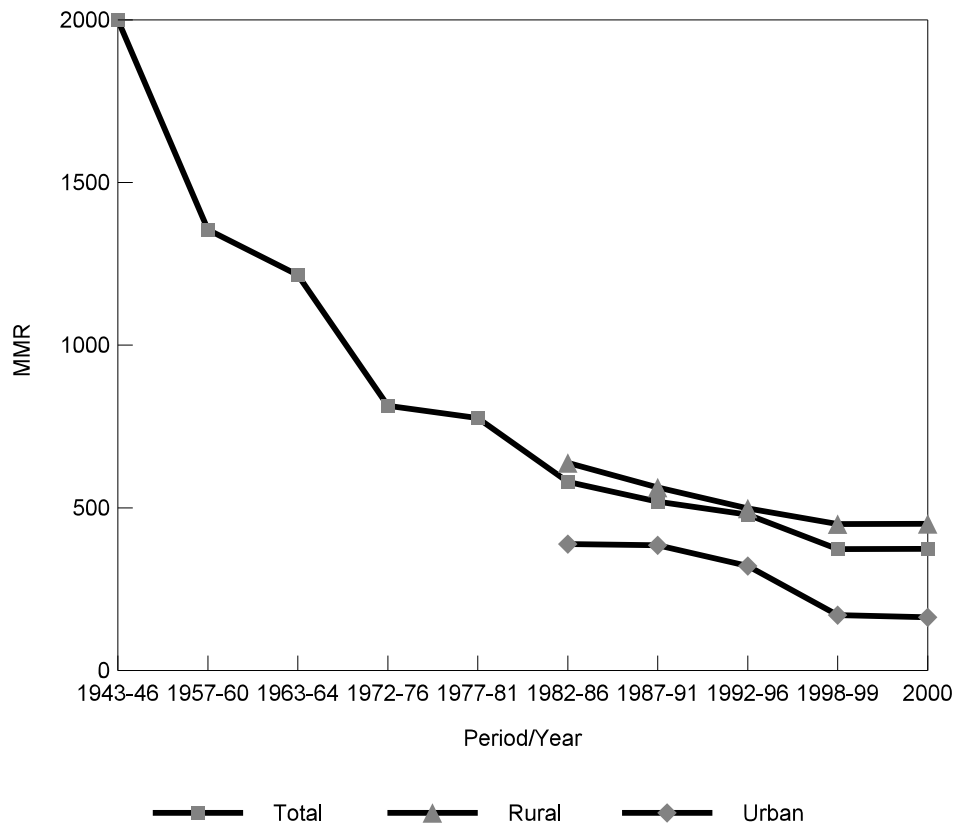


Figure 2
Maternal Mortality Ratio 1999

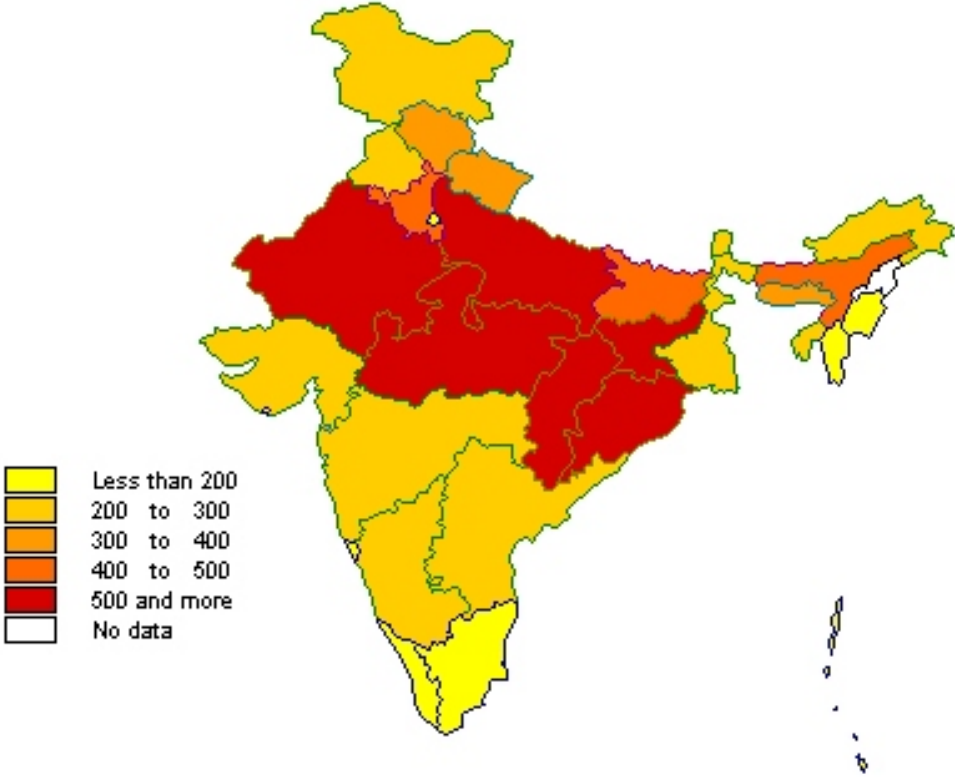


Figure 3
Causes of Maternal Deaths in India, 1995

