

Levels and Trends in Caesarean Births: Cause for Concern?

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A consistent increase has been observed in the rate of Caesarean section deliveries in most of the developed countries and in many developing countries, including India, over the last few decades. An analysis of the National Family Health Survey data shows that the rate of this form of delivery in states like Kerala, Goa, Andhra Pradesh, West Bengal and Tamil Nadu is alarmingly high. States with marked demographic transition as well as high institutionalised births have an inflated rate of c-section deliveries.

Childbirth is a universally celebrated natural event; yet for many thousands of women in India, it is becoming a matter of concern due to the over-medicalisation of their bodies. One of the current examples of this is the Caesarean section delivery. The rising trend in c-section rate in both the developed as well as developing countries, and the increasing preference for it by medical professionals points towards growing medicalisation of women's health. According to the World Health Organisation's (WHO) guidelines, modified in 1994, the Caesarean birth rate in any population group should range between 5% and 15% (WHO 1994). It is suggested that no additional benefit accrues to the children or to the mothers when the rates exceed this level. However, currently the Caesarean birth rates in many developed and developing countries far exceed the tolerable limit specified by the WHO and indicate an unnecessary use of this intervention.

The provision of essential obstetric care has been considered to be the best option to reduce maternal and child mortality. Moreover, institutional delivery is always advocated as the best possible measure to deal with childbirth complications. This is because it helps the doctor to decide on the type of delivery to be performed (normal or Caesarean), based on the intensity of the complications. Unfortunately, this useful medical intervention meant to save lives has turned out to be a source of exploitation in many countries.

In the past, the proportion of all deliveries conducted by Caesarean section was an indicator to measure the levels of complications and to understand the access to quality obstetric care among population groups. The same indicator is currently an alarm signal on the possible overuse of medical intervention. It no longer represents quality of care but speaks about the

unhealthy trend emerging within the medical profession and that it is used for reasons other than maternal complications.

The use of Caesarean delivery in unwanted circumstances creates risks to the mother's health and leads to inefficient use of resources (Millennium Development Goal 2003). It is important to have this intervention during delivery in the case of unavoidable complications. In cases of breech presentation, intrauterine growth retardation, dystocia, previous Caesarean section and suspected foetal compromise, a c-section is advised and preferable (Baskett and McMillen 1998).

Despite the lifesaving advances, there are several adverse consequences of Caesarean delivery in comparison to normal delivery for women and to their households. The immediate consequence for the household is the economic burden since the economic cost of a c-section far exceeds the cost of a normal delivery. In addition, without any medical and obstetric indications it may sometime cause serious socio-psychological damage to women undergoing this method. But the consequences of this medical intervention are inadequately discussed in the literatures. In recent times, however, concern has been expressed about the rising c-section rates in many developed as well as developing countries (Pai 2000). Research shows that the risk of maternal death following a caesarean section is five to seven times higher than vaginal birth (report of the NHTS 2006). Complications during and after the surgery may include a number of injuries to the mother's health such as injury to the uterus, bladder, and blood vessels, which cause severe haemorrhage, infection, accidents related to the anaesthesia pulmonary embolism and paralysed bowels (McAleese 2000). This medical intervention invites some health risk to newborn babies too. Studies indicate that babies born by c-section are more likely to develop breathing problems or respiratory distress syndrome (Morrisson et al 1995).

Studies have also shown that over the past few decades childbirth is increasingly influenced by medical technology. Johanson et al (2002) argue in this context that the normal birth has become too "medicalised" and the higher rates of

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unnecessary obstetrical intervention raise concern for the mother's health. According to Bruekens (2001), the over-medicalisation of maternal care has become a worldwide epidemic. In fact, medicalisation, in general, has taken control over human life and maternal health also comes under its ambit.

