UNNECESSARY MEDICAL INTERVENTIONS: CAESAREAN SECTIONS AS A CASE STUDY

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While there is no dispute about the need and, in some instances, the imperative role of many medical interventions like appendectomy, caesarean section (CS), hysterectomy, coronary bypass surgery, and blood transfusion, it is of concern that these interventions could be done (and are being done) without valid medical indications. There is now an increasing perception that caesarean sections and hysterectomies are being done unnecessarily. There is also the concern that these procedures are being done by unqualified people in rural areas. Issues like the irrational, unnecessary use of blood transfusions and its role in the HIV epidemic have also been raised.

The medical fraternity, quite awake to this possibility, has a tradition of auditing systems that monitor these interventions. It does not, however, follow that all hospitals/institutions actually have these audit systems in place. Surgeons usually audit their appendectomy rates by sending every appendix removed for histopathological confirmation of inflammation. The proportion of "normal" (not inflamed) appendices is the negative appendectomy rate. It indicates whether too many appendectomies are being performed in a surgical practice or unit (Colson et al. 1997). By consensus, a normal appendix rate of about 10 – 20% is considered acceptable. A rate more than 20% indicates that surgeries are being performed without valid indications. Another example is the caesarean section rate used by obstetricians for auditing caesarean sections. This paper focuses on caesarean sections as a case study to discuss the issue of unnecessary medical interventions and their potential adverse impact.

RISING CAESAREAN SECTION RATES

While the crucial, indeed, life saving role of the caesarean section in modern obstetrics is obvious, the potential adverse impact of high caesarean section rates is less obvious and less discussed. In recent times, concern has been raised about rising CS rates in many countries (Notzon et al. 1985; Meehan et al. 1993; Lancet 1997; Savage 1999). In the USA, CS rate increased from 5% to 25% in just a matter of two decades (Taffel et al. 1990). In 1995, the CS rate in the United States was 21% (NCHS 1997). The rate in England was estimated to be around 12% (Savage et al. 1993).

The problem is not confined to only the developed countries (Notzon et al. 1985; Macfarlane et al. 1993). In China, in the past three decades, the proportion of babies delivered by CS increased from 4.7% to 22.5% (Cai et al. 1998). In Brazil, the CS rate increased from 14.6% in 1970 to 31% in 1980 (Faundes et al. 1993). Chile leads the world with a rate of 37% (Murray et al. 1997). A recent ecological study from Latin America estimated the national CS rates for 19 countries in the region (Belizan et al. 1999). 12 out of the 19 countries had CS rates above 15%, ranging from around 17% to 40%. The authors estimated that over 850, 000 unnecessary caesarean sections are performed each year in Latin America. The ecological study also demonstrated an association between better socioeconomic conditions and higher CS rates.

Alarmed by these trends, many countries are actively trying to contain this rise. Thanks to the widespread debate and action, some countries have, in fact, succeeded in bringing down CS rates (Lancet 1997).

While there is no universal agreement as to what should be the optimal CS rate, some authors have argued that a rate of about 6% to 8% would be appropriate and would account for the common medical indications for performing the surgery (Francome et al. 1993). During a consensus building exercise by WHO, a rate of 10-15% was considered appropriate (WHO 1985) for the medical indications. This rate was defined arbitrarily. The government of USA, in its Healthy People 2000 strategy, has set a goal of reducing the CS rate to 15% by 2000 (DHHS, 1991). According to some researchers, the optimal CS rate should be decided on the characteristics of the population. Where the population is healthy, well-nourished, and socially secure (middle and upper class), a CS rate of 15% would probably be acceptable. Where the population is impoverished with poor general and reproductive health (high-risk pregnancies), a rate of 20 – 25% would probably be appropriate (Christine Nuttall, personal communication).

There has been very little research in India on CS rates and its adverse impact (Pai 1999a). The issue is rarely discussed in hospitals and medical institutions in India. Obstetricians in India have not shown much concern about this nor have they attempted nationwide audits. We do not know our national CS rate. However, an increase in CS rates have been reported

from urban centers (Mukherjee et al. 1993). A five-year audit from a large, teaching hospital in Calcutta showed a CS rate 49.9% (Pahari et al. 1997). A study done in a rural hospital showed that nearly 18% of the emergency and 15% of the registered obstetric admissions resulted in caesarean sections (Chhabra et al. 1992). Anecdotal reports also suggest that CS rates in urban private hospitals are high, particularly in centers which have special infertility and assisted reproductive technology units. The KSSP surveys in rural Kerala have documented an increase in CS rates between 1987 and 1996 (Kannan et al. 1991; Kunhikannan et al. 1999). With hospital data being scarce, it is not surprising that there is not much population-based data on CS rates and on the potential adverse impact of CS, particularly in the context of rising CS rates worldwide.

