

# Appraisal of caesarean section incidence and indications at manipal teaching hospital, Pokhara, Nepal



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## ABSTRACT

**Background:** Worldwide lower segment caesarean section (LSCS) is the most commonly performed obstetric operation. Though it's a lifesaving procedure it is sometime associated with both short and long term risk which can extend many years beyond current delivery and affect health of mother, fetus and future pregnancy. **Aims and Objective:** The study aims to examine the incidence and indication of caesarean section at Manipal teaching hospital. **Materials and Methods:** A retrospective descriptive study of 2140 cases was carried out at a teaching hospital in Pokhara, Nepal. Data regarding total number of vaginal delivery and caesarean section performed in 1 year duration from August 2019 to July 2020 was obtained from the operation record book and medical record section of hospital. Other information regarding age, parity, gestational period and indication of cesarean section were obtained and depicted in tabulated form. The collected secondary data has been analyzed employing frequencies and percentage. **Results:** During the one year study period, 2140 deliveries were made out of which 1170 (54.7%) cases underwent caesarean section. Out of those cases 78.8% of women underwent emergency LSCS. Most of the women were in the age group of 21-30 years (69.2%). In 81.2% cases caesarean was done between 38-42 weeks gestation. 52.3% of cases were multigravida, 43.8% were primigravida and only 3.1% were grand multigravida. Most common indication of caesarean were fetal distress (23.7%), previous LSCS (23%), cephalopelvic disproportion (15.6%), oligohydramnios (11%) followed by breech, preeclampsia, eclampsia and non-progress of labour. **Conclusion:** This study revealed that the incidence of caesarean section was high in the hospital and majority of the patients who underwent caesarean section had an emergency caesarean section. The commonest indications were fetal distress and repeat caesarean section. The issue requires further investigation to identify reasons for high CS rate and raises necessity of policy guidelines and intervention in order to prevent possible unjustified use of surgical delivery.

**Key words:** Caesarean section; Incidence; Indications; Nepal

## INTRODUCTION

Worldwide lower segment caesarean section is the most commonly performed obstetric operation. It is a lifesaving procedure when certain complication arises which has a detrimental health effect either to the mother or fetus both during pregnancy and at the time of birth. However, it is also associated with both short and long term risk which has an impact not only in current delivery but also extends

in future and affects the health of the woman, her child, and future pregnancies. These risks are higher in women with limited access to comprehensive obstetric care.<sup>1</sup>

Worldwide the rate of caesarean section is increasing at an alarming rate, despite the lack of evidence which supports substantial maternal and perinatal benefits with CS rates higher than a certain threshold, and some of the studies even showing a link between increasing CS rates and poorer outcomes.<sup>2-4</sup>

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The World Health Organization (WHO) has suggested a caesarean rate between 10% and 15% and if the rate goes above 15% it implies an unnecessary and unjustified use of surgical delivery, whereas rate below 5% was associated with population's lack of access to medical technology.<sup>5</sup>

Contrary to WHO statement and lots of recommendations and warnings about risk of caesarean, its rate has been constantly rising across the globe reaching to an epidemic proportion in some countries and showing no sign of slowing down.<sup>6-7</sup>

The reasons for this increase can be multifactorial like Changes in maternal characteristics and professional practice styles, increasing malpractice pressure, social and cultural factors, improvement of surgical and anesthetic techniques, reduction of the postoperative complications and the perception of greater safety during the procedure.

Ensuring safe pregnancy and motherhood occupies a pivotal role and is considered as one of the key issues in the reproductive health policies [Table 1]. Caesarean section is associated with maternal and perinatal risk. As identified by various prior studies, its rate has increased dramatically over the past three decades both in the developed and in the developing world. In this context, it is important to empirically investigate the prevalence and examine its indications in Nepal. As few studies have been conducted on the topic in Nepal, the study aimed to empirically examine the incidence and indications of cesarean section at Manipal Teaching Hospital in Pokhara, Nepal. The study results will be useful for informing health authorities and provide a basis for formulation of health policies and strategies to control the cesarean section rate.

## MATERIALS AND METHODS

This descriptive cross-sectional study is a hospital based retrospective study conducted at the Department of Obstetrics and Gynecology, Manipal Teaching Hospital, Pokhara. It is a tertiary care hospital of province number 4 where all kind of obstetrics related conditions are dealt with multidisciplinary approach. Service is provided for both booked as well as referral cases. Referrals are from local as well as peripheral hospitals. Study duration was of 1 year from August 2019 to July 2020.

Data was collected from operation record book as well as medical record department of hospital. Data was analyzed using SPSS version 25 and frequencies as well as percentages were calculated. Total number of deliveries both vaginal and caesarean section obtained and incidence of caesarean calculated. Other variables like type of

caesarean, age, parity, gestational age and indication of LSCS was analyzed. Ethical approval was taken from respective authority.

