

# Prevalence, Indications and Complications for Cesarean Sections at District Hospital of Eastern Nepal

Sah Prabhu<sup>1</sup> and Mishra Sangeeta<sup>2</sup>.

1. Department of Gynecology and Obstetrics, Ilam District Hospital, Ilam, Nepal.
2. Department of Gynecology and Obstetrics, Koshi Zonal Hospital, Biratnagar, Nepal.

## ABSTRACT

**Introduction:** Cesarean Section (CS) is one of the most common obstetric operative procedures. The procedure of cesarean section is still challenging in hospitals, from rural areas of low-income countries like Nepal, where health resources remain scarce and limited. The aim of this study is to understand the prevalence of cesarean section, clinical indications that prompt CS and maternal complications following CS.

**Methods:** In this descriptive cross-sectional study, all cases of delivery at Ilam District Hospital from Jul 16, 2017, to Jul 15, 2018, were included. Ethical approval was obtained from the institution. Patients attending the hospital were from hilly and remote areas of Ilam, Pachthar and Taplejung districts. The prevalence, clinical indications and outcomes of CS were recorded. Data analysis were conducted using Microsoft Excel.

**Results:** The prevalence of cesarean section was 162(14.70%). The mean maternal age was 24.59 (range 17-39) years. Fetal distress was the leading indication and accounted for 57(35.18%) cases for CS, followed by non-progress of labour 40(24.69%), failed induction 23(14.19%), Cephalopelvic disproportion 17(10.49%) and Breech or malpresentation 11(6.79%). Most of the patients were primigravida 115(70.98%), and mean gestational weeks was 40.21(range 36-44). No major maternal complications were noted. Neonatal mean weight was 3.52(2-5.5) kg and APGAR score of more than 6 at 5th minute were recorded in 158 (97.53%) of newborns.

**Conclusion:** The CS prevalence in our study was within the WHO recommendations of 10-15%. The leading indications for CS were fetal distress, and no major complications were seen in mothers or newborns following CS.

**Keywords:** cesarean section (CS); indication; complications; fetal and maternal outcome.

ADDRESS FOR CORRESPONDENCE:

DR. PRABHU SAH

DEPARTMENT OF GYNECOLOGY AND OBSTETRICS

ILAM DISTRICT HOSPITAL, NEPAL.

EMAIL: [drprabhu81@gmail.com](mailto:drprabhu81@gmail.com)

© Authors; 2020.

South East Asia Journal of Medical Sciences, Little Bay Publishers.

This is an Open Access article which permits unrestricted non-commercial use, provided the original work is properly cited.

[\(CC BY-NC-SA 4.0\)](https://creativecommons.org/licenses/by-nc-sa/4.0/)

## INTRODUCTION

The Cesarean Section (CS) is one of the most common operative procedures in obstetric practice for reduction of maternal and fetal morbidities and mortalities [1]. The initial purpose of the cesarean section was to retrieve the infant from a dead or dying mother to save the baby's life. The indications for the caesarean section have changed dramatically from ancient to modern times and as the caesarean section has become comparatively became safer, obstetrician debate against delaying surgery to reduce maternal and perinatal infant mortality rates [2].

In rural areas of a developing country, lack of trained healthcare providers, transportation system and proper equipment's are challenges for neonatal, infant and maternal mortality. The developing countries lack resources which makes the caesarean section procedure more complex and complicated [3]. The limited number of health facilities and skilled care providers, inappropriate equipment, untrained staff, socio-cultural and economic barriers and inadequate transportation system in the low-income countries like Nepal is presenting complex situation and facing challenges to improve cesarean delivery [4,5]. Scientific progress, social, cultural and legal issues have led to a change in attitudes towards CS among patients and doctors. There is a need for strict implementations of the global indications and guidelines for CS, which will help to control unwanted and unnecessary surgical procedure of caesarean section [6].

Unnecessary obstetric intervention could be hazardous for maternal and neonatal health. Cesarean section operation evolved to save maternal life during difficult childbirth but now increasing choice to prevent perinatal morbidity and mortality. WHO recommends the cesarean section level of 15% but the rising trends of CS has presented major concerns within the health care system of all countries [7]. The proportion of births delivered by caesarean section in Nepal has increased from 5% in 2011 to 9% in 2016, with a huge difference between urban (12%) and rural (6%) areas [8]. The aim of this study is to understand the prevalence of cesarean section, clinical indications that prompt caesarean section and its outcome at Ilam district hospital, which covers the three rural hilly districts, i.e. Ilam, Panchthar and Taplejung districts of Eastern Nepal.