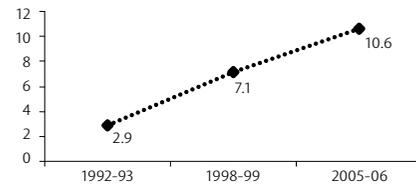
Keeping in view the above background, the objective of this article is to bring out the trends, emerging patterns and dynamics of c-section in India, and also across regions. While doing so, it also tries to speculate on the possible reason for the increasing trend and discusses its implication for maternal health. However, the global picture is presented first to understand India within the global perspective.

Global Trend in C-Section Deliveries

Among the developing countries until recently, the high rate of this form of delivery in the Latin American countries was a cause for concern. A consistent increase has been observed in the rate of c-section deliveries in most of the developed countries and in many developing countries over the last few decades. The present data shows that in the us, 1.2 million or

29.1% of births were by c-section delivery in 2004 (NIHS 2006). A study by Sufang et al (2007) shows that in high income countries like Australia, us, Germany, Italy and France, the rates have gone up

Figure 1: Percentage of C-Section Delivery from 1992-93, 1998-99 and 2005-06, India



phenomenally. A similar scenario has also been noticed in the developing countries where the proportion of Caesarean births is as high as in the developed nations. According to Stanton and Holtz (2006), in the developing world, approximately one in eight births is via c-section. Among the developing countries reviewed recently, Chile had the highest rate (40%) followed by Brazil, the Dominican Republic, South Korea, China and Iran (Stanton et al 2006). According to the report of the National Institute of Health (2006), in Brazil about 37% of the births were through c-section. Another study by Sufang et al (2007) shows that the c-section birth rate in China has gone up from 8.9% in 1993-94 to 24.8% in 2001-02.

Trends in India

India is also experiencing a rapid increase in c-section delivery along with an increase in institutional deliveries and growing access to gynaecological and obstetric care. The high rural urban differences in rates invoke speculation on the possible reason for such an increase.

Reliable data on the incidence of c-section is available in India only from the National Family Health Survey (NFHS) conducted during 1992-93. Hence, the trend of c-section deliveries analysed from 1992-93 to 2005-06 shows an upward trend in c-section rates. The present analysis is based on the data derived from different rounds of NFHS. Figure 1 presents the trends in c-section deliveries in India for the period 1992-93 to 2005-06. At the all-India level, the rate has increased from 2.9% of the childbirth in 1992-93 to 7.1% in 1998-99 and further to 10.2% in 2005-06.

However, this scenario itself cannot be considered as a sharp increase, nor does the figure exceed the tolerable limit specified by the who. In fact, the rate of increase has marginally declined if we compare 1992-93 to 1998-99 with 1998-99 to 2005-06. What has been alarming in the case of India is the wide heterogeneity in the incidence of c-section across states and regions. It is evident from the analysis in Table 1 that in 2005-06, seven out of 19 states reported over 15% or more caesarean childbirth. Over the last 15 years the increase in c-section delivery has been substantial in many states. Interestingly, all the southern states recorded c-section delivery as high as in countries with the highest level of c-sections in the world. The rates recorded in Kerala, Andhra Pradesh and Goa are alarming. The data indicate that states with marked demographic transition also record a high incidence of c-section, although the real cause of such an increase would be different.

Rural-Urban Difference: Another striking difference in c-section rates in India is in the rural-urban disparity. Figure 2 (p 21) represents urban rural difference in c-section delivery in the three NFHS rounds. In 1998-99, it was around 4.8% in rural areas and 14.9% in urban areas. It has increased to 6.2% in rural areas and 17.8% in urban areas during 2005-06. The higher urban rates may be a reflection of combination of factors like high utilisation of maternal health services, faster fertility decline and larger concentration of private hospitals, etc.

