

## Prevalence and Indications of Caesarean Section at a Tertiary Level Hospital, Kathmandu

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### Abstract

Caesarean section (CS) is one of the most common surgeries performed in modern obstetrics. Caesarean section rates have been increasing worldwide over the past few decades, with most countries and regions exceeding the World Health Organization recommended rate of 15% of all deliveries. The objective of the study was to assess the prevalence and indications of caesarean section in a teaching hospital. This study was conducted in labour room of Tribhuvan University Teaching Hospital Kathmandu. The respondents in this study of caesarean section were all CS cases documented in confinement record book from 1st January to 30<sup>th</sup> March 2015.

Out of 1112 delivery cases, 436 caesarean sections were performed. Among them (72.24%) were emergency CS and elective CS were (27.75%). The most common indication of emergency caesarean section were meconium stained liquor (23.17%), fetal distress (20.63%), non-progress labour (9.84%), oligohydramnios (9.52%), previous CS (6.98%), breech presentation (4.44%), Pre labour rupture of membranes 4.12%. The common indications of elective CS were previous CS (40.49%), breech presentation (14.04%), CPD (5.78%), bad obstetric history (6.61%), pregnancy, induced hypertensive disorders (4.13%).

Based on the study finding it is observed that meconium stained liquor, fetal distress, non-progress labour, previous CS are most common indication for emergency Caesarean section. The most common indications of elective CS were Previous CS followed by breech presentation, cephalopelvic disproportion, bad obstetric history and pregnancy hypertensive disorders. Future efforts to reduce the overall caesarean section rate should be focused on reducing the primary caesarean section, and early detection and management of pregnant women in any medical and obstetric complication.

**Keywords:** Caesarean section, Indications, Prevalence, Emergency Caesarean section, Elective Caesarean section.

### Introduction

Pregnancy and delivery are considered as normal physiological phenomena in women. Approximately, 10% of deliveries are considered as high risk, some of which may require caesarean section. Caesarean section is normally performed when a vaginal delivery would put the mother and baby's life at risk but sometimes it is also performed on request. Caesarean section is one of the most commonly performed surgeries in obstetric practice. Caesarean section was introduced in clinical practice as a

lifesaving procedure both for the mother and baby (Ronsmans, Holtz, Stanton (2006).

An increase in the number of caesarean sections (CS) conducted for non-medical indications is an important contributor to the global rise in CS rates (Schmidt 2009, Khunpradit 2011). It is estimated that up to one-third of the 18.5 million annually performed caesarean sections worldwide are conducted for non-medical indications and have been described as unnecessary. Sixty percent of the world's births occur in low income countries;

whereas, middle and high income countries account for only 37.5% of all births. To date, middle and high income countries contribute most to the global increase in CS rates (WHO 2010).

In later years the rate raised to a record level of 46% in China, and to levels of 25% and above in many Asian, European and Latin American countries. In 2009 the cesarean section rate was 34 % in the United States (Boruff 2013). Cesarean section is common surgical operation now and most estimated prevalence rate of 33%; prevalence ranges from 4% in Africa to 29% in Latin America and Caribbean (Betran ,Mepaldim, Lauer, Bingshun, Thomas , Vanlook , et al 2007).

A study done in tertiary referral centre in Eastern Nepal, BPKIHS revealed a rate of 28.6% in 2006 and 33.7% in 2007. The finding most common indication for CS was for foetal distress (26.25%), another common indication was previous CS (21.25%) (Chhetri 2011).

However many studies have shown that a higher caesarean delivery rate is not necessarily associated with better perinatal outcomes, and has even been associated with increased risk of fetal and neonatal mortality and neonatal morbidity, compared with spontaneous vaginal delivery (Villar , Valladares , Wojdyla , Zavaleta , Carroli , Velazco et al 2006).