## MATERIALS AND METHODS

This is an observational descriptive cross-sectional study, which includes all cases of delivery at Ilam District Hospital from Jul 16, 2017, to Jul 15, 2018. Most patients in this hospital come from rural areas of Ilam, Panchthar and Taplejung districts. The Department of Gynecology and Obstetrics at the hospital is managed by only one surgeon, who is responsible for doing self-ultrasound scanning along with pre and post-operative management for both mother and baby with the help of well-trained nurses and

paramedics, but without other specialist doctors. Although the resources are scarce and limited, our team and hospital manage the patients at the best of their potential. All patients sign an informed consent for surgical procedure. The data was collected after the ethical clearance was received from the institution. In this study, all deliveries during the study period were included to find out the modes and types of delivery, the demographic profile of the patients, indications of CS, complications of CS, the weight of the infant, APGAR score at 5th minute. Antepartum, intrapartum and postpartum complications and management were also noted in all delivering (vaginal or CS) patients. Data were analysed using Microsoft Excel Program.

## RESULTS

During the one-year period of Jul 16, 2017, and Jul 15, 2018, a total of 1102 deliveries were recorded. Among these deliveries, the common mode of deliveries was vaginal delivery followed by Lower (uterine) Segment Caesarean Section (LSCS) or Caesarean Section (CS). CS was performed on 162(14.70%) patients.

**Table 1. Incidence of delivery**

Mode of delivery	Frequency (n = 1102)	Percentage
Vaginal delivery	925	83.93
Instrumental delivery (vacuum)	15	1.36
Lower (uterine) Segment Caesarean Section (LSCS)	162	14.70

**Table 2. Distribution of CS cases by Age, Gravida and Gestational week**

Characteristics	Frequency (n=162)	Percentage
<b>Age (mean-24.59 years)</b>		
≤19 years	22	13.58
20-24 years	71	43.82
25-29 years	40	24.69
30-34 years	20	12.34
≥35 years	9	5.55
<b>Gravida</b>		
Primigravida	115	70.98
Multipara	43	26.54
Grand-multipara	4	2.46
<b>Gestational age(mean 40.)</b>		
<37 weeks	4	2.46
37-42 week	147	90.74
>42 weeks	11	6.79

Mean age of the patients undergoing CS were 24.59 (17-39)

years. Most of these CS were performed on women who were pregnant for the first time (primigravida - 70.98%). Majority of these CS was performed during the gestational week of 37-42 (90.74%).

The most common indication of CS was fetal distress (35.18%), followed by non-progress of labour (24.69%), failed induction (14.19%), Cephalopelvic disproportion (10.49%) and Breech or malpresentation (6.79%).

**Table 3. Indications for Cesarean Section**

Indications	Frequency (n=162)	Percentage
Fetal distress / meconium stained liquor (MSL)	57	35.18
Non-progress of labour (NPOL)	40	24.69
Failed induction	23	14.19
Cephalopelvic disproportion (CPD)	17	10.49
Breech or malpresentation	11	6.79
Oligohydramnios	5	3.08
Previous CS	3	1.85
Preeclampsia or eclampsia	3	1.85
multiple pregnancy	1	0.61
Cord prolapse	1	0.61
Others and unknown (BOH)	1	0.61

The complications following CS were minimal and minor. No major complication was seen in maternal and fetal health after the CS.

**Table 4. Complications in mother after CS**

Characteristics	Frequency (n=162)	Percentage
No Complications	156	96.29
Urinary Tract infections (UTIs)	2	1.23
wound infection	1	0.61
Postpartum Hemorrhage PPH	3	1.85

Mean weight of infant born after CS was 3.52 kg, with a majority of them in the range of 2.5 to 3.9kg (80.24%). The mean APGAR score at 5th minute for the newborn after CS was 7.91, with most of them having a good score of over 6.

**Table 5. Distribution of neonatal weight at birth and APGAR score at 5 minute**

Characteristics	Frequency (n=162)	Percentage
<b>Neonatal weight (mean - 3.52kg)</b>		
Less than 1.5 kg	0	0
1.5-2.4 kg	2	1.23
2.5-3.9 kg	130	80.24
More than 4kg	30	18.51
<b>APGAR score at 5th minute (mean - 7.91)</b>		
less than 4	1	0.61
4-6	3	1.85
More than 6	158	97.53