Table 2 (p 21) represents the rural urban scenario of c-section delivery among the major states in India. The urban caesarean birth rates, on an average, are more than double the rural rates in almost all the states. It is important to mention that in states like Kerala, Andhra Pradesh and West Bengal, the urban c-section rates are over 30%. Even at the global level over 30% is one of the highest rates recorded only in a few Latin American countries. The highest level of difference in rates between rural and urban areas are evidenced in states like West Bengal, Jammu and Kashmir, Andhra Pradesh, Assam, and Maharashtra. Though Kerala has the

Table 1: Trend in C-Section Delivery in India and Different States (Percentage of women who had undergone caesarean section delivery by states*)

States	Percentage of Women having Caesarean Delivery			
	NFHS-1 (1992-93)	NFHS-2 (1998-99)	NFHS-3 (2005-06)	Diff from NFHS-1 (NFHS3-NFHS1)
Andhra Pradesh	4.4	14.7	27.5	23.1
Assam	2.3	5.0	6.5	4.2
Bihar	1.1	3.0	4.1	3.0
Delhi	4.6	13.4	12.0	7.4
Goa	13.7	20.0	25.5	11.8
Gujarat	2.7	8.6	8.8	6.1
Haryana	2.3	4.2	5.0	2.7
Himachal Pradesh	1.6	6.8	13.1	11.5
J&K	5.7	10.6	14.1	8.4
Karnataka	3.7	11.0	15.3	11.6
Kerala	13.2	29.8	30.1	16.9
Madhya Pradesh	0.7	3.0	6.8	6.1
Maharashtra	3.4	9.9	15.6	12.2
Orissa	1.5	5.2	6.1	4.6
Punjab	4.2	8.3	14.4	10.2
Rajasthan	0.7	3.0	4.2	3.5
Tamil Nadu	7.1	17.5	23.0	15.9
Uttar Pradesh	0.6	2.7	5.9	5.3
West Bengal	3.3	13.5	15.0	11.7
India	2.9	7.1	10.6	7.7

* Percentages have been given for major states only. Source: National Family Health Survey, Rounds 1, 2 and 3.

highest proportion of c-section delivery in India, the rural-urban difference is lowest as rural Kerala also reports very high incidence of c-section rates.

Reasons for High Rates

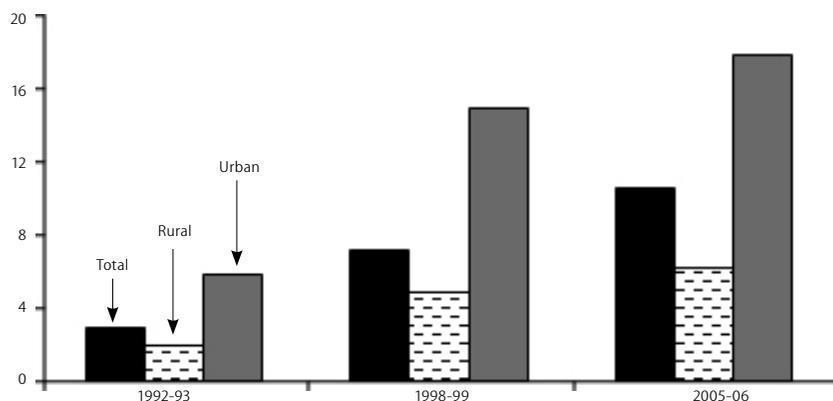
It is difficult to conclusively predict the reasons for the rapid increase in c-section deliveries from the available information. However, the scenario should be understood in the context of medicalisation of human bodies. There is an ongoing debate in the field of medical sociology on the possible reasons for medicalisation. Some studies focus purely on the medical rationale for performing c-section (Baskett and McMillen 1998; Cai et al 1998). It is justified in many circumstances to ensure the safety of the mother and child under conditions of obstetric risks (Mishra and Ramanathan 2002). Medical interventions are more or less acceptable under certain circumstances such as breech presentation, dystocia, previous Caesarean section and suspected foetal compromise (WHO 1985). A study by Cai et al (1998) revealed that the performance of c-section was mainly associated with self-reported complications during pregnancy, higher birth weight and maternal age. The report by the Parliamentary Office of Science and

