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Original Research Article

Rising trend of caesarean section in a tertiary hospital over half decade: a retrospective study

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ABSTRACT

Background: Cesarean section (CS) rates are increasing worldwide; however, it can lead to significant increase in maternal and infant morbidity and mortality. This study aimed to determine the rates and trend of cesarean sections in Jammu (Jammu and Kashmir), India.

Methods: This was a retrospective hospital record-based study done in patients who were admitted in Government Medical College Jammu (Jammu and Kashmir) India in the Department of Obstetrics and Gynecology during the study period from Jan 2012 to Dec 2017 and data of CS was collected. The trends and indications for CS over the 5-year period were analyzed with SPSS 12.0 software.

Results: During the study period, annual number of deliveries in GMC Jammu increased from 14592 (2012) to 20417 (2017). CS rates increased from 4817 (33.01%) to 8378 (41.03%) with a hike of 8.02%. Commonest indication for CS was post CS pregnancies (25.43%-34.24%) followed by non-progress of labor (NPOL), fetal distress, breech presentation, antepartum hemorrhage, cephalo-pelvic disproportion (CPD) and severe pregnancy induced hypertension (PIH).

Conclusions: This study indicates that rapid socio-economic changes and the outlook towards medical intervention by the women, families and society are largely responsible for rising trend of CS. Other factors that have been reported for this are fear of pain; concerns about genital modifications after vaginal delivery; misconception that CS is safer for the baby; fear of medical litigation and lower tolerance to any complications or outcomes other than the perfect baby are responsible for the current high incidence of caesarean section in many states and urban centres with post cesarean pregnancy being the largest contributor. From doctors point of view, it is a defensive medicine to have better outcome.

Keywords: Cesarean section, Elective, Emergency, Fetal distress

INTRODUCTION

The caesarean section (CS) rate has risen rapidly worldwide in recent decades and is a global concern.¹⁻⁶ In 1985, the World Health Organization (WHO) recommended that the optimal CS rates should not be higher than 10% to 15% and this recommendation has become a reference up to this day.⁷ The levels of 10%-15% were considered high but acceptable at the time. The

rise of caesarean births has been the subject of continuing debate.⁸ WHO survey from 2004 to 2008 reported a 25.7% average global caesarean section rate, with 27.3% in Asia, 19.0% in Europe and 29.2% in Latin America.^{1,2} Recently, European Board and College of Gynecology and Obstetrics (EBCOG) has demonstrate its worry about the fact of only few countries of European Union having CS less than 20%.⁹ Data from countries like Iran, Brazil and México show section rates reaching up to 91.9%,

85.8%, and 85.6%, respectively.^{10,11} Also the same countries have the highest rate of caesarean section in public sector being 78.5%, 71.0% and 47.8 % respectively.¹² A collaborative study done by the Indian Council of Medical Research (ICMR) in the 1980s showed a CS rate of 13.8 percent in teaching hospitals.¹³ The escalating rates of CS in teaching hospitals in India had been compared between 1993-94 and 1998-99 with data from 30 medical colleges/teaching hospitals.¹⁴ The

overall rate showed an increase from 21.8 per cent in 1993-94 to 25.4 per cent in 1998-99. What was alarming was that 42.4 per cent were primigravidas and 31 per cent had come from rural areas. In a study over a two-year period in an urban area of India, the total CS rates even in the public and charitable sectors were 20 and 38 per cent respectively. In the private sectors, the rate was an unbelievable 47%.¹⁵

Table 1: Percentage of women who had undergone caesarean section from NFHS-1(1992-93), NFHS-2 (1998-99), NFHS-3 (2005-06) and NFHS-4 (2015-16).¹⁶⁻¹⁹

States/ Country	Percentage of women who had caesarean section				Gap from NFHS-1	AARI
	NFHS-1 (1992-93)	NFHS-2 (1998-99)	NFHS-3 (2005-06)	NFHS-4 (2015-16)		
India	2.9	7.1	10.6	17.2	14.3	8.0
Jammu and Kashmir	5.7	10.6	14.1	33.1	27.4	7.9
Delhi	4.6	13.4	12.0	23.7	19.1	7.4
Himachal Pradesh	1.6	6.8	13.1	16.7	15.1	10.7
Haryana	2.3	4.2	5.0	11.7	9.4	7.3
Punjab	4.2	8.3	14.4	24.6	20.4	8.0
Utter Pradesh	0.6	2.7	5.9	9.4	8.8	12.7
Maharashtra	3.4	9.9	15.6	20.1	16.7	8.0
Karnataka	3.7	11.0	15.3	23.6	19.9	8.4
Bihar	1.1	3.0	4.1	6.2	5.1	7.8
Rajasthan	0.7	3.0	4.2	8.6	7.9	11.5
Goa	13.7	20.0	25.7	31.4	13.7	3.7

As per the latest Indian data (National Family Health Survey 2015-2016, NFHS-4) the caesarean rate at the population level seems to be 17.2% with a gap from NFHS-1 of 14.3%. It reveals that at the all india level, the rates of CSs have almost doubled over the last decade, while in the last 20 years, it has risen six times.