## RESULTS

The profile of caesarean section exhibits that out of the total 2140 cases, 1170 (54.7%) of the patients underwent caesarean section. Most of the patients are young, multigravida and have gestation period of 38-42 weeks. The results depict that most of the women i.e. 69.2% belonged to age group 21-30 years followed by 20% in between 31-40 years and 9.6% were below 20 years. Only 1.2% of women were above 40 years.

Gestational period wise (81.2%) cases were more than 37 weeks, 14.2% were between 34-37 weeks and only 4.2% were less than 34 weeks. Similarly, Gravidity wise 43.8% women were primigravida whereas 52.3% were multigravida while grand multiparty comprise only 3.9% of cases. Hence, the patients were commonly young multigravida with gestational period of 38 to 42 weeks.

The incidence of caesarean section reveals that out of 2140 deliveries during the study period 1170 (54.7%) patient underwent caesarean section. Majority of patient 922 (78.8%) underwent emergency caesarean section and (21.2%) had elective surgery [Table 2].

The indication of cesarean section depicts that the most common indication for performing LSCS was fetal distress (23.7%) which included cases with meconium stained liquor, non-reassuring fetal heart rate pattern like fetal bradycardia, tachycardia, and deceleration in Cardiotocography. Next frequent indication was Previous LSCS (23%) per se or with other added indications like CPD, breech, oligohydramnios etc. Cephalopelvic disproportion (15.6%) included cases who had unengaged head or narrow pelvis diagnosed at the time of clinical pelvimetry before the onset of labour and cases who are diagnosed to have malposition of head or narrow pelvis during the time of labour. Oligohydramnios due to premature rupture of membrane, IUGR or isolated comprises 11% of cases.

Among the malpresentation Breech was the most common comprising of 7% cases and 1% was done for transverse lie. Hypertensive disorder of pregnancy like severe pre Eclampsia with impending features, Eclampsia remote from term or with other obstetric indications comprises 5.5% of cases. Similarly 5.5% of cases were done for Non progress of labour either due to arrest of dilatation or arrest in descent of head seen in partograph. Antepartum hemorrhage (2.8%) included

cases with placenta previa and abruptio placenta. Patient either underwent elective LSCS before they bleed or emergency following bleeding in case of placenta previa. Multiple pregnancy comprises 2% which included set of twins, one triplet and one quadruplet. Other (1.2%) indications were failed induction, bad obstetric history, heart disease, pregnancy following In Vitro Fertilization, and Polyhydramnios [Table 3].

## DISCUSSION

Caesarean section is in rising trend in both developed and developing countries. From obstetric point of view it is a procedure which helps to improve maternal and perinatal outcome if judiciously practiced but at the same time it has got detrimental effect both short and long term which can extend many years beyond the current delivery.

**Table 1: Profile of caesarean section patients**

Socio-Demographic distribution	Number of patients
Age (years)	
≤ 20	113 (9.6%)
21-30	810 (69.2%)
31-40	234 (20%)
> 40	13 (1.2%)
Gestational age (weeks)	
≤ 34	49 (4.2%)
34 – 37	171 (14.6%)
38-42	950 (81.2%)
Gravida	
1	512 (43.8%)
2-4	612 (52.3%)
> 4	46 (3.9%)

**Table 2 : Incidence of caesarean section**

Incidence Type	Number of patients
Delivery type	
Vaginal delivery	970 (45.3%)
Caesarean section	1170 (54.7%)
Caesarean section type	
Elective LSCS	248 (21.2%)
Emergency LSCS	922 (78.8%)

**Table 3 : Indication of caesarean section**

Indication of LSCS	Number of patients
Previous LSCS	269 (23%)
Cephalopelvic disproportion	183 (15.6%)
Fetal distress	278 (23.7%)
Oligohydramnios	129 (11.0%)
Breech	82 (7.0%)
Multiple pregnancy	23 (2.0%)
Antepartum hemorrhage	33 (2.8%)
Preeclampsia, Eclampsia	65 (5.5%)
Transverse lie	11 (1.0%)
Non progress of labour	65 (5.5%)
Failed induction	17 (1.4%)
Others	15 (1.2%)