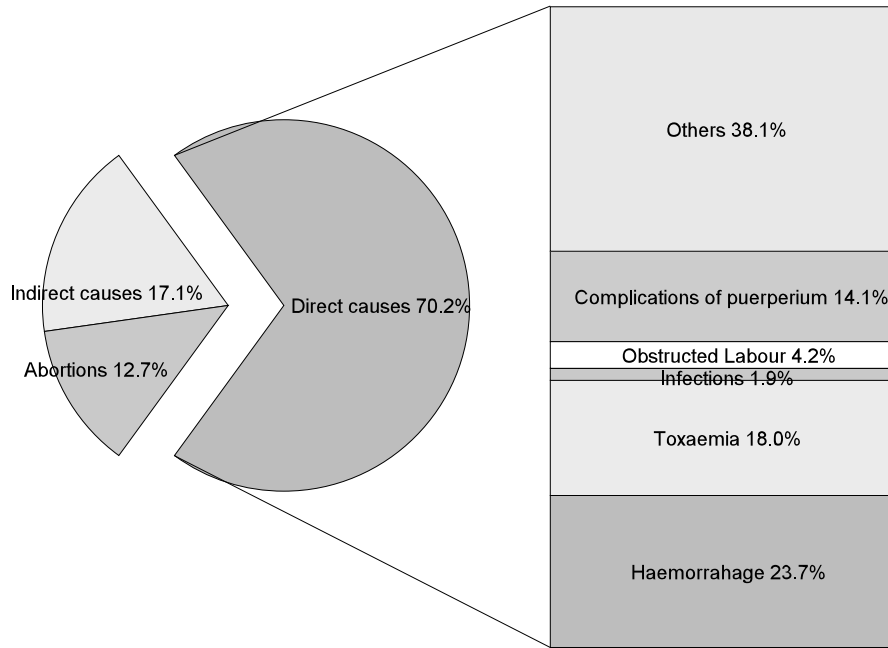


Figure 4
Proportion of Women Receiving Any Prenatal Care Service

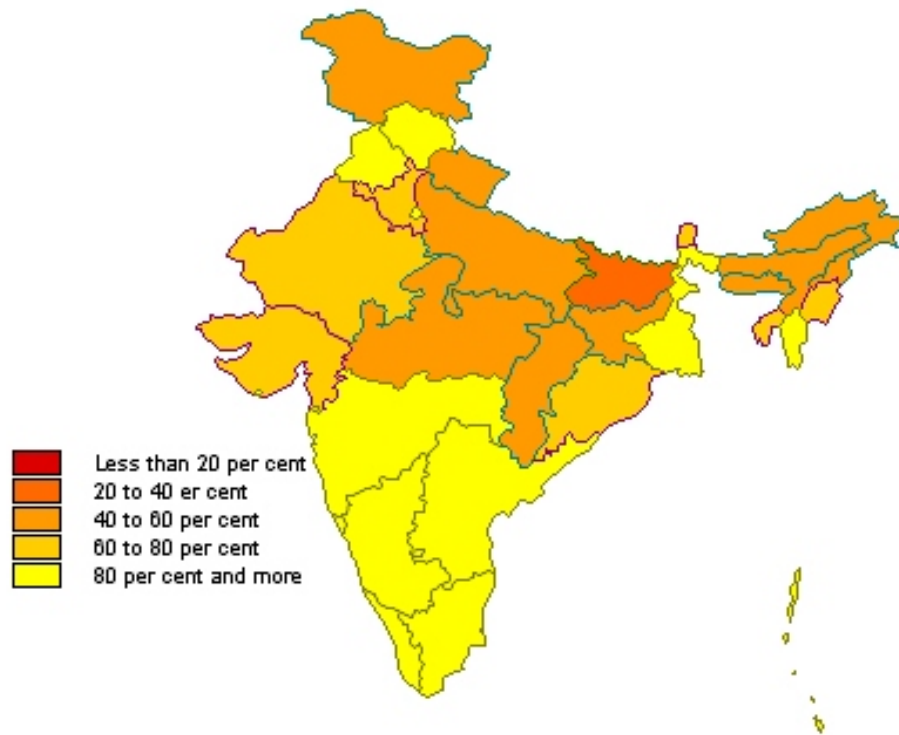


Figure 5
Proportion of Women Receiving Full Prenatal Care Service

