

EFFECT ON MODE OF CHILD BIRTH AND ITS OUTCOMES BEFORE AND DURING THE COVID-19 PANDEMIC AT ILAM DISTRICT HOSPITAL: A COMPARATIVE DESCRIPTIVE CROSS-SECTIONAL STUDY

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ABSTRACT

Introduction

Nepal started full lockdown from 24 March to 14 June 2020, followed by partial lockdowns multiple times as a precaution for the prevention of COVID-19 infection. Managing health care services was a major issue during the COVID-19 pandemic for both the patients and health care professionals including services targeting pregnant women in developing countries like Nepal.

Objectives

To study the impact of the COVID-19 pandemic on childbirth services attended at a district government hospital and to observe the impact on mode of delivery and maternal-child health.

Methodology

This descriptive cross-sectional study aimed to find out the impact on delivery services during the pandemic compared to pre-pandemic duration that includes one year period from 22nd October 2019 to 22nd March 2020 (before pandemic) and from 23rd March 2020 to 23rd September 2020 (pandemic duration) at Ilam District Hospital. All the information used in this research was taken from Health Management Information System (HMIS) log book. The permission to use the recorded data was obtained from the hospital. Anonymity and confidentiality of data were maintained and no personal information was used in this research to protect the identity of the patients. The data was collected from the HMIS records of the hospital and was then processed in Microsoft excel.

Results

The result shows despite the lockdown and pandemic the percentage of patients coming to receive delivery services within the hospital increased about 9% which is an exceptionally good result. Emergency CS was found to be decreased by 3%. During the pandemic Hospital stay was significantly reduced for patient's safety due to COVID-19. However, no adverse impact was observed on the health outcomes of the mother and baby due to a short stay at the hospital.

Conclusion

Despite lockdown and pandemic, the number of parents receiving hospital delivery services increased at Ilam hospital. This was possible due to proper management and pre-plan services according to the government's COVID-19 protocol to cope with the pandemic and demand of the health services as other nearby hospitals closed their door during the pandemic. In the future, a short stay at the hospital can be continued to cope with a high demand of the services in the maternity department as we found the health of both mother and baby has not been impacted due to short stay in the hospital during the pandemic.

KEY WORDS

Childbirth, COVID-19, Pandemic



INTRODUCTION

The health and wellbeing of women have been hugely impacted due to the pandemic, particularly of the pregnant women who are facing several challenges to receive timely maternal health services from the hospital. This is mainly due to the lack of an adequate transportation system, fear of transmission of the COVID-19 infection. These challenges were highly amplified for those pregnant women who are living in rural/remote areas and for families with poor socioeconomic backgrounds. The low utilization of maternal health services may become a barrier to good outcomes. Although there is a provision of free delivery as a policy implemented by the government of Nepal, pregnant women faced particular challenges and barriers to access maternal health care services. Maternal health is an important aspect in women's life ranging from phase-wise timing of attendance at routine antenatal (pregnancy care visits, childbirth, and postnatal status) along with the availability of qualified health practitioners, staff, doctor and hospital's infrastructure.^{1,2}

The world has faced an unprecedented public health crisis due to COVID-19. In Nepal, the first lockdown was imposed from 24th March 2020 to 14th June 2020, which was followed by several lockdowns of short periods as a precaution for the prevention of the spread of infection. COVID-19 stretched the under-resourced health system of low-income and middle-income countries like Nepal, leading to a significant impact on the health system, socioeconomic and cultural structures, and widening healthcare access inequalities especially increasing the burden of adverse birth outcomes of pregnancies. During the pandemic period, the health care system became over-burdened and medical professionals were worried about obstetric quality care for maternal-child health and have the fear that caregivers, such as health professionals might suffer.^{3,4}

The purpose of this study was to compare maternal health services especially hospital delivery services during one year period that included six months pre-pandemic and the first six months of the pandemic period.

METHODOLOGY

This descriptive cross-sectional study was conducted at Ilam District Hospital, the government hospital of Nepal in the mountainous eastern region. Data were taken from the Health Management Information System (HMIS) logbook of one year period from 22nd October 2019 to 22nd March 2020 (before pandemic) and from 23rd March 2020 to 23rd September 2020 (pandemic duration). All the cases of study period were studied. This study was conducted based on the Helsinki declaration. Due to unavailability of institutional review board at the hospital the permission to use the anonymous data was obtained from the hospital administration and all the records of the patients visiting the hospital for the delivery during that time were obtained from HMIS record and taken as sample size by convenient sampling and entered and processed in Microsoft Excel 2013. Personal details of patients have not been used in this research so that the anonymity of the patients can be maintained. The data were then subtracted and reanalyzed by using MS Excel. Descriptive statistics as frequencies and percentages were used to analyze the data.

RESULT

During the total duration of the study 1,218 deliveries were performed, out of which 582 (426 vaginal delivery and 156 cesarean section) were during the pre-COVID period. Meanwhile, 636 (474 vaginal deliveries and 162 cesarean sections) were during the first six months of the COVID period.