According to WHO, rates of caesarean section in many countries have increased beyond the recommended level of 15%, almost doubling in the last decade especially in high income areas like Australia, France, Germany, Italy, North America and United Kingdom (Black, Kaye, Jick 2005, Laws, Sullivan 2012, Tranquilli, Giannubilo 2004). Similar trend is also seen in China, Brazil and India, especially due to births in private hospitals. Even though the indication of CS has not changed so far and these remain foetal distress, malpresentation, multiple gestation, previous caesarean, protracted labour and CS on demand. Current available data from developed countries revealed morbidity and mortality from CS is more than in vaginal delivery for both the mother and fetus.

A rise in CS rates, however, is not necessarily associated with improvements in maternal and perinatal health indicators or quality of care (Mazzonietal 2011). Rather, it could increase the risk of maternal morbidity and mortality (Souza etal 2010).

It is important, therefore, to study the rising trends in CS rates across lower and middle income countries and explore the reasons for this. The objective of this study was to find the prevalence and different indications of caesarean section in a tertiary referral hospital in Kathmandu.

## Method

This study was conducted in labour room of Tribhuvan University Teaching Hospital Kathmandu. The sample were cases with caesarean section who were documented in confinement record book from 1st Jaunry to 30<sup>th</sup> March 2015. All recorded caesarean section were included in this study. The demographic information collected included maternal age, ethnicity, parity and gestational age of the mother of mother. Information of baby's sex, weight, and Apgar score after 1 and 5 minutes, and indication of caesarean section were collected. Written consent was taken from authority of TUTH. A verbal consent was taken from labour room staff in this study. The data was entered in computer and analyzed by simple descriptive statistics.

## Findings

**TABLE 1**  
**Mode of Delivery**

(n=1112)

Variable	No.	Percentage
Vaginal Delivery	676	60.79%
Caesarean section	436	39.20%
Elective CS	121	27.75%
Emergency CS	315	72.24%

Table 1 shows the mode of delivery, during the study period. The total number of deliveries were

1112 from 1st January to 30th March 2015, and the incidence of vaginal delivery was 676(60.79%). Total cesarean section were 436 (39.20%) out of which emergency CS were 315(72.24%) and elective CS were 121(27.75%).

**TABLE 2**  
**Maternal Demographic Character**  
(n=436)

Variables	Emergency CS No 315(%)	Elective CS No 121(%)
<b>Age of mother</b>		
<20	19 (6.03%)	7(5.78%)
21- 30	250(79.36%)	74(61.15%)
31-40	46(14.60%)	40(33.05%)
>40	-	-
<b>Ethnicity</b>		
Brahmin	117(37.14%)	49(40.49%)
Chettri	68(21.58%)	17(14.04%)
Newar	50(15.87%)	24(19.83%)
Mongolian	58(18.41%)	20(16.52%)
Other	22(6.89%)	11(9.09%)
<b>Parity</b>		
Primi	164(52.06%)	41(33.88%)
Gravida two	102(32.8%)	60(49.58%)
Gravida three ≥	49(15.55%)	20 (16.52%)
<b>Gestational Age</b>		
≤30 weeks	3(0.95%)	-
30-37	50(15%)	17(14.04%)
38-42	260(82.53%)	104(85.95%)
≥42	2(0.63%)	

Emergency CS was 315(72.24%), among them major (79.36%) of the women were in the age group of 21 to 30 years followed by 31 to 40 years (14.60 %). Thirty seven percent were of Brahmin ethnicity. More than half (52.06%) were primigravidas followed by second gravida (32.38%), major (82.53%) of the cesarean sections were performed in term pregnancies (38 to 42 weeks).

Elective CS was (27.75%), among them (61.15%) of the women were in the age group of 21 to 30 years followed by 31 to 40 years (33.05 %). Forty percent were Brahmin ethnicity. Nearly half (49.58%) were second gravida followed by primigravidas (33.88%). More than half (85.95% ) of the cesarean sections were performed in term pregnancies (38 to 42 weeks

