Trend of utilization of safe motherhood services in rural Nepal

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ABSTRACT

Introduction: The government of Nepal has implemented Safe Motherhood programs throughout the country to decrease the perinatal morbidity and mortality. Safe motherhood service includes normal vaginal delivery, Caesarian Section (CS) and perinatal management. CS rates are a major public concern. Currently 18.6% of all births occur by CS, ranging from 6 to 27.2% in different parts of the world.

Method: Retrospectively collected data from Electronic Health Record (EHR) of Bahmini deliveries from May 1,2016 to October 31,2020 were used. Demographic profiles like age, geographical location. Similarly, gestational age, caste, gravida, parity, various indications of CS, maternal, fetal, and neonatal outcomes were also recorded.

Result: A total of 4168 deliveries were conducted over four and half years with 3694 (88.6%) vaginal deliveries and 474 (11.4%) CS. There was constant maintenance of CS rate from 5-15% over four and half years, 11% in 2016 to 12% in 2019. Fetal distress was the commonest indication of overall CS followed by non-progress of labor. The women from Bhimeshwor municipality of Dolakha district, were 156 (32.9%). The most CS was done in the age group of 20-24 years, which was 192 (40.5%). Neonatal Death was 3/1000 births.

Conclusion: Different from the other evidences, we found that our CS rate was within the limit of WHO's recommendation for lower resource setting. Following strict guidelines and with dedicated care, it's possible to maintain recommended CS rate with less neonatal and maternal morbidities even in lower resource setting where there are no NICU, ICU facilities and Electronic Fetal Monitoring (EFM).

Keywords: Caesarean section, electronic health record (EHR), neonatal and maternal morbidity

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INTRODUCTION

Caesarian section (CS) is the most common procedure in modern obstetrics. CS delivery is defined as the birth of a fetus through incisions in the abdominal wall (laparotomy) and the uterine wall (hysterotomy).[1] CS rates are a major public health concern and a topic of worldwide debates.[2] According to latest data from 150 countries, currently 18.6% of all births occur by CS, ranging from 6 to 27.2% in the least and most developed regions.[3]

There has been increased in CS rates significantly around the world.[4] CS rate varies in different parts of the world ranging from 1% in some African countries (South Sudan and Niger) to 56% in some American countries (Brazil and Dominican Republic).[5] Earlier, WHO has recommended that 10%-15% are associated with decrease in maternal and neonatal morbidities.[6] In Nepal, CS rate varies from 10%-30% in different hospitals.[7]

The government of Nepal has implemented Safe Motherhood programs throughout the country to decrease the perinatal morbidity and mortality. Peripheral hospitals with lower resource setting are struggling to maintain highest level of neonatal and maternal care. This study reports analysis of trend of utilization of safe motherhood services after devastating earthquake of 2015, when care delivery of the hospital was supported by Nyaya Health Nepal (an NGO which works collaboratively with Nepal Government), where there was regular support of trained human resource, supply chain and dedicated care with proper case management guideline of the hospital.

METHOD

This was a retrospective study conducted in Charikot Hospital from May 1st 2016 to October 30th, 2020 after taking ethical approval of utilization of secondary data from Electronic Health Record (EHR) system from National Health Research Council (NHRC). It is a referral hospital of Dolakha District and few other neighboring districts. All deliveries that took place during the given time frame were recorded from EHR and verified with record of safe motherhood service book. Indications of CS, rates of VBAC, rates of Neonatal deaths, maternal mortality, geographical distribution, age distribution, address, parity, Gravida, neonatal outcome, year wise CS rates were all computed. Descriptive analysis of data was done using SPSS 19 software.

RESULT

During the four and half years, 4168 deliveries were conducted in the hospital, 474 (11.4%) had undergone CS and 3694 (88.6%) undergone normal vaginal delivery. Most of them were primiparous women (256, 54%). Women from Bhimeshwor municipality (156, 36.9%) were mostly benefitted with the service. The most common CS age group was 20-24 years of age, which was 192 (40.5%). 457(96.4%) women delivered at 36-42 weeks of gestation (Table 1). Mostly it was emergency CS 413(87.1%). The most common indication of CS was fetal distress 86 (18.14%), followed by non-progress of labor 78(16.4%) and cephalopelvic disproportion (CPD) of 74 (15.6%) (Figure1). There were 474 (11.4% CS performed during the period (Fig-2). There was one maternal mortality due to PPH after CS. Most of the babies 441(91.5%) had birth weight more than 2.5kg, 460 (97.1%) had good APGAR score and the neonatal mortality rate was 3/1000 live birth. 2.1 % of them had surgical site infection successfully managed with IV antibiotics. Average day of admission was 3.5.