In a recent article published (along with an editorial on the issue) in the *National Medical Journal of India*, we reported some observations from a population-based survey in Madras City (Pai et al. 1999b). Our survey was an Expanded Programme on Immunization 30-cluster survey, a well known survey design used widely for estimating immunization coverage (Henderson et al. 1982; Lemeshow et al. 1985), in an urban, educated, middle and upper class population in Madras City. It had two parts. The first part was designed to estimate the Hepatitis B vaccine coverage and this has been reported earlier (Pai et al. 1998). The second part was on breastfeeding patterns in this community. Since mode of delivery was one of the questions in this section, we could collect some population-based data on CS rate and study its impact on breastfeeding practices.

Mothers of 210 babies (aged 13- 24 months) were interviewed in the survey. Of the 210 babies, all had been delivered in the hospital. 95 of 210 (45%, 95% Confidence Interval: 39.1 – 51.3) had been delivered by caesarean section. Univariate analysis did not reveal any association between CS and socioeconomic variables like maternal education, maternal occupation, paternal education and paternal occupation. Unfortunately, we did not collect other relevant data like parity of the mother, primary or repeat section, indication for CS, etc. Therefore, we could not speculate as to why the CS rate is very high in this population.

Table - Breastfeeding practices by mode of delivery.

	Vaginal Delivery Frequency (%) (N = 113)	Caesarean Section Frequency (%) (N = 94)	Chi-squares for one degree of freedom (P Value)
Colostrum given	101 (89%)	62 (66%)	16.82 (< 0.0001)
BF initiated within 4 hours	64 (57%)	22 (23%)	23.92 (< 0.0001)
Prelacteal feeds given	38 (33%)	53 (56%)	10.96 (0.0009)
Exclusive BF for at least 4 months	58 (51%)	41 (44%)	1.22 (0.26)

Source: Pai et al, 1999b

The Table shows the breastfeeding patterns by mode of delivery. 206 of 210 babies (98%) had been ever breast-fed. This high proportion of ever breastfed babies is despite the very high CS rate and was encouraging. However, babies born by CS tended to be initiated on BF late, given prelacteal feeds more often, and given colostrum less often when compared to babies delivered vaginally. Though a greater proportion of vaginally delivered babies were given exclusive BF for at least 4 months, the association was not statistically significant.

On purely scientific grounds, a CS rate of 40 to 50% is almost impossible difficult to justify. Medical indications alone cannot result in such a high rate. Though not conclusive, the data also suggested that CS might be adversely affecting some aspects of breastfeeding (colostrum, early initiation of breast feeds and prelacteal feeds). The impact of CS on breastfeeding may become more obvious as CS rates increase worldwide. This adverse impact of CS on breast feeding has rarely been identified as a deterrent to breast feeding. Studies explicitly designed to study the question of CS rate and breastfeeding are needed.

IMPACT OF CAESAREAN SECTIONS

Though caesarean sections are much safer today than in the past, it is well known that CS carry documented risks to the mother and the baby. These risks are:

Maternal mortality: The risk of maternal mortality for caesarean delivery in the USA is 20 per 100,000 as compared to 2.5 per 100,000 for vaginal delivery (Petitti et al. 1985). An Indian study has shown that deaths related to CS accounted for 1 in 8 overall maternal deaths in the hospital, and the institutional mortality for CS was 5.7 per 1000 (Mukherji et al. 1995).