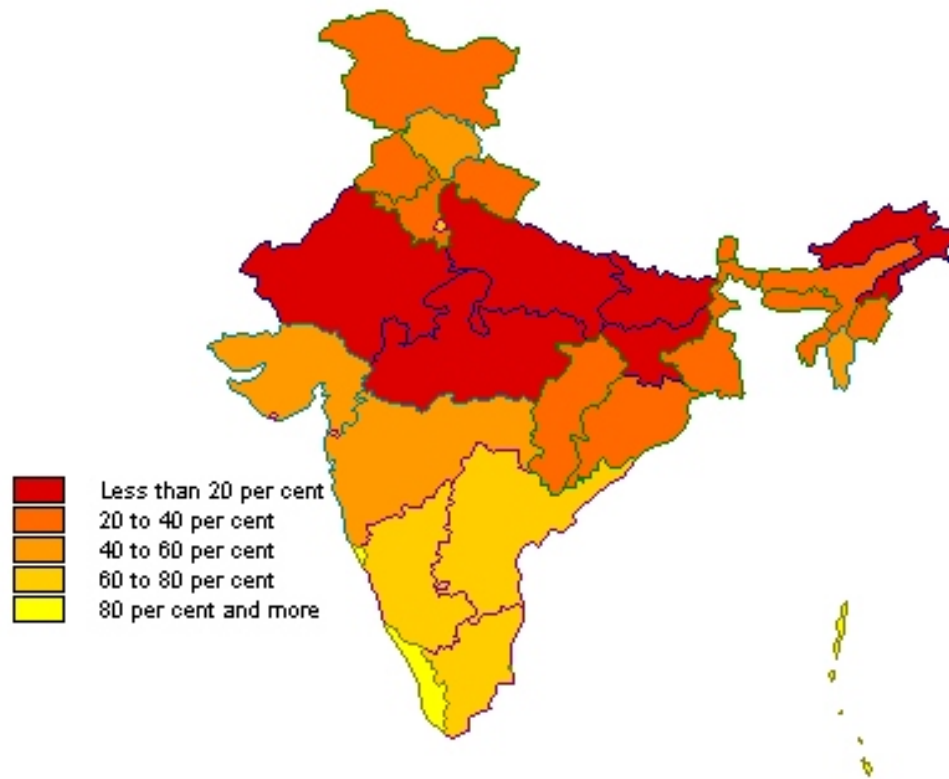


Figure 8
Proportion of Institutional Deliveries

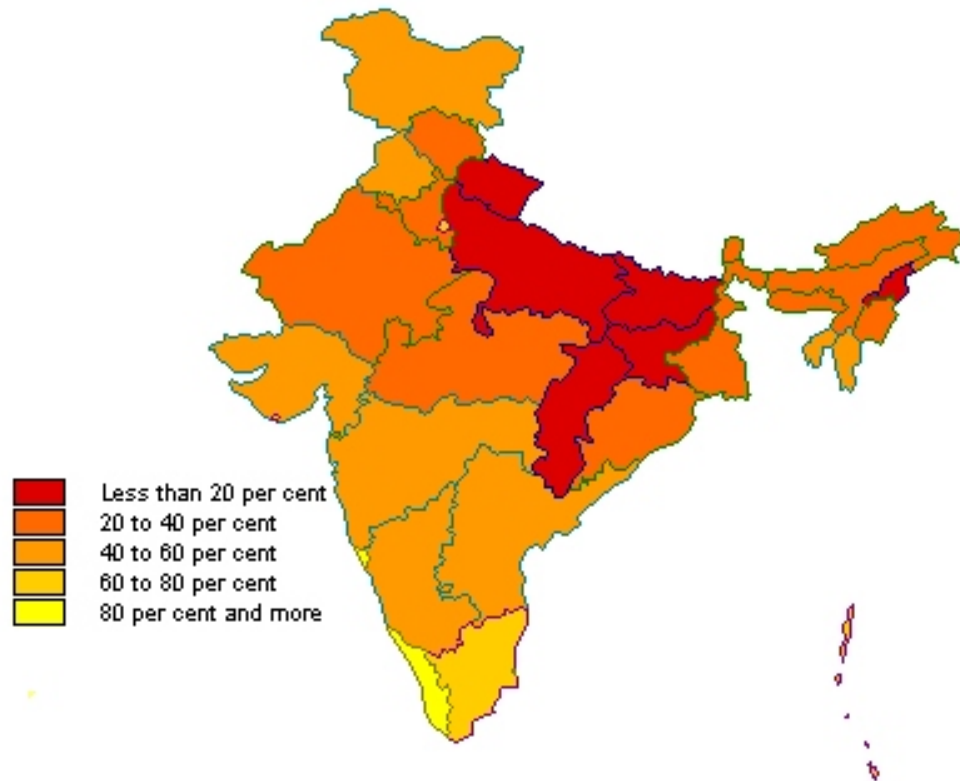


Figure 9
Difference between the Proportion of Safe Deliveries