**TABLE 3**  
**Characteristics of Newborn Baby**  
n= 439

Variables	Emergency CS No 315(%)	Elective CS No 121(%)
<b>Sex</b>		
Male	187(58.80%)	73(60.33%)
Female	131(41.19%)	48(39.66%)
<b>APGAR Score</b>		
<b>One Minute</b>		
0-3	2(0.62%)	-
4-6	24(7.54%)	1(0.82%)
7-10	292(91.82%)	120(99.17%)
<b>Five Minute</b>		
0-3	1(0.31%)	-
4-6	4(1.25%)	-
7-10	313(98.42%)	121(100%)
<b>Birth Weight</b>		
<2.5 kg	61(19.18%)	13(10.74%)
2.5-3.9 kg	248(77.98%)	103(85.12%)
4 or >kg	9(2.83%)	5(4.13%)

Table 3 shows the characteristic of newborn babies. Among 318 emergency caesarean section more than half (58.80%) were male, (77.98 %) had a birth weight of (2.5 to 3.9 kg), (19.18%) had less than 2.5 kg. A large number (91.82 %) had 7 to 10 APGAR score within one minute and (98.42 %) had 7 to 10 APGAR score in five minute. In elective caesarean section (60.33%) were male and 85.12 % weight 2.5 to 3.9 kg. A majority 91.82 % had 7 to 10 APGAR score within one minute and 98.42 % had 7 to 10 APGAR score in five minute

**TABLE 4**  
**Indications for Caesarean section**

(n=436)

Variables*	Emergency CS	Elective CS
	No 315(%)	No 121(%)
Meconium Stained Liquor	73(23.17%)	-
Previous C S	22(6.98%)	49(40.49%)
Fetal Distress	65(20.63%)	-
Breech Presentation	14(4.44%)	17(14.04%)
Non-progress of Labour	3(9.84%)	-
Cephalopelvic disproportion	10(3.17%)	7(5.78%)
APH, Placenta previa, abruption placenta	10(3.17%)	3(2.47%)
Oligohydramnios	30(9.52%)	3(2.47%)
Failed Induction	13(4.12%)	-
Intrauterine Growth Restriction	8(2.53%)	4(3.30%)
PIH, Impending Eclampsia	9(2.85%)	5(4.13%)
Bad Obstetric History	5(1.58%)	8(6.61%)
Twin Pregnancy	3(0.95%)	-
Cord round neck tight	3(0.95%)	3(2.47%)
GDM	3(0.95%)	4(3.30%)
Heart Disease	5(1.58%)	5(4.13%)
prelabour rupture of membranes	13(4.12%)	-
Cord Prolapse	0(0.63%)	-
Others	11(3.49%)	20(16%)

\*Multiple responses

Table 4 shows the indications of caesarean section, among them indication of emergency CS were meconium stained liquire, (23.17%), fetal distress (20.63%), non progresslabour (9.84%), oligohydramnios (9.52%), previousCS (6.98%), breech presentation (4.44%), prelabour rupture of membranes 4.12%).

The usual indications of elective CS were previous CS (40.49%), breech presentation (14.04%), cephalopelvic disproportion (5.78%), bad obstetric history (6.61%), pregnancy hypertensive disorders (4.13%).

### Discussion

Among 1112 delivery cases in TUTH from Ist January to 30<sup>th</sup> March 2015, the prevalence of cesarean section was 436 (39.20%) out of which emergency CS was 315(72.24%) and elective CS was 121(27.75%).

The results of this study demonstrates that the prevalence of caesarean section 39.20% was high. The high CS rate in this hospital may be attributed to the fact this is a referral hospital. This finding is supported by a study of 300 cases of CS in Pakistan conducted at a tertiary hospital which noted 11.3%

elective CS and 88.7% were performed as an emergency CS ( Khawaja, Yousaf , Tayyeb 2004). Another study done in tertiary referral centre in Eastern Nepal, BPKIHS revealed a rate of 28.6% CS in 2006 and 33.7% in 2007 (Chhetri et al 2011). Nearly similar high caesarean rates of 32.6% have been reported from the only available community based study from Chennai (Stree, Sathiyasekaran 2003).