Maternal morbidity: The risk of maternal morbidity is between 8 and 12 times higher for caesarean delivery when compared to vaginal delivery (Petitti et al. 1985; Boehm et al. 1994). It is also well known that more primary caesarean sections will lead to more repeat caesarean sections for subsequent births (Sehgal 1981). Repeat sections carry even higher risks to the mother. Some of the important morbidities due to CS are:

1. Severe blood loss requiring transfusion during surgery is an important morbidity. Haemoglobin surveys in India by the National Institute of Nutrition (Reddy et al. 1993) have shown that about 13% of the pregnancy women are severely anemic (Hb <7 gm%) and 34% are moderately anemic (Hb 7 – 9 gm%). The high prevalence of anemia among mothers in rural areas makes them vulnerable and less capable of withstanding blood loss. Lack of safe blood is a major issue, particularly in rural areas. On the other hand, irrational, unindicated blood transfusions, could be an important factor in the transmission of HIV and Hepatitis B (Bhargav 1998a, 1998b).
2. Caesarean hysterectomies are usually done when the uterus is badly damaged during CS with profuse, intractable bleeding. A study from Bombay has documented this problem (Kamal et al. 1994).
3. Wound infection and would dehiscence (Petitti et al. 1985) increase morbidity, prolong hospital stay and increase costs.
4. Anesthetic complications like post-spinal headache increase postoperative morbidity (Petitti et al. 1985).
5. Late complications like incisional hernia (Petitti et al. 1985) can occur several years after the CS and might require surgical correction.
6. Higher incidence of problems like placenta praevia and placenta accreta (placenta adherent to the wall of the uterus) in the subsequent pregnancy (Savage 1999). This could lead to severe blood loss and hysterectomy.
7. Adverse impact on breastfeeding. Earlier studies have shown that caesarean mothers were less likely ever to breast feed, experienced a much longer time to first interaction with their babies, and less likely to exclusively breast feed as compared to mothers who delivered vaginally (Sachdev et al. 1995; DiMatteo et al. 1996; Pai et al. 1999b).
8. Negative psychological impact of caesarean section on mothers (DiMatteo et al. 1996).

Neonatal morbidity: The newborn baby is also affected in many ways (Petitti 1985, Boehm 1994).

1. Iatrogenic prematurity which might result in neonatal problems (like respiratory distress, physiological jaundice) and death.
2. Neonatal depression due to maternal anesthesia.
3. Fetal injury during uterine incision and extraction.
4. Longer hospital stay exposing the newborn baby to nosocomial (hospital-acquired) infections.

Higher health care costs: CS results in longer hospital time for both the mother and the baby. Most hospitals would keep the mother and the baby in hospital for at least one week. On an average, in India a CS would cost 2 – 3 times more than a normal vaginal delivery. Data from the NHS in Britain suggests that a woman delivered by CS is likely to cost the NHS at least 1000 pounds more than if she had a normal delivery. Reducing the CS rate by 1% could save 7,000,000 pounds a year (Savage et al. 1993). Data from Brazil suggests that a 1% increase in the CS rate would cost US $ 4,104,000 (Faundes et al. 1993). There are no Indian data on such cost issues.

Ethical issues: Lastly, in addition to the above medical and economical implications, unnecessary medical interventions also raise ethical issues (Pai et al. 1999; Savage 1999; Oommen 1999). Also, how can a country like India afford to waste scarce resources in unnecessary interventions? The issue of unnecessary interventions is finally a statement on the standards of medical ethics in India.

FACTORS INFLUENCING CS RATES

Medical factors: These are the traditional medical indications for performing the surgery. The most common medical indications for performing CS are previous caesarean delivery, failure of the labour to progress (dystocia) and cephalopelvic disproportion, fetal distress, and breech and other malpresentations.

Physician factors: These are factors that lead to physicians' preference for caesarean delivery. Fear of litigation (defensive obstetrics) and a lower tolerance for not taking risks has been cited as the most important factor in several western studies (Savage et al. 1993; Savage 1999). Fear of litigation is unlikely to be an important factor in the Indian context.

Factors like physician convenience, 'physician style' of practice, type of practice (private versus group practice), financial incentives, physician's experience and training, availability of expert second opinion, have also been studied (Burns et al. 1995; Goyert et al. 1989; Haynes De Regt et al. 1986; Savage 1999).

The finding that CS rates in the private sector are higher than in the public sector have been shown in western (Haynes De Regt et al. 1986; Stafford et al. 1990) and Indian studies (Kannan et al. 1991). A survey done in 1995 in Trivandrum City showed an average CS rate of around 10% in the government hospitals as compared to a rate of around 30% in the private hospitals (K R Thankappan, personal communication).

The lowering of threshold for doing the procedure because of the availability of skilled neonatal intensive care, better anesthesia, availability of blood transfusion services, etc. may be another factor (Leitch et al. 1998). The impact of increasing use of electronic fetal monitoring and epidural anesthesia on the CS rates have also been studied (Thorp et al. 1993).