and the Proportion of Institutional Deliveries

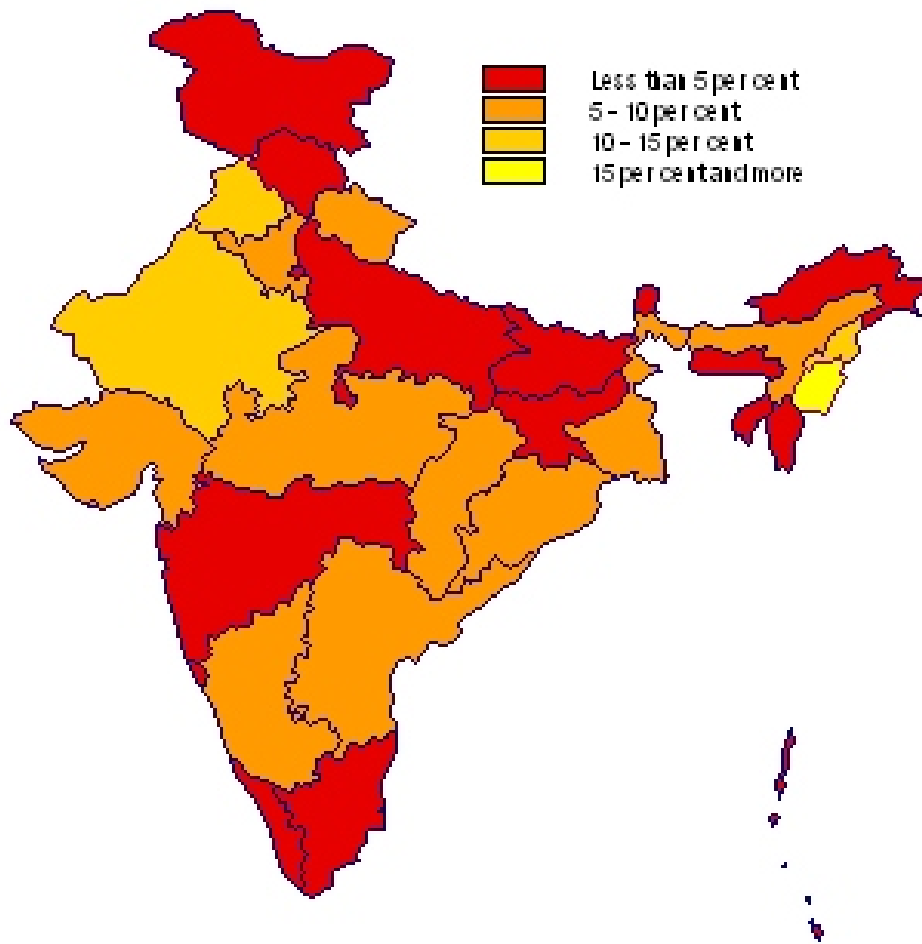


Figure 10
Proportion of Women Receiving any Prenatal Care and
Proportion of Safe Deliveries