**DISCUSSION**

In this study done at Ilam District hospital, the Caesarean section rate was 14.70%. This is lower than the previous study done by Subedi in Eastern Nepal [7]. This may be because most of the patients were given a short trial for vaginal delivery, and no CS was conducted on maternal request. The CS rate in the current study is also lower than the previous studies done by Gurung and colleagues at Gandaki Medical College Teaching Hospital in Pokhara at 41.26%, Rajbhandary and Shrivastava at Nepal Medical College and Teaching Hospital in Kathmandu at 21.40 % and Dhakal and colleagues at Mid-Western Regional Hospital in Surkhet at 18.8% [9,10,11]. The rate of CS in Nepal varies with urban areas having twice as many CS as the rural areas [8]. This is reflected in the studies by Gurung et al. and Rajbhandary and Shrivastava, as their study was conducted in Pokhara and Kathmandu, the two most urban areas of Nepal [9,10]. The CS rate of this study is in line with that of the study by Dhakal et al. possibly because of the similarities in the nature of patients attending from rural areas and the hospital setting being similar, though one is in Eastern part of Nepal and other in the Mid-Western part of Nepal [11].

Most of the patients in this study undergoing CS were in the age group of 20-24 years (43.82%), and more than two-thirds of the patients were primigravida (70.98%). In contrast, the study done by Prasad et al. showed their patient age groups were 25-29 years (42.8%) and only 51% of the patients undergoing CS were primigravida [12]. Similarly, the study done by Gurung et al. noticed only 52% of cases of primigravida [9]. The higher rate of CS in lower age group patients in this study may be due to early marriage in the rural areas of the hilly region and also because of the anxiety and fear associated with primigravida. Dhakal and colleagues also showed that the most common age group undergoing CS in their study were 20-24 (42.9%) years with the majority of CS performed during 37-42 weeks gestational age (88.5%), which is almost similar to our

study at 90.74% [11]. The same finding may be due to same geographical area (Surkhet) in the western part of Nepal. Again, the similarities in these findings may be associated with the nature of patients attending from rural areas and the hospital setting being similar.

We found that the most common indications of CS in this study were fetal distress/MSL (35.18%), followed by NPOL (24.69%), failed induction (14.19%), CPD (10.49%) and Breech or malpresentation (6.79%). Most of these indications have featured as the main indications for CS in many of the previous studies; such as Rajbhandary and Shrivastava showed fetal distress (40.4%), CPD (14.8%), Breech (10.4%); Dhakal et al. showed fetal distress/MSL (37.8%), NPOL (17.1%), Breech (15.8%); Prasad et al. (2017) showed fetal distress/MSL (29.15%), failed induction (19.73%), CPD (10.8%), Breech (8.5%) [10,11,12]. This demonstrates that regardless of the regional variations or rural and urban divide, the indications of CS remain the same and fetal distress/MSL, NPOL, failed induction, CPD and breech presentations are some of the main indications for caesarean sections.

In this study, the complications following CS were minimal and minor. No major complication was seen in maternal or fetal health after the CS. We found only 3.7% of patients showing complications in the form of UTI (1.23%), PPH (1.85%) and wound infection (0.61%), which were managed conservatively. This was in contrast with many of the previous studies. Rajbhandary and Shrivastava found complications among 27.32% of their patients [10]. The complications included UTI (18.6%), wound infection (6.6%) and PPH (1.6%). Similarly, Sharma et al. found a high rate of complications at 42.7% among their patients, with the predominance of PPH (21.1%), wound infection (7.6%) [13]. Another study, Dhakal et al. noticed very low complications of 3.7% in their study, with the majority of these patients showing PPH and wound infection [11]. The similarity in low complications rate in this study and Dhakal et al. maybe because of the lower age of the majority of patients in both these studies [11]. In our study, low rate of maternal complication may be due to short duration of catheterization (removed within 24 hour of surgery), proper use of uterotonics and use of antibiotics for 5-7 days after CS.

Our study showed the APGAR score of more than six in 97.53% of newborns at five minutes, and 80.24% of the infants had birth weight between 2.5 to 3.9kg. This was an excellent result compared to other studies conducted in Nepal despite the challenges of limited health care resources to improve the health of women and children. Dhakal et al. showed an APGAR score of six or more in 97.9% of cases at five minutes [11]. Whereas, Bhandari (2017) noted APGAR score at five minutes of more than five in just 61.2% cases and the fetal weight between 2.5-4 kg were observed in just 78% of the newborns [14].