The convenience factor might be an important one in India. There may be many possible reasons for this. In India, 70 – 80% of medical care is provided by the private sector (Duggal et al. 1989; Nandraj 1994). Data from Karnataka shows that more than three-fourths of private hospitals have less than 30 beds (World Bank 1997). Data from a survey in Maharashtra showed that the average number of beds per hospital in the private sector was only 11 (Nandraj et al. 1997). Single doctors or a family usually owns these small hospitals and nursing homes (World Bank 1997; Nandraj et al. 1997). Many of these hospitals offer maternity services. Among the hospitals surveyed in Maharashtra, 55% of the hospitals provided maternity care (Nandraj et al. 1997).

In this context, it is quite likely that there will be only one qualified obstetrician per hospital. Again, the Maharashtra survey showed that nearly 40% of the hospitals were being run by the doctor-owner without any assistance from other doctors or visiting consultants, and of this only half had any specialist qualification (Nandraj et al 1997). Given this reality, most obstetricians in such hospitals will be on call virtually every day. It is easy to understand how little support and backup an obstetrician will have in this situation. Lack of round the clock patient monitoring facilities, lack of trained nurses (this was an important finding in the Maharashtra survey) and difficulty of obtaining immediate second opinion would force obstetricians to resort to elective C-sections even without a strong indication. Even in group practices and relatively larger hospitals, it is possible that women might want only a specific obstetrician to conduct their delivery because of the doctor's reputation or fame. This puts the busy obstetrician under enormous strain. In such situations, elective surgeries might become a lot more common and convenience may take precedence over rational practice.

Lack of monitoring facilities, poor infrastructure and equipment, lack of trained personnel, and difficulty in arranging for an emergency CS within a short period are other factors that might be important in the Indian context (Pahari et al, 1997). The poor physical conditions of private hospitals and the gross neglect of minimum required standards for infrastructure and resources have been documented in India (Nandraj et al. 1997, Nandraj et al. 1999).

Socioeconomic and cultural factors:

Better socioeconomic conditions have been ecologically associated with higher CS rates (Belizan et al. 1999). In the Latin American study of 19 countries, a positive and significant correlation was found between CS rates and the per capita Gross National Product. The proportion of urban population was also significantly correlated with CS rates in this study. CS rates among women in private hospitals were much higher than that of women in public hospitals.

In Brazil, over the last two decades, most middle and upper class women have been having caesarean births. In Vitoria, for instance, the CS rate in private hospitals is over 95% (Christine Nuttall, personal communication). Caesarean birth might have become a new "status symbol" among this group (Nuttall 1999). Women from lower socioeconomic groups tend to imitate this trend when they realise that middle and upper class women preferred caesarean births. Ethnographic work has also supported this view of caesarean births becoming a status symbol among the privileged classes (Davis-Floyd 1992, Jordan 1992). A similar phenomenon might be happening in urban, educated, affluent communities in India. This could be one reason for the very high CS rate in middle and upper income group studied in Madras City. More anthropological and sociological work needs to be done on this issue in our context.

Women wanting to avoid labor pain and demanding elective CS is one issue and this may vary from place to place. In UK, an audit of maternity services in England and Wales in 1997 found that obstetricians viewed the desire of a woman to deliver by CS to be a major factor in decision making (Lancet 1997). The Lancet editorial on this issue concluded by

stating that "the trend for use of caesarean section, coupled with a greater emphasis on individual autonomy in medical decision making, has clearly progressed too far for a return to a paternalistic directions to women on how they should give birth. Instead, the emphasis should be on comparisons of the implications of vaginal versus caesarean-section delivery." (Lancet 1997). In India, there may be big rural-urban difference in this phenomenon. For example, in rural Tamil Nadu, CS is called "*periya operation*" in Tamil ("major surgery") and women accept CS only as a last resort when there is virtually no chance of a normal delivery. In affluent populations, the desire to have a CS may be an important factor. This issue, unfortunately, was not investigated in the Madras study (Pai et al. 1999b).

In Brazil, another important factor is the use of CS to perform surgical sterilization (Faundes et al. 1993). While there is no law against sterilization in Brazil, there is enough ambiguity in the law for the Ministry of Health to exclude sterilization from accepted methods of family planning. This has lead to physicians "disguising sterilization as a part of other surgery, from breast nodule to ovarian cyst, but mostly as a 'normal' C-section."(Faundes et al. 1993). There is also the perception among women (which is encouraged by some obstetricians) that a CS will allow them to keep the vaginal anatomy intact and therefore protect against loss of normal coital function (Faundes et al. 1993).