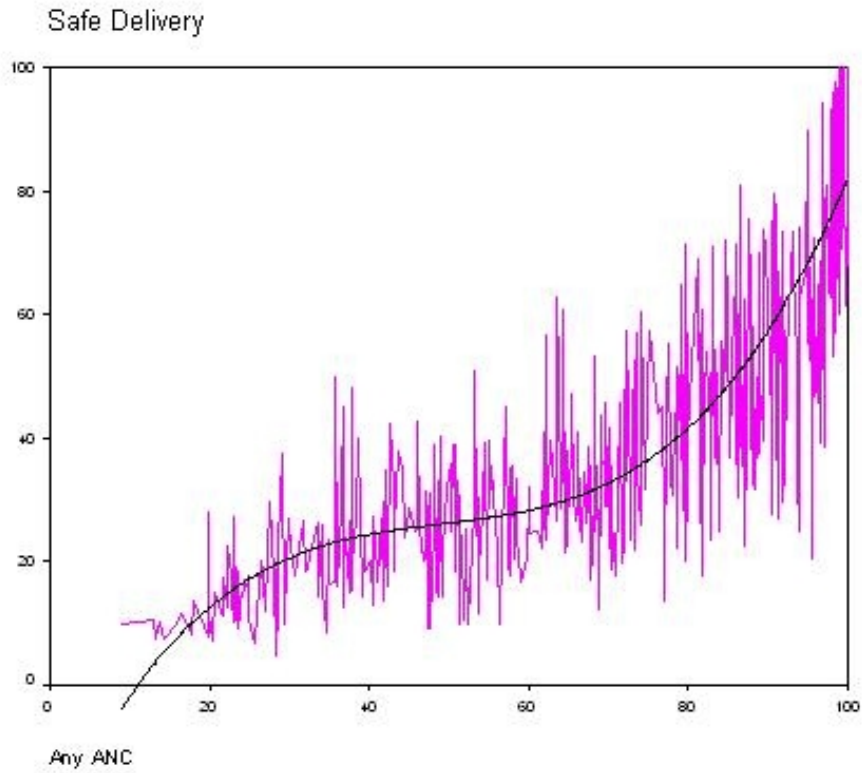


Figure 11
Proportion of Women Receiving Any Prenatal Care
and Proportion of Institutional Deliveries

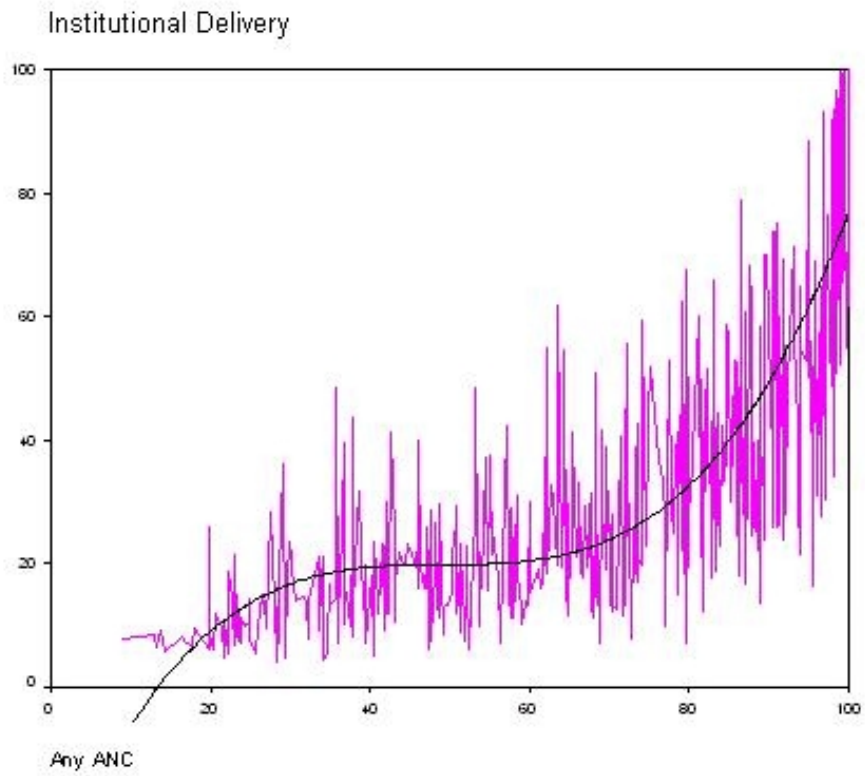


Figure 12
Proportion of Women Receiving 'Full' Prenatal Care
and Proportion of Safe Deliveries