In Jammu and Kashmir state, the CS rates seems to be 33.1% with a gap of 27.4% from NFHS-1 and is among the few states of India having highest percentage of CS. The change in CS rate from 1992 to 2015 for different states by calculating the average annual rate of increase (AARI) is also given in Table 1 which shows AARI of 8% of India.¹⁶⁻¹⁹

The indications of CS vary among institutions as there is no standard classification system exists for indications of CS.^{20,21} A major challenge is that definitions are not standardized and indications can be multiple or related.²² Broadly it can be classified into medical and non-medical indications.²³⁻²⁴

Medical indications are divided into two subcategories: definite medical indications such as fetal distress syndrome, breech presentation or placenta previa, and vague medical indications such as previous CS, failure to

progress during labour and presumed fetal compromise.²³⁻²⁴

One of the main non-medical reasons for caesarean delivery is maternal request.²³⁻²⁴ However, maternal requests for elective caesarean delivery are becoming the leading cause for this choice, which now accounts for between 0.3 and 14 % of all caesarean deliveries worldwide.²⁵

Cause of this increase trend: Some possible reasons that have been reported for this are fear of pain; concerns about genital modifications after vaginal delivery; misconception that CS is safer for the baby; the convenience for health professionals and also for the mother and family; and lower tolerance to any complications or outcomes other than the perfect baby.²⁶⁻³¹

Some cultural factors also have been found. For example, in China, choosing the date of the baby's delivery on the basis of luck and fate for the future of the baby by some people is one of the explanations for scheduling a CS.³² Country-specific standards of practice and profitability may influence medical decision-making, leading to greater intervention in delivery.^{8,33}

In the case of private health sector, the fear of not finding her own obstetrician when labour begins, doctor that she knows from the beginning of pregnancy could be a motive to program the date. Other important fear of most of women is to suffer a long labour and at the end, to finish in a CS. Defensive obstetrics is another common reason for high rates of caesarean section. It has been observed that 82% of physicians performed CS to avoid negligence claims.³⁴

METHODS

This retrospective hospital record-based study was carried in patients who were admitted in Government Medical College Jammu (Jammu and Kashmir) India in the Department of Obstetrics and Gynecology during the study period from Jan 2012 to Dec 2017. All women who underwent CS were included in present study.

Patient’s individual data which included total obstetric admission, total numbers of vaginal deliveries, instrumental deliveries, caesarean sections and their indications for admission was collected from the medical records. The major contributing factors were compared, and their proportions were calculated. When two or more contributing factors were present only one major indication was taken.

RESULTS

Over the years, annual number of deliveries increased from 14592 (2012) to 20417 (2017). In the corresponding period, CS rates rose from 4817 (33.01%) to 8378 (41.03%) as shown in Figure 1. Table 2 shows number of total deliveries, CS and its percentage.

Table 2: Number of total deliveries and CS (%).

Years	Total deliveries	Caesarian sections	Percentage
2012-13	14592	4817	33.01
2013-14	16603	6219	37.46
2014-15	19092	7477	39.16
2015-16	19605	7845	40.01
2016-17	20417	8378	41.03

Table 3 shows most common indications of CS, their frequency and percentage contribution to total CS in the Govt. medical college Jammu (J and K), India. Commonest indication for CS were post CS pregnancies (25.43%-34.24%) followed by non-progress of labor (NPOL) (18.06%-17.13%), fetal distress (13.56-13.55%), breech presentation (13.24-10.11%), antepartum hemorrhage (APH) (11.60%-11.15%), cephalo-pelvic disproportion (CPD) (5.19-4.24%) and severe pregnancy induced hypertension (PIH) (5.34%-7.89%) and others (7.58%-1.69%).

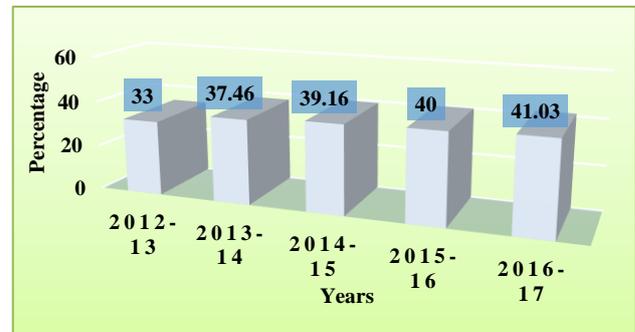


Figure 1: Rising trend of CS.

Table 3: Commonest indications of CS, their frequency and percentage contribution.