Another issue is health insurance and modes of remuneration. In India, health insurance might soon become a reality. Currently, fee-for-service remuneration is the commonest mode of payment in the private sector. High rates of CS have been documented among private hospitals, private patients, and in places where a fee-for-service type of remuneration is practiced (Stafford et al. 1990). Based on the data from the Chinese study, the authors concluded that the rise in CS rates might be "an early indication that emerging forms of health insurance and fee-for-service payments to physicians will lead to an excessive emphasis on costly, high-technology medical care in China." (Cai et al. 1998).

It is possible that lack of support from mid-wives (Faundes et al. 1993; Savage 1999), and declining skills in instrumental (forceps and vacuum) delivery could be reasons for rising CS rates. In Netherlands, midwives play a very important role and conduct a good proportion of the total deliveries at home. The CS rate for Netherlands (10%) is one of the lowest in Europe (Treffers et al. 1990).

In India, we have our own sociocultural peculiarities. The urban-rural difference might be quite stark though there is very little data on this in our context. The CS rates in tribal areas might be quite low (for example, the CS rate in a Gudalur tribal hospital in the Nilgiris is around 5% - 6% [N. Devadasan, personal communication]) and indeed CS in that context might be underutilized. The KSSP survey showed that women from the highest socioeconomic stratum had an almost 2 times higher proportion of CS deliveries as compared to women from the lowest stratum (Kannan et al. 1991). In Maharashtra state, the Mangudkar Committee found that the average CS rate in the private sector was nearly 30% while it was only about 5% in government hospitals (Nandraj 1994).
Many obstetricians are under pressure to perform CS because the relatives of the women wish to see the baby born on an auspicious date and time (Kabra et al, 1994). This factor has been reported from Brazil where obstetricians are under pressure to perform CS (Quadros 1999). Anecdotal reports suggest that CS rates are extremely high in hospitals that offer assisted reproduction services and infertility therapy. In the situation, neither the women nor the obstetricians might be willing to take the risk of a normal delivery.

There is also the issue of high CS rates in our teaching hospitals because residents want more "cutting chances" to improve their surgical skills. This is true for all surgical specialities, not just obstetrics. Those doing postgraduation in obstetrics and gynaecology consider it very important to learn four important skills which are perceived as 'bread and butter' for future practice: sterilization, dilatation and curettage (D & C) for medical termination of pregnancy, caesarean section and hysterectomy. They aim to become competent in these procedures in order to start their own private practice immediately after postgraduation.

And lastly, in our milieu, the economic element can never be overemphasized. A CS is quick, safe and easy to perform, and obstetricians (and the hospitals where they work) stand to earn much more by doing CS than conducting vaginal deliveries. The economic imperative might be even more important in interventions like coronary bypass surgeries. It is well known that hospitals that offer bypass surgeries invest huge sums of money for the infrastructure and equipment. Many hospitals would thus have huge loans to repay. Unless a minimum number of surgeries are performed per week, hospitals would find it very difficult to repay loans. Since bypass surgeries bring in a lot of money, hospitals gain more when such interventions are done. Without data it is hard to speculate how much the economic factor plays are role in the Indian context *vis-a-vis* other factors.

STRATEGIES TO REDUCE THE CS RATES

Several strategies and programs have been tried across the world to reduce CS rates. Some of these are medical strategies (like active management of labour, and second opinion) while others are economic and social in their approach. Some of them are discussed here.

Consensus statements and practice guidelines: The American College of Obstetrics & Gynecology consensus statement of vaginal birth after caesarean section is a good example of this (ACOG 1994). The statement encouraged the trial of labor among women who had previous CS. Such efforts and practice guidelines may raise awareness within the medical community but they have not been shown to have a major impact on the CS rates in the USA (Studnicki et al. 1997).

Influencing practice through opinion leaders: Influencing practice through opinion leaders and respected professionals have been attempted with some success in Canada (Lomas et al. 1991). This strategy was more effective than audit or feedback in increasing vaginal birth after previous CS.