This study has documented the both elective and emergency CS. Our study revealed, emergency CS was 315(72.24%), among that more than half (79.36%) of the women were in the age group of 21 to 30 years followed by 31 to 40 years (14.60 %). More than half (52.06%) were primigravidas followed by second gravida (32.38%). A large number ( 82.53% ) of the cesarean sections were performed in term pregnancies (38 to 42 weeks). Elective CS was (27.75%), 61.15% of the women were in the age group of 21 to 30 years followed by 31 to 40 years (33.05 %). Majority (40.49%) were Brahmin ethnicity. Nearly half (49.58%) were second gravida followed by primigravidas (33.88%). A large number (85.95% ) of the cesarean sections were performed in term pregnancies (38 to 42 weeks). A study reported by Mamuda , Bettina, Abdul and Nynke, Broek ( 2014, ) in primiparous women were significantly more likely to have an emergency CS (193/242) compared to multiparous women (168/288) (79.8% vs 58.3%). But, 20.2% of all CS in primiparous women were done as an elective CS. Another study done in Tribhuvan University Teaching Hospital by Amatya et al (2013) reported it was observed that the maximum (40.2%) of the women were in the age group of 25-29 years followed by 20 to 24 years (35.6%), however 0.6% were above the age of 40 years. More than half (51.9%) were primigravidas followed by second gravida (30.6%), however 1.6% were with more than five pregnancies. A large number i.e. 81% of the cesarean sections were performed in term pregnancies, 15.3% for preterm pregnancies and 3.3 % for post term pregnancies.

This study revealed, the most common indication for emergency CS were meconium stained liquor, (23.17%), fetal distress (20.63%), non progress labour (9.84%), oligohydramnios (9.52%), previous CS (6.98%), breech presentation (4.44%), prelabour rupture of membranes 4.12%), which are

the most common indication worldwide. Failed induction and non-progress of labour were the next frequent indications. A study in Nepal at tertiary level shows slow progress in labor, previous CS, fetal distress and breech presentation were the commonest indicators for CS (Khanal 2004). A study report by Chhetri, Singh (2011) shows that the most common indications for caesarean section were meconium stained liquor, which constituted 23.4% . The next frequent indication was previous caesarean section, which accounted for 17.2% , followed by breech presentation in 11.1% , fetal distress in 9.6% , non-progress of labor in 7.2% , cephalopelvic disproportion in 6.2% , and placenta previa in 4.4%. Another study report of Nwobodo , Isaah , Panti (2011) reports nearly similar finding of emergency caesarean section where fetal distress was the main reason for caesarean section, accounting for 30.3% followed by 18% each for previous caesarean section and failed induction, 9% each for dystocia & CPD, 4.5% each for malpresentation and twins, 3.4% for abruption, 1.1% each for placenta previa, IUGR.

This study shows that leading indication of elective CS was previous CS (40.49%) followed by breech presentation (14.04%), cephalopelvic disproportion (5.78%), bad obstetric history (6.61%) and pregnancy hypertensive disorders (4.13%). The increased incidence of repeat caesarean section is due to the absence of patients opting for vaginal birth after caesarean section. A retrospective study done by Najam , Sharma about maternal and fetal outcomes in elective and emergency caesarean sections at a teaching hospital in North India shows previous caesarean section was the main reason for caesarean section accounting for 78%, others being malpresentation 14.9%, IUGR 3.9%, CPD 1.3% and placenta previa 1.3%. This is comparable to other reported studies where repeat caesarean section was 30.7% and malpresentation 17.1%.

### Conclusion

Based on the study finding it is concluded that meconium stained liquor, fetal distress, non progress labour, previous CS, breech presentation were most common indications of emergency caesarean section. This intervention is a part of the

emergency obstetric management for potentially life threatening complications in both women and newborn babies. Emergency caesarean sections are unavoidable but we can definitely bring down the rates of emergency caesarean section by proper selection of cases for induction of labor. The most common indications of elective CS was previous CS followed by breech presentation, cephalopelvic disproportion, bad obstetric history, pregnancy hypertensive disorders. Future efforts to reduce the overall caesarean section rate should be focused on reducing the primary caesarean section, and early detection and management of pregnant women in any medical and obstetric complication.

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