Technology (POST) in UK shows that the increasing use of in vitro fertilisation (IVF) has led to an increase in the number of multiple births and these babies are usually delivered by c-section (POST 2002). Keeler and Brodie (1993) argued that, ignoring the financial costs, a c-section is best if the price in terms of morbidity and risk to mother of the operation is less than the discomfort and risk to mother and child of prolonged normal delivery.

on women's fear of normal delivery (Behague et al 2002). But on the other hand, Taffel et al (1989) argued that the decision to perform c-section is prompted by the physician's concern for the life and health of the mother or the child.

It is often argued that, beside the medical factors, the physician's interests determine the choice of c-section (Mishra and Ramanathan 2002). These include the physician's style of practice, clinical

Figure 2: Percentage of Births by C-Section by Place of Residence, India



At the same time there is no evidence to show that there has been any significant increase in age at childbirth in the country. On the contrary, the age at marriage and the age at childbirth hardly increased to account for the rapid increase in c-section. Moreover, widespread use of IVF or other reproductive technologies are not observed in all regions in India. Some social scientists argue that the decision to perform a Caesarean section is often strongly influenced by non-medical factors along with the medical determinants. Researchers have found a strong correlation between increasing c-section delivery and socio-economic and cultural factors. In the case of developed countries, the doctor's preference for this surgical procedure, coupled partly with the demand of the expectant mothers, is responsible for the increasing trend. Women's requests for Caesarean section is considered to be an important determinant of birth outcome, particularly in countries with growing privatisation and options for patient choice (Ash and Okah 1997). It is often argued that the power of decision-making in the home and seeking medicalised healthcare are associated with higher maternal education and family incomes (Potter et al 2001). Most research focuses

attitude and fear of litigation (Belizan et al 1999). On the other hand, economic motives may include both the doctors' fear of malpractice as well as economic gain (Tussing et al 1992). Some studies consider the increasing c-section delivery purely in terms of overuse of healthcare facilities due to financial benefits accruing to the hospital. The source of payment for the delivery and the place of birth, i.e., whether it is a private or public sector institution also influence the performance of c-sections (Peterson 1990). Therefore, it is difficult to conclude whether there are medical grounds for the increasing rate or the women exercise their choice for this form of delivery in India

Role of Private Sector

Private hospitals are very often the targets of criticism for enhanced c-section delivery on grounds of financial greed. Studies point towards higher incidence of caesarean deliveries in private hospitals compared to public hospitals (Peterson 1990). This suggests that non-medical factors such as economic gain and pressures of private practice may motivate doctors to perform surgical deliveries. The high rate in urban areas probably indicates growing privatisation of healthcare in urban areas

Table 2: Percentage of Births in Rural and Urban Areas by C-Section Delivery

States	Percentage of Women Who Have Caesarean Delivery		
	Rural	Urban	Diff from Urban to Rural (Urban-Rural)
Andhra Pradesh	19.4	32.2	12.8
Assam	3.7	17.4	13.7
Bihar	2.5	7.6	5.1
Delhi	5.0	12.6	7.6
Goa	23.7	27.3	3.6
Gujarat	5.5	14.7	9.2
Haryana	3.1	12.1	9.0
Himachal Pradesh	12.3	15.4	3.1
Jammu and Kashmir	9.2	29.0	19.8
Karnataka	11.6	22.2	10.6
Kerala	28.4	33.5	5.1
Madhya Pradesh	1.9	13.6	11.7
Maharashtra	7.7	19.9	12.2
Orissa	3.9	12.8	8.9
Punjab	14.8	19.6	4.8
Rajasthan	2.2	9.9	7.7
Tamil Nadu	19.8	26.0	6.3
Uttar Pradesh	2.4	12.7	10.3
West Bengal	5.8	30.1	24.3
India	6.2	17.8	11.6

* Percentages have been given for major states only. Data have been analysed based on *National Family Health Survey, 2005-06*.