Active management of labor: Active management of labour involves accurate diagnosis of labour, early artificial rupture of the amniotic membrane, and high dose oxytocin for failure of the labour to progress. Some institutions have successfully reduced the CS rates by using active management of labour while others have not (Socol et al 1999). A randomised trial on active management of labor did not show any difference in the CS rates (Frigoletto et al. 1995). A more recent trial did show a trend toward reduced CS rate (Rogers et al 1997).

Audits: The use of audit was shown to be successful in reducing the CS rate in UK (Robson et al. 1996). Using the medical audit cycle, the CS rate in a district general hospital was brought down from 12% to 9.3%.

Internal and external peer review programs: A statewide program to study the effect of external peer review on CS rates had no apparent impact on the CS rates in New York state (Bickell et al. 1996). In this program, trained teams from the ACOG visited randomly selected hospitals and interviewed staff members and reviewed labour and delivery records to assess the quality of care. Review teams provided feedback to the hospitals and also provided recommendations.

Second opinion requirements and feedback: Work done by Myers and Gleicher in the USA showed that CS rates can be reduced successfully by a voluntary program which included a stringent requirement for second opinion, objective criteria for the most common indications for CS, and a detailed review of all surgeries performed and of individual physicians' rates of performing them. (Myers et al. 1988). Data from Ecuador shows that a second opinion before CS could save money for the health care delivery system (Dmytrachenko et al. 1998).

Data from a private hospital in Jaipur suggested that obtaining a second consultation and reducing the obstetrician's fee for CS, and raising the fee for vaginal delivery, could bring down the CS rate (Kabra et al. 1994). In this hospital, the CS rate had increased from 5% in 1972 to 23% in 1989. By audit, review and action, the CS rate was brought down to 12% in 1991 (Kabra et al. 1994).

Larger role for midwives: The Netherlands experience emphasizes the need for a larger role for midwives (Treffers et al. 1990; Savage 1999). Unfortunately, despite a high proportion of home deliveries in India, we do not have much documented information on this issue.

Financial incentives: The Australian experiences in this area is worth noting. In 1984, a working party of the Australian National Health and Medical Research Council issued a report which concluded that fee-for-service remuneration may be increasing the CS rates and recommended a global obstetric fee to be paid irrespective of the mode of delivery (National Health and Medical Research Council 1984). This came into effect in 1988 and was resisted by obstetricians. Interestingly, the move had no apparent effect on the CS rate. Apparently, since CS was a quicker option for busy physicians and since the fee was the same for both vaginal and CS deliveries, the whole strategy of global fee actually might have worked as an inducement to intervene more often (King 1993). King actually suggests that it might be more sensible to offer a higher reward for avoiding rather than performing CS (King 1993).

Pressure from lay public and special groups: Pressure groups and media coverage may influence CS rates. Pressure from women's pressure groups may have made a difference in countries like UK and USA (Savage 1999). There are not many studies that clearly document this issue.

STRATEGIES FOR INDIA

It is interesting to note that some of the strategies for reducing CS have worked well in some settings while they have failed to make a difference in other settings. The same strategy that worked in one setting might not necessarily work in another. Since there are not much data on this issue, one can only speculate on which strategies would work in the Indian context. The Jaipur experience of a large private hospital successfully reducing the CS rate is exceptional and worth noting (Kabra et al. 1994).

In India, irrational medical practice is common. For example, despite attempts to promote rational drug use, irrational drug therapy is widespread (Phadke 1998). One of the reasons for the failure of the National Tuberculosis Control Programme is the non-adherence to practice guidelines in anti-tuberculous therapy by physicians (Uplekar et al. 1991). Even a simple, easy to use practice guideline like the use of oral rehydration therapy (ORT) for diarrhoea is not widely practiced. In this context, it is very unlikely that consensus statements and practice guidelines will make a big impact on the CS rate.

In a country where the private sector is dominant and largely unregulated (Nandraj 1997, Nandraj et al. 1999), it is very difficult to foresee obstetricians agreeing to external peer review. Most hospitals will be very reluctant to share information on CS rates. Audits will work only if obstetricians understand that an audit is actually a credibility building exercise. Unless an audit is done, the true magnitude of the problem will never be ascertained. For advocacy, audit, and impacting on policy, we need studies, particularly on reasons behind rising CS rates, providers' opinions, and women's perceptions. National bodies like Federation of Obstetric and Gynaecological Societies of India (FOGSI) should be involved in this important task. Audits by FOGSI are more likely to be accepted by the obstetrical community. In this context, the Brazilian experience is worth noting (Faundes et al. 1993). The Health Ministry of Brazil initiated a national campaign against the high CS rate, but the way this was done caused embarrassment to the Brazilian Federation of Gynaecology and Obstetric Societies (FEBRASGO). With the FEBRASGO then in opposition, the campaign failed.