In Nepal, around 41% of deliveries take place at home, especially in rural areas [8]. The rural areas of Nepal still lack well-trained and qualified nurses and doctors. In most cases these deliveries at home take place with the help of Traditional Birth Attendants (TBAs) however these TBAs do not have the skills and expertise to deal with birth-related complications, therefore risking the lives of a mother and the infant. The poor socio-economic situation of the family in rural areas often delay the decision making in seeking access to skilled delivery care. This often creates a sense of emergency enforcing the caesarean section. However, in our hospital, we ensure that every pregnant woman is offered an option of vaginal delivery until the indication of CS appears. The constant monitoring of these pregnant patients helps in making sure that the indications for CS are not missed. In many cases, we would already have seen these patients during pregnancy. All these pregnant women and their relatives are counselled about our government policy regarding incentives for an antenatal check-up (schedule four visit) and hospital delivery. We also advise patients to stay in close proximity to the hospital, especially during the rainy seasons, to avoid any unwanted and complicated pregnancy outcomes. All these initiatives have ensured that the rate of CS in Ilam District Hospital remains on the lower side and the complications following the CS is minimal. Moreover, we did not have any maternal and neonatal mortality in our study period despite having limited health care resources, which we see as an achievement.

## CONCLUSION

This study showed that the prevalence of CS at 14.70%, which is comparatively lower than the rates reported in other parts of the country. Fetal distress/MSL, NPOL and Failed induction were reported as the most common indications for CS. No, any major complications were seen in mothers and newborns following the cesarean section. Though it is challenging to provide Comprehensive Emergency Obstetric Care (CEOC) service in a district hospital with limited resources, maternal and fetal outcomes were significantly good. Complications were minimal, but this can be still lowered with better antenatal services, appropriate intra-partum fetal monitoring and timely intervention.

## LIMITATIONS OF THE STUDY

This study was conducted with a small sample size at a single site and therefore cannot be generalized for all hospitals. We recommend conducting a further multi-centre study with larger sample size, and longer follows up period to better understand the prevalence, indications of complications of CS.

**DECLARATIONS:** None Declared

**CONFLICT OF INTEREST:** None Declared

## REFERENCES

1. Charoenboon C, Srisupundit K, Tongsong T. Rise in cesarean section rate over a 20-year period in a public sector hospital in northern Thailand. *Archives of gynecology and obstetrics*. 2013 Jan 1;287(1):47-52.
2. Sewell JE. Cesarean section—a brief history. A brochure to accompany an exhibition on the history of cesarean section at the National Library of Medicine. 1993 Apr 30;30.
3. Kwawukume EY. Caesarean section in developing countries. *Best Practice & Research Clinical Obstetrics & Gynaecology*. 2001 Feb 1;15(1):165-78.
4. Dhakal S, Van Teijlingen E, Raja EA, Dhakal KB. Skilled care at birth among rural women in Nepal: practice and challenges. *Journal of health, population, and nutrition*. 2011 Aug;29(4):371.
5. Irani M, Deering S. Challenges affecting access to cesarean delivery and strategies to overcome them in low-income countries. *International Journal of Gynecology & Obstetrics*. 2015 Oct 1;131(1):30-4.
6. Samdal LJ, Steinsvik KR, Pun P, Dani P, Roald B, Stray-Pedersen B, Bøhler E. Indications for Cesarean Sections in Rural Nepal. *The Journal of Obstetrics and Gynecology of India*. 2016 Oct 1;66(1):284-8.
7. Subedi S. Rising rate of cesarean section—a year review. *Journal of Nobel Medical College*. 2011;1(2):50-6.
8. Ministry of Health, Nepal; New ERA; and ICF. *Nepal Demographic and Health Survey*. Kathmandu, Nepal: Ministry of Health, Nepal; 2016
9. Gurung RT, Gurung G, Shrestha R, Gurung T, Sharma P. Prevalence and Outcome of Cesarean Section at Gandaki Medical College Teaching Hospital and Research Centre, Pokhara, Nepal. *Journal of Gandaki Medical College-Nepal*. 2016;9(2):1-6.
10. Rajbhandary S, Shrivastava VR. Study of Indications and postoperative complications of primary caesarean section in tertiary care hospital in Nepal. *Int J Reprod Contracept Obstet Gynecol*. 2018;7(3):835-40.
11. Dhakal KB, Dhakal S, Bhandari S. Profile of Cesarean Section in Mid-Western Regional Hospital in Nepal. *Journal of Nepal Health Research Council*. 2018 Mar 18;16(1):84-8.
12. Prasad A, Bhandari G, Saha R. Profile of Cesarean Section at Kathmandu Medical College. *Journal of Nepal Health Research Council*. 2017 Sep 15;15(2):110-3.
13. Sharma S, Dhakal I. Complications among Mothers and New Born Due to Delivery Process in Selected Hospitals of Rupandehi District Nepal. *Journal of Nepal Health Research Council*. 2018 Jul 5;16(2):190-4.
14. Bhandari BR. Indications and Fetal Outcomes of Cesarean Section in Sindhu Sadabahar Hospital, Sindhupalchok. *Kathmandu University medical journal (KUMJ)*. 2017;15(60):284-7.