Years	Post CS	NPOL	Fetal distress	Breech	APH	CPD	PIH	Others	Total CS
2012-13	1225 (25.43%)	870 (18.06%)	653 (13.56%)	638 (13.24%)	559 (11.60%)	250 (5.19%)	257 (5.34%)	365 (7.58%)	4817
2013-14	2274 (36.56%)	1257 (20.21%)	822 (13.21%)	634 (10.20%)	432 (6.95%)	329 (5.30%)	217 (3.49%)	254 (4.08%)	6219
2014-15	2667 (35.67%)	1655 (22.13%)	813 (10.88%)	732 (9.79%)	537 (7.18%)	496 (6.63%)	379 (5.07%)	198 (2.65%)	7477
2015-16	2931 (37.36%)	1470 (18.74%)	744 (9.48%)	1112 (14.18%)	767 (9.77%)	244 (3.12%)	409 (5.21%)	168 (2.14%)	7845
2016-17	2869 (34.24%)	1435 (17.13%)	1135 (13.55%)	847 (10.11%)	934 (11.15%)	355 (4.24%)	661 (7.89%)	142 (1.69%)	8378

DISCUSSION

The issue of rising rates of CS in India has been further brought into the limelight by a petition on Change.org by Subarna Ghosh, addressed to the Union Minister for

women and Child development, Maneka Gandhi. The petition asks the government to direct hospitals to be more transparent about the percentage of CSs they conduct. The government has taken cognizance of the petition, indicating that the matter may be tabled for

deliberations and future course of guidelines. Rates of both primary and repeat cesarean section have been on rise.³⁵ In present study CS rate escalate from 33.01%-41.03% (8.02% hike). As per NFHS-3, CS were limited to 10.6 percent of all deliveries in the country, just at the recommended level of 10-15 percent. The WHO guidelines take into account the number of CS needed for complicated births and curbing maternal mortality rates. But as per the latest NFHS-4 report, the numbers have escalated in many parts of the country including Jammu and Kashmir state, having CS of 33.1%. The average annual rate of increase (AARI) of India is 8 percent, which is higher than the global AARI of caesarean rate (4.4 percent) during the period. Further, AARI of J and K state is 7.9%.¹⁶⁻¹⁹ The trend of CS deliveries analyzed from 1992-93 to 2015-16 shows that there has been an upward trend in CS rates in India as shown in Table 1. At all India level, the CS rate has increased from 2.9 percent of the childbirth in 1992-93 to 7.1 percent in 1998-99 and further rise to 10.6 percent in 2005-06 and a steady rise to 17.2 percent in 2015-16.¹⁶⁻¹⁹

The commonest indication for CS were post CS pregnancies (25.43%-34.24%) followed by NPOL, fetal distress, breech presentation, APH, CPD and severe PIH. Other studies have also shown these being the main indications of CS.³⁵⁻³⁷ WHO Global Survey conducted in nine countries in Asia revealed that most common indication for CS are previous CS (24.2%), CPD (22.6%), fetal distress (20.5%), breech and other abnormal presentation (12.5%).¹ The survey also revealed that, all types of CS and operative vaginal delivery were associated significantly with increased risk of maternal mortality and morbidity as compared to spontaneous vaginal delivery. However, failure to give consent for trial of labour was one of the main factors for rise in CS in post CS group as seen in other studies also.^{35,36} The rates for CS on demand in absence of any specific indication are increasing. Mackenzie et al³⁸ observed that maternal request was one of the main indications for CS (23%) in 1996. Maternal request was not found to be important factor in present study (0.0%-0.5%).

The healthcare facilities and coverage have received a boost with proper and strict implementation of various schemes like JSSK (Janani Shishu Suraksha Karyakram), National Ambulance services, and Mother-Child tracking system under the National Rural Health Mission. Evidently, these government schemes have increased awareness about the health facilities as well as strengthening of primary health centers with ease of referral and better transport facilities, which helped to rise institutional deliveries all over India. It is important to note that in India government expenditure in health sector is extremely low. For example, in 2011 total health expenditure as % of GDP was only 4 for India and 18 for U.S.A. In the same year the general government expenditure on health as % of the total health expenditure for U.S.A., France, Germany, Brazil, Sri Lanka, China and India were 46, 77, 76, 46, 45, 56 and 31 respectively

(WHO, 2013). To curtail the problems of over-medicalization of CS, government must spend more money to develop maternal and child health care infrastructure. Seats for medical students in government colleges must be increased.³⁹

Limitations of the study: The study has certain limitations. As the study design was retrospective which has its own limitations i.e. incomplete documentations and missing values. Secondly, maternal and fetal outcomes as a result of vaginal or caesarean deliveries were not reported. Thus, in future prospective studies should be conducted with maternal and fetal outcomes being reported. Moreover, a qualitative study using focus group discussion or open-ended questions for Obstetricians would be more revealing to identify reasons for supporting women choice for Elective CS.

CONCLUSION

The scientific, public health and medical community have raised concerns about this supposed global epidemic, while the search for ideas and interventions to reduce CS is ongoing. However, the rational and responsible reduction of CS is not a trivial task and it will take considerable time and efforts. Monitoring both CS rates and outcome is essential to ensure that the policies, practices and actions targeting the optimal use of CS leads to improved maternal and fetal outcomes. Rising litigation, insurance, preterm CS to salvage the premature babies in the era of modern neonatal intensive care unit (NICU) facility and doctor's anxiety are leading to the era of more operative deliveries.

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