Financial incentives and disincentives again are unlikely to work because of the unregulated nature of the private health sector in India. Who can make changes in remuneration practices when the entire sector is commericalised and not very transparent? With the passage of the Insurance Regulatory and Development Authority (IRDA) Bill in December 1999, the health insurance sector in India is likely to open up in a big way. Some see this opening up of the insurance sector as move that will completely change the healthcare scenario in India (D'Silva 1999). Greater accountability, cost effectiveness, professional management of hospitals, and cost management practices might produce sweeping changes in the way healthcare institutions operate. Insurance companies and managed care organisations might exert pressure on hospitals and providers to limit the number of CS deliveries.

Pressure from lay public and other pressure groups might be effective. A case in point is the recent press coverage in Madras that was given to the practice of clinicians getting kickbacks from labs and diagnostic centers for referring patients (The Hindu 1999a, 1999b). Soon after the media coverage, the Indian Medical Association (IMA) held meetings condemning this practice. Apparently, many diagnostic centers have now stopped offering these financial incentives.

Issues like irrational practice, unregulated private sector, and rampant commercialism among the medical community finally reflect the state of medical ethics as a whole in our country. Unless that takes a turn for the better, it is unlikely that CS rates can be reduced. Medical associations like the IMA, Medical Council of India (MCI), and FOGSI are important for setting high standards of medical ethics.

It is also important to involve women's groups; they could also independently audit CS rates. Their perspective will encompass the non-medical and social issues relating to CS (like women's feelings and preferences about the mode of delivery, their need to be counseled about the risks of CS and its potential impact on breastfeeding, etc.) and complement the audit by the obstetricians. Women's pressure groups in India have already done some good work in the area of fertility regulation methods and their adverse health impact (Forum for Women's Health 1995, Sathyamala 1995). They could take up the CS issue for study and advocacy.

Lastly, we need a wider debate among the medical and the lay communities on the whole issue of CS rates in India and the potential adverse impact on the health of mothers and newborn babies. Education of the public is another important issue. The KSSP study in Kerala recommended the "need to de-emphasize the medicalisation of such normal phenomena as pregnancy and child bearing." (Kannan et al. 1991).

Ultimately, women have a right to know that having a CS implies risks for both themselves and their babies. Unfortunately, even an enlightened woman, in our milieu, has very little control over major decisions during childbirth. Consider the scenario where an obstetrician diagnoses fetal distress and recommends an emergency CS. If that happens,

which mother would want to argue or discuss the issue? Where is the time to get a second opinion or exercise choice? At that point in time, the only objective would be to save the life of the baby. The entire process is complex and the mother (and the relatives of the mother) does not have an option but to agree to the doctor's recommendation. Not much counseling is also possible in such a situation.

Doctors wield too much power and unless the medical community decides to regulate itself, there is little that consumers can do. This issue of medical control and medicalisation of childbirth has been studied in Mexico (Castro 1999). This study suggests that obstetricians, partly for financial gain, create a high demand of CS among affluent women. Caesarean, thus, become a 'status symbol' among middle and upper class women. Soon, people from other social groups being to imitate this trend because the privileged classes prefer it. As Castro puts it, "the increase of caesarean sections can thus be regarded as a process in which women are finally given less information and less choice and in which obstetricians appropriate the central role of childbirth at the expense of women."

Unnecessary medical interventions have to be placed in the Indian context where those who need medical interventions most are least likely to get them. In the case of caesarean sections, a lot of the maternal and perinatal morbidity and mortality in rural areas could be prevented by provision of good maternity care. A caesarean section, in that context, is live saving and necessary. Since a greater proportion of women from rural and lower socioeconomic areas have high-risk pregnancies, one would expect to see a higher CS rate in this population. Unfortunately, most of the caesarean births are probably occurring among affluent women who are at lower risk and do not really need interventions. So, we have a dichotomy of not enough intervention in some populations with the consequences of high morbidity and mortality, and needless intervention in other populations when there is no real need for them. Either way, both groups suffer.

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