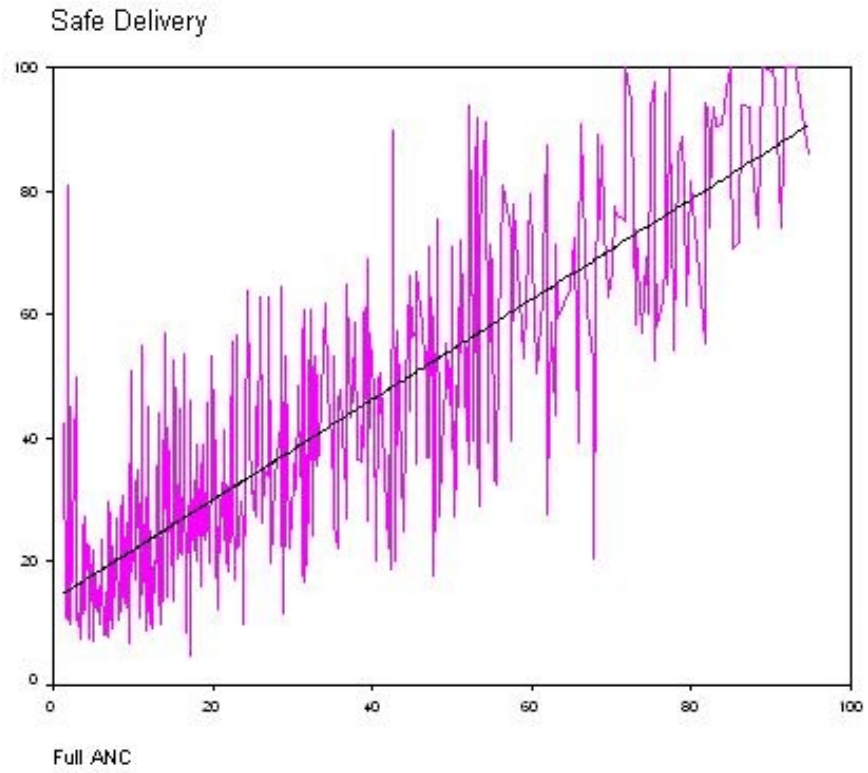


Figure 13
Proportion of Women Receiving 'Full' Prenatal Care
and Proportion of Institutional Deliveries

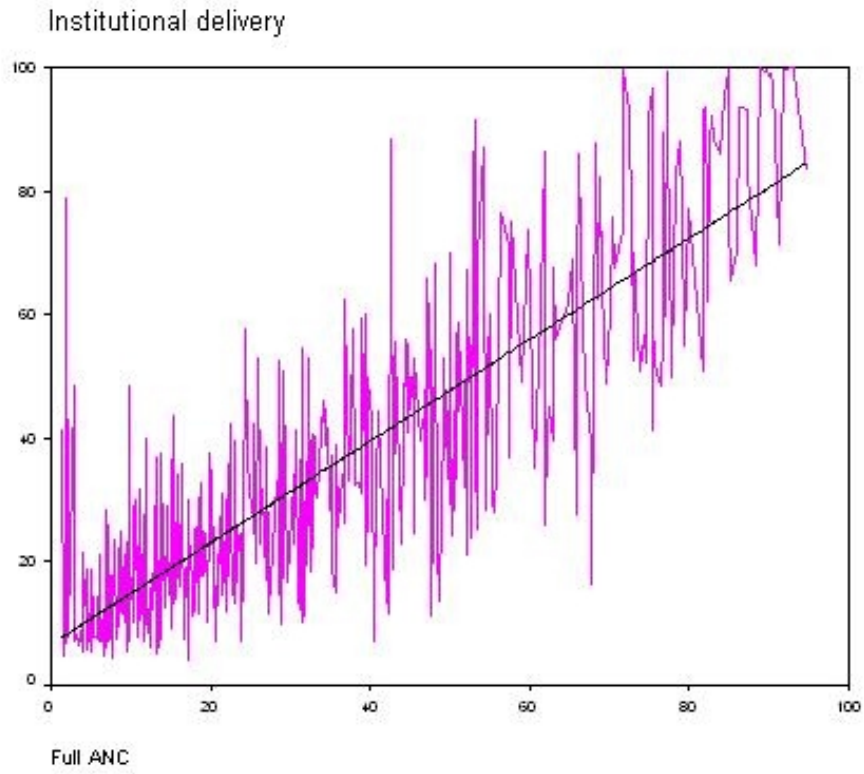


Figure 14
 A Conceptual Framework for Universalising the Availability of
 Emergency Obstetric Care