WHO has considered the ideal rate of CS to be between 10% and 15%.<sup>5</sup> Caesarean rate calculated in our study was 54.7%. Ours is an established referral Centre for all high risk cases from nearby health Centre as well as peripheral health sectors. Most of the referred cases are complicated necessitating CS for maternal or fetal indications. In a study done in Kathmandu Model hospital by Poudel et al<sup>8</sup> the rate of caesarean was 66.1% which is higher than ours. Pradhan et al<sup>9</sup> performed a study in Patan Hospital where the incidence of CS was 41.9%. In a study done by Dhakal et al<sup>10</sup> regarding rates of CS in urban Nepal, CS rate in BPKIH, Dharan was 28.6%, TU 25.4%, Kritipur hospital 50.9%, Kathmandu medical college 48.8%, Mid-Western regional hospital 18.9% and Okhaldhunga community hospital 9.5%. This shows that CS rate was higher in urban part and in Medical College than in remote part and government hospital. In a retrospective study conducted in Gandaki medical college the CS rate was 41.26% and in a study done in Rajasthan CS rate was 31.1%.<sup>11,12</sup> The average global CS rate is 18.6%<sup>2</sup>

Out of total CS 248 patient underwent elective LSCS whereas 922 women underwent emergency LSCS. This disparity was due to high number of referral cases who had obstetrics or medical complication necessitating emergency cesarean section. Similar finding was noted in several studies.<sup>11, 12, 15, 20.</sup>

Majority of women were in the age group of 21-30 years. In developing country like ours the average age of marriage is late teen or early 20s. Most fertile period in women's life is also in their 20s. Because of this factors women undergoing cesarean section is also high in between 21-30 years.

The most common indication of caesarean section in our study was fetal distress 23.7% followed by previous cesarean section 23%. Increase use of cardiotocographic monitoring of fetal heart rate leading to early detection of abnormal pattern, increase cases of postdated pregnancy and high risk cases with meconium stained liquor as a complication, unavailability of fetal scalp blood sampling to identify true distress are some of the reasons for increased incidence of caesarean done for fetal distress. Similar finding was seen in a study done in GMC where 25% of cases underwent CS for fetal distress.<sup>11</sup> In studies conducted in different institutes, though the main indication of performing caesarean was fetal distress the incidence varied like 40.2% in Kirtipur hospital,<sup>13</sup> 12.5% in Ethiopia,<sup>14</sup> 15.44% in Sharif medical college<sup>15</sup> and 13% in Jhalawar medical college<sup>12</sup> respectively. Birla S in her comparative study of indications of primary caesarean section between primigravida and multi gravida found that fetal distress was the most common indication in both group (32.21% vs17.41%).<sup>16</sup>

Most common maternal indication was previous caesarean section which constitutes 23% of cases. Similar finding was noted in a study done by Maimoona et al<sup>15</sup> and Poudel et al<sup>8</sup> where the incidence was 22.76% and 25.3% respectively. It is higher than in a study done in Ethiopia where the incidence was 18.9%<sup>14</sup> and in GMC 14%<sup>11</sup> and lower than in study done by Sharma et al 35%.<sup>12</sup>

This increase in previous caesarean section cases can be due to a tendency to do elective or emergency repeat caesarean rather than going for trial of labour for vaginal birth after caesarean. This low threshold for performing VBAC is probably due to fear of uterine rupture in labour which is 5.2/1000 compared with (1.6/1000) in elective repeat caesarean delivery and this can be catastrophic leading to perinatal death (1/1000) and very rarely maternal death.<sup>16-19</sup> Cephalopelvic disproportion as indication was present in 15.6% which is lower than in a study done by Gurung et al 28%.<sup>11</sup>

The alarmingly increasing rate of caesarean needs to be addressed urgently from all the health sectors. Scientifically tested Strategies to promote natural birth and reducing CS should be incorporated in health policy. From government level introduction of strong mechanism to monitor caesarean section rate in both government and private sector need to be done. Expansion of midwifery profession to ensure 24 hour coverage in rural part of Nepal and more training on skilled birth attendance to promote natural birth needs to be focused. Institutions should form strong protocols for management of both complicated and uncomplicated deliveries and regular meeting needs to be held to ensure its implementation. Evidence based counseling to expecting couple for the better health outcome while planning the mode of delivery from obstetrician part should be done.

## CONCLUSION

The study depicts that the rate of caesarean section rate was quite high in the institute and majority of the patients underwent an emergency caesarean section. The commonest indications of caesarean section were fetal distress and previous LSCS. As most caesarean section are currently based on physician's judgment, the study results depict need to develop and implement guidelines for performing caesarean section so that unjustified surgical delivery can be minimized. As the study is based on a single hospital, the results may not be generalizable. Hence, there is need for standardized collection of information on incidence and indications of caesarean section nationally so that comparison and improvements can take place. Additionally, further studies are recommended for understanding of

causes and consequences of prevalence of high caesarean section rates.

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## CONFLICT OF INTEREST

We declare no conflict of interest

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**Author's Contribution:**

**AS** - Concept and Design of the study, Interpretation of results, Preparation of manuscript and Revision of manuscript; **JS** - Concept and coordination of study, revision of manuscript; **SDG** - Review of literature, Revision of manuscript.

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