Table 1. Socioeconomic and clinical characteristics of women and neonate in Charikot Hospital (2016-2020)

Parameters	Variables	N (%)
Moother's Age	16-19	48 (10.1)
	20-24	192 (40.5)
	25-29	159 (33.5)
	30 and above	75 (15.8)
Gravida	1	256 (54)
	2	147 (31)
	3 and above	71 (15.8)
Gestational Week	<36 weeks	7 (1.5)
	36-42 weeks	457 (96.4)
	>42 weeks	10 (2.1)
Child's Gender	Female	210 (43.6)
	Male	272 (56.4)
Birth Weight	<2500 gm	41 (8.5)
	>2500 gm	441 (91.5)
Neonatal Deaths at Hospital	Yes	14 (3)
	No	460 (97)
Type of CS	Emergency	413 (87.1)
	Elective	61 (12.9)
Delivery Type	Vaginal	3694 (88.6)
	CS	474 (11.4)
Maternal Mortality	Yes	1 (0.2)
	No	473 (99.8)
Geographical Location	Dolakha	400 (84.4)
	Sindhupalchok	30 (6.3)
	Ramechhap	34 (7.1)
	Others	10 (2.1)
Surgical Site Infection		10 (2.1)
Still Birth	Among Total Delivery	82 (19.2/1000)
VBAC	Among Previous CS	88 (55)

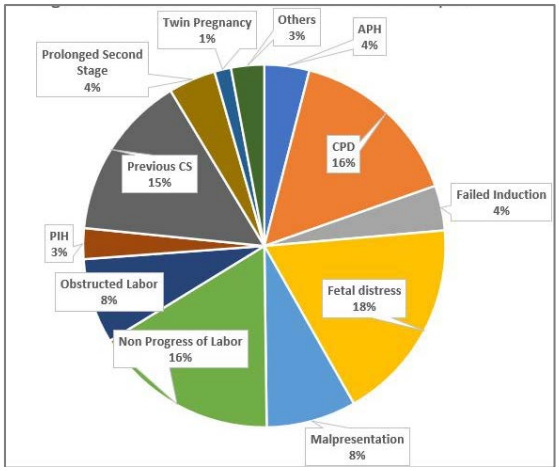

Figure 1. Indication of C-section at Charikot Hospital

Figure 2. Trend of CS and vaginal deliveries at Charikot Hospital

DISCUSSION

This is one of the few studies in lower resource setting of periphery of Nepal to see the trend of utilization of safe motherhood services. Our study showed a CS incidence rate of 11.4%, which is exactly what WHO has recommended (10-15%).[8]

Multiple factors were assumed in maintaining this rate at this hospital, like, all decisions were taken by senior MDGP consultant, almost no demand to CS among our population, on time handling of complications by SBA nurses, regular clinical updates by regular CME sessions and middle- and lower-class family being more favor to trial of labor. We have noted much higher CS rates in Nepal[7]. It's really difficult professionally to compare vaginal delivery and CS delivery on risk-benefit perspective.[9]

The CS rate in our study was maintained in between 5-15%. But, in other studies of USA, CS rate was 4.5% in 1965, increased to 29.1% in 2004 and again increased to estimate at 32.8% in 2010 and 2011.[10] We haven't used Electronic Fetal Monitoring (EFM) in our study and fetal distress is determined as the commonest indication of CS especially in emergency setting but non-progress of labor and previous CS were among common indications. Per other studies, there is no significant difference in reduction of overall perinatal mortality associated with increased use of EFM in developed settings.[11]

Previous CS was the most common indication for elective CS in our study, which accounted for 15% of the total CS. Our VBAC rate was maintained as 55% in total previous CS cases due to maternal preference to trial of labor and vigilant cautious monitoring of labor in those cases. In contrast, USA had declining rates of VBAC from 28.3% to 9.2% (1996 to 2004).[10]

Trial of labor in nulliparous breech is one of the concerning topics these days. Just 8% of total CS is done mainly for breech and successful breech vaginal delivery is one of the important aspects of our care and this is comparable to another study of 10%.[12] Primiparous were 54% in our study which is exceptionally high as compare to another study of 41.5%.[13]

Still birth has contributed large proportion of perinatal mortality in our study which was 19.2/1000 births. Some of the reasons identified were congenital anomalies, pregnancy induced hypertension, gestational diabetes, thyroid disorder and malformed uterus however this needs to be evaluated extensively with another study. Similar results reported in one study with 22/1000 births.[14]

In our study, there was one maternal death due to PPH and late presentation in hospital. Average stay of women after CS was 3.5 days. Surgical site infection was maintained at 2.1% due to strict infection prevention protocols of hospital, however there are studies with higher rates of surgical site infection 14-16%.[15] We recommend further study is needed in stillbirth and intervention towards its management.

CONCLUSION

The CS rate was maintained at 5-15% per WHO's recommendation at our hospital even though the global trend is rising. The commonest indication of CS delivery was fetal distress. Proper evaluation and measures should be taken to identify high rates of Still birth at Charikot Hospital.

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years. We declare that we have no conflict of interest. Staff were self-motivated to conduct this study.

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