Table 1: Incidence of delivery

Mode of delivery	Frequency		Percentage (%)		
	Pre-COVID-19	Pandemic COVID-19	Pre-COVID-19	Pandemic COVID-19	
Vaginal delivery	Normal	60	96	10.3	15.09
	Instrumental	18	24	3.09	3.77
	Episiotomy	348	354	59.79	55.66
CS	Elective	36	48	6.18	7.54
	Emergency	120	114	20.61	17.92
Time of delivery	Day	342	444	58.76	69.81
	Night	240	192	41.23	30.19
Total		582	636		

A total of 582 deliveries were performed during the pre-COVID-19 period meanwhile, 636 deliveries were performed in the pandemic COVID-19 period. Most of the deliveries were vaginal delivery with episiotomy during both pre-COVID 19 (59.79%) and pandemic COVID-19 (55.66%).

Table 2: Distribution according to Socio-demographic variables

Socio-demographic variables	Frequency		Percentage (%)		
	Pre-COVID-19	Pandemic COVID-19	Pre-COVID-19	Pandemic COVID-19	
Age group	16-20	132	156	22.68	24.53
	21-30	366	354	62.89	55.66
	31-40	60	108	10.3	16.98
	>40	24	18	4.12	2.83
Residence	Ilam	546	592	93.81	93.1
	Panchthar	32	42	5.5	6.6
	Taplejung	4	2	0.69	0.31
Obstetric History	Primigravida	288	366	49.5	57.54
	Multigravida (<3)	276	240	47.42	37.73
	Grand Multiparous(>3)	18	30	3.09	4.72
Gestational age	<37 weeks	36	42	6.18	6.6
	37-42 week	528	552	90.72	86.79
	>42 weeks	18	42	3.09	6.6

Most of the delivering mothers belonged to the 21-30 years age group during both pre-COVID-19 (62.89%) and pandemic COVID-19 period (55.66%). The delivering mothers were mostly from the Ilam district of Eastern Nepal. Most of the deliveries were performed with a gestational age range of 37-42 weeks.

Table 3: Distribution of neonatal weight at birth and APGAR score at 5 minutes

	Pre-COVID	Pandemic COVID-19
Neonatal weight		
Less than 1.5 kg	Nil	Nil
1.5-2.4 kg	24	30
2.5-3.9 kg	468	546
More than 4kg	90	60
APGAR score at 5th minute		
less than 4	1	0
4-6	10	6
More than 6	571	630

Most of the neonates weighted in the range of 2-3.9 kgs (468 in pre-COVID-19 and 546 in post-COVID-19 period). Most of the neonates had an APGAR score of more than 6.

Table 4: Distribution of Days of Hospital stay

Mode of delivery		Days (mean + range)	
		Pre-COVID-19	Pandemic COVID-19
Vaginal delivery	Normal	2.08 (1-3)	1.52 (1-2)
	Instrumental	2.44 (2-3)	1.46 (1-3)
	Episiotomy	2.1 (1-3)	1.59 (1-3)
CS	Elective	5.94 (5-7)	4.44 (4-6)
	Emergency	6.22 (5-7)	4.38 (4-7)

The hospital stay for vaginal deliveries during the pandemic COVID-19 period was in the range of 1-3 days mean while the stay for CS was 4-7 days. On the other hand, hospital stay for vaginal delivery in the pre-COVID-19 period was 1-3 days meanwhile the stay for CS was 5-7 days. Hospital stay depended on the arrangement of transportations and condition of weather but during the pandemic period, patients may stay for a short time due to fear from the transmission of COVID-19 infection.

DISCUSSION

During the lockdown period, at Ilam district hospital, only one surgeon was performing examinations like ultrasonography along with pre and post-operative management for both mother and baby with the help of well-trained nurses and paramedics. During the pandemic, patients with a single visitor were allowed in the hospital with some restrictions followed by health protocols provided by the government. During the pandemic, antenatal care visits were disturbed due to lack of transportation and fear of transmission of infection from the hospital which was not favorable for the maternal and neonatal outcomes. At admission for delivery in the hospital, on-duty staff and the doctor recorded detailed history of age, parity, previous obstetric history, gestational age, whether referred from other centers (details of referral if the patient was referred), maternal general condition, fetal position and presentation, and heart sounds, pelvic assessment, state of liquor amniotic fluid and cervical dilation along with any other danger signs and symptoms.^{5,6}

Many factors influence the mode of delivery such as parity, gravidity, gestation age, previous delivery, employment status, financial burden, mode of transportation. Common modes of delivery are vaginal (unassisted i.e. natural, help with medicine or episiotomy, and assisted i.e. forceps or vacuum) and cesarean section by surgical intervention. The pregnant mother also expects choices in decision making, pain control, and social support. Patients and family members also have to plan about how to care during antepartum, partum and post-partum periods as any alteration in the plan may increase stress to patients and family members.