Table 3: Percentage of Women Undergoing C-Section Delivery in Institutionalised Births

States	Institutional Births	Delivery by C-Section	Birth in Public Health Facilities	Delivery by C-Section in Public Health Facilities	Birth in Private Health Facilities	Delivery by C-Section in Private Health Facilities	Difference in C-Section Births from Private to Public
Andhra Pradesh	75.6	36.4	27.7	25.3	48.1	42.8	17.5
Assam	26.2	25.1	14.7	20.9	11.4	30.5	9.6
Bihar	25.1	16.2	4.8	8.2	20.4	18.0	9.8
Delhi	52.7	22.9	27.5	18.1	25.1	28.1	10.0
Goa	92.2	27.8	44.0	18.1	48.4	36.6	8.5
Gujarat	52.5	16.9	13.9	13.8	38.7	18.0	4.2
Haryana	34.6	14.5	13.2	14.4	21.2	14.7	0.3
Himachal Pradesh	49.1	26.9	42.3	24.2	6.7	43.9	19.7
Jammu and Kashmir	51.1	27.6	41.7	25.5	9.5	37.1	11.6
Karnataka	64.1	23.9	34.8	17.2	29.5	31.8	14.6
Kerala	99.3	30.3	35.6	26.0	63.8	32.7	6.7
Madhya Pradesh	38.3	17.7	20.8	9.7	17.5	27.1	17.4
Maharashtra	71.2	22.0	34.3	16.6	37.1	26.9	10.3
Orissa	39.1	15.5	30.6	10.5	8.7	33.1	22.6
Punjab	51.2	32.3	12.3	34.4	38.8	31.6	-2.8
Rajasthan	31.6	13.1	20.0	12.1	11.6	15.0	2.9
Tamil Nadu	90.1	25.5	53.8	19.3	36.5	34.7	15.4
Uttar Pradesh	24.7	23.9	6.4	12.4	18.3	27.9	15.5
West Bengal	51.9	28.9	37.8	20.8	14.2	50.3	29.5
India	44.8	23.7	23.4	18.1	21.4	29.9	11.8

and financial benefits behind this surgical procedure in private healthcare facilities. Table 3 presents data on percentage of c-section deliveries in private and public health facilities. It is clear from the analysis that the c-section deliveries are more in private health facilities than in the public health facilities in many states. Different rates in public and private hospitals suggest that non-medical factors, such as economic gain and pressures of private practice, may motivate doctors to perform surgical deliveries (Potter et al 2001). At the all-India level nearly 30% of the Caesarean births are in private health facilities. States like West Bengal, Andhra Pradesh, Goa, Karnataka, Kerala, Tamil Nadu, Himachal Pradesh, Gujarat, and Orissa show alarming rates. In all these states the proportion of c-section births in private health facilities is above 30%. Moreover, in some states the difference in rates between urban and rural areas is pronounced. Analysis shows that the difference is highest in West Bengal (29.5%). But in the case of Punjab, Caesarean births in public hospitals are more than in the private hospitals. It is interesting to note that in a state like Kerala, which represents the highest proportion of c-section births, the difference between public and private hospitals is relatively less as compared to other states. This probably shows

that private hospitals alone cannot be blamed for the increasing trend.

Conclusions

The role of the c-section intervention in reducing maternal mortality must be recognised in a country like India. But the number of Caesarean births particularly in urban areas do present a serious concern. This article attempts to show that over the past few years an increase in the rate of c-section births has occurred in many states and especially in the urban areas. The exact cause of this increasing trend, however, remains unknown. While an important reason for medical intervention is the attempt to save the lives of mother and child, there are also other societal forces playing a vital role. Very high incidence of c-section delivery among the affluent groups and in private hospitals points to factors beyond the purely economic motive.

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