Restrictions in transportation and disrupted health services resulted in a lack of scheduled ante-natal visits and a lack of proper and adequate investigations impacted the family expectations. During this period, any complicated labor was referred to the tertiary level government hospital, for example, Koshi Hospital in coordination with their doctors.

The primary responsibilities of nurses include the admission process, maternal/fetal assessment, and proper clinical care at the bedside. Experienced nursing staff and appropriate nurse-doctor communication can make positive impacts on patterns of delivery modes and outcomes. Care by an experienced nurse during labor can predict delivery mode during the intrapartum period and optimal nurse-doctor communication has a role in decision making about the mode of delivery. Modes of delivery can be influenced by nurses' knowledge of labor and doctors' practice patterns.⁷

In the community normal vaginal delivery is still better for the mother and child while CS and operative vaginal deliveries are associated with risk and such deliveries mode should be only undertaken when indicated. Episiotomy is trauma to the perineum which needs surgical repair and sometimes may have long-term consequences. The long-term consequences of OASIS (obstetric anal sphincter injuries) are much more serious and difficult to manage which requires well-trained and experienced manpower. Several intrapartum techniques as perineal massage and warm perineal compress may reduce the risk of OASIS.^{8,9}

In low-income countries, CS may be higher due to delays in assessing referral health facilities. Common indications for CS include maternal conditions (prolonged, obstructed labor, abruption of placenta, hypertensive disorders) and fetal conditions (cephalo-pelvic disproportion, fetal distress, and malpresentation) to name a few.¹⁰ COVID-19 lockdown led to restrictions in transportation except for emergency services and thus, reduced health care accessibility, especially for out-patient consultations due to which many patients failed to get routine antenatal checkups. Moreover, they also feared the transmission of disease in hospitals. Some studies showed an increase in maternal mortality.^{11,12} During the early phase of the pandemic health care providers were also feeling anxiety, insomnia, and depression may be due to inadequate precautionary measures and lack of proper safety equipment in the workplace.¹³ While maternity services access was limited within Nepal and around the world, it is a very interesting and significant finding that despite the lockdown and pandemic the hospital provided a large number of delivery services in the maternity department, about a 9% increase compared to the pre-pandemic duration. The reason could be women not finding a hospital to go to for maternity health services around the region because many hospitals stopped providing the services and there was a limited transport service. We have noted that daytime delivery occurred very often and increased about 10% during the pandemic. The possible explanation could be the arrival of patients in the morning hours with labor pain and the induction process initiated in the morning hours. This is not a significant outcome as we have noted the majority of the delivery occurred in the daytime even in the pre-pandemic period.

Interestingly, the APGAR score at 5 minutes during and before the pandemic was almost the same. That means despite huge constrained health services during the pandemic, properly planned services can have the same or positive impact on the health of the child.

We have seen limited changes in the socio-demographic profile of women who used the delivery services at the

hospital. Most of the mothers aged 21-30 years during both pre-COVID-19 (62.89%) and pandemic COVID-19 period (55.66%). Most of the women who attended the hospital for the service were from the Ilam district.

Social factors such as low education, limited access to health care, financial dependency and cultural norms can also put women in a lower position in society. COVID-19 impact on health care may be of long term and to avoid or improve health care health personnel should be trained to deal with such situations. Limited health care during this pandemic may have a great impact on the accessibility of health care among women in poor countries.¹⁴ This may affect the mode of delivery and its outcome. Results from a published study of the same hospital during one year period included 1102 deliveries out of which vaginal delivery was 83.93% and CS 14.7%; newborn birth weight between 2.5 to 3.9 kg 80.24%, APGAR of more than 6 in 97.53% of the newborn at 5 minutes; and CS(14.7%).¹⁵ In comparison to the above study, present results of 1218 deliveries in one year period included 582 pre-COVID and 636 deliveries in COVID period, the increase attributed to lack of services in the periphery due to shut down; vaginal deliveries pre-COVID 73% was comparable to COVID period 74% was lower than previous study 83.9%, and CS pre-COVID 27% was similar to COVID period 26%. A slightly shorter duration of hospital stay for vaginal and CS delivery during the COVID period was noted.

CONCLUSION

While maternity services have been significantly impacted during the pandemic within Nepal and around the world,

Ilam hospital maintained its services for pregnant women and accepted a large number of admission at maternity units despite the shortage of staff and facilities. The hospital was prepared well to provide the services and to cope with the service demand during the pandemic. Study has concluded that there was no impact on the services at the maternity unit and health outcomes of mother and baby. It was also noted that the percentages of CS in this hospital was slightly lower during the pandemic compared to pre-pandemic records.

LIMITATION OF THE STUDY

Our study was single-centered and the sample size was small, so a larger sample size and multi-center study with longer follow-up are recommended.

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CONFLICT OF INTEREST

The authors declare no financial support or potential conflict of interest for writing and publication of this article.

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