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# Trend Analysis of Maternal Health Care Services in Nepal

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## Abstract

*This study attempts to analyze the trend in maternal health care utilization: antenatal care, delivery care, and postnatal care in Nepal. Maternal health remains a major challenge in developing countries despite improvements in medical technology and several efforts to improve maternal health care services. This study is based on Nepal Demographic and Health Survey data from 2006, 2011, and 2016. It covers 4,066 women in 2006, 4,148 in 2011 and 3,998 in 2016 for antenatal care. In the study, this analysis is confined to women aged (15-49) who had a live birth in the five years preceding the survey. Data on delivery care were obtained for all births that occurred in the five or two years preceding the survey. This study comprises 2030 women in 2011 and 1,978 women in 2016 aged 15–49 years who had a live birth in the two years preceding the survey on childbirth, and postnatal care. Especially, the study deals with antenatal, delivery care, and postnatal care. There is a substantial increase in the utilization of antenatal care (ANC) by skilled health providers from, 44 percent in 2006 to 84 percent in 2016 respectively. Still, six percent percentage do not seek even one-time ANC care and the percentage of women who seek 4 or more ANC care from a skilled service provider is low. Still, two fifth percent of delivery take place at home. postnatal service is still very low in Nepal. This study's results suggest the need for efforts to be addressed to improve the use of maternal health care services in Nepal. There is a need to increase the use of postnatal checkup as well as delivery assisted by skilled attendants.*

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**Keywords:** Maternal health, antenatal care, antenatal visit, delivery care, & postnatal care.

## Introduction

Maternal health is a key health challenge globally. The high levels of maternal mortality are a common subject in global health and development discussions. The top 5 Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs) both consider maternal mortality as an important public health concern, particularly in

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developing countries. Globally, approximately 810 women die every day from pregnancy or childbirth-related complications, and approximately 6,700 newborn deaths every day around the world (World Health Organization, 2019).

Maternal mortality in Nepal is still high 239 per 10, 0000 live births. One woman in 167 can be expected to have a maternal death while aged 15 to 49. The Government aims to reduce the maternal mortality ratio to 70 per 100,000 live births and neonatal mortality to 12 per 1,000 live births and to achieve coverage of 90 percent for four antenatal care (ANC) visits, institutional delivery, skill birth attendants (SBAs) delivery, and three postnatal care (PNC) check-ups by 2030 as part of the SDGs target. Still, the proportion of women utilizing maternal health services is low in Nepal. Nationally, 69 percent of women had at least four ANC visits, 57 percent of births were delivered in health facilities and only 57 percent of both mothers and newborns receive a postnatal care check within 2 days of delivery (Ministry of Health Nepal, New ERA & ICF, 2017).

The lives of millions of women of reproductive age can be saved through the proper utilization of maternal health care services. Health care services during pregnancy, childbirth and after delivery are important for the survival and well-being of both the mother and the neonate. The first hours, days, and weeks after giving birth are dangerous times for both the mothers and their newborns because the majority of the complications and deaths happen during this time (World Health Organization,2013).

Antenatal care is an entry point for maternal and child healthcare service utilization through which pregnancy risk can be detected and managed and contributes to reducing both maternal and neonatal mortality (Dahiru, & Oche, 2015). In order to reduce perinatal mortality and enhance women's experiences of care, the World Health Organization recommends a minimum of eight contacts (WHO,2016). But, the Ministry of Health in Nepal recommends pregnant women have ANC visits at least four times during their pregnancies (Ministry of Health and Population,2018). Similarly, the second component of maternal health care services, institutional delivery, allows detection and management of risk during labor and childbirth so that effective interventions can be provided by medically trained personnel at a health facility (Hatt et al., 2009).

The government of Nepal is promoting safe motherhood programs through various initiatives such as providing free delivery care and transportation incentives to women delivering in a health facility (MoH et al., 2017). The government of Nepal initiated free delivery of care services in 2005 through the ‘Maternal Incentive Scheme’ to increase health facility delivery. In 2009, the scheme was expanded to include ‘free deliveries’ and in the same year, the government of Nepal introduced the “four ANC incentive program”

to improve ANC attendance (Bhatt, et al., 2018). Antenatal care (ANC) visits, institutional delivery, and postnatal care (PNC) visits are vital for the improved health of mothers and newborns. In addition, three PNC check-ups are recommended to reduce maternal and neonatal morbidity and mortality: the first within 24 hours of delivery, the second on the 3rd day, and the third on the 7th day of delivery (Department of Health Services, 2018). Access of these routine maternal and newborn health (MNH) visits have increased in the last few decades in Nepal; however, little is known on the effective uptake (including timely, skilled, frequent, and adequate care) of essential MNH interventions during those visits. Also, there is a scarcity of updated information regarding the utilization of sufficient postnatal check-up in Nepal.

Despite the need and the efforts made by the government of Nepal through different policies to improve access to maternal health care services and reduce maternal mortality, complete maternal health service utilization has been very limited. Considering the importance of maternal health, this study has been proposed to study the trends in antenatal, delivery, and postnatal care of mothers in Nepal.

## **Objectives**

The main objective of this study is to analyze maternal health care utilization over the period of 2006 to 2016. The specific objective is to study the trends of maternal health care (antenatal care, delivery care, & postnatal care) services in Nepal.

## **Justification**

A country cannot progress without healthy people. In this regard, this study was specially designed to obtain maternal health care which includes care during gestation, delivery, and post-delivery. Data are based on the Nepal Demographic Health Survey of periods of time. The data on antenatal care, delivery care, and Postnatal care reflect the status of women and the overall development of the country. It is hoped that the study is useful to provide updated information regarding maternal health care for further research in this field.

## **Methodology**

This study is based on a descriptive and analytical research design. The Nepal Demographic and Health Survey (NDHS) 2006, 2011, and 2016 are major sources of data used in this study. It is a nationally representative survey that covers 4,066 women in 2006, 4,148 in 2011, and 3,998 in 2016 for antenatal care. In the study, this analysis is restricted to women aged (15-49) who had a live birth in the five years preceding the survey. In this

study, maternal health chapter covers data on three different aspects namely antenatal care, delivery care and postnatal care.

Antenatal care section covers information on pregnancy checkups from skilled provider (doctor or nurse/midwife) and number of ANC visit. The delivery care section includes information related to the place of delivery and assistance during delivery. Data on delivery care were obtained for all births that occurred in the five (NDHS,2006) or two (NDHS 2011, 2016) years preceding the survey. The Nepal national protocol recommends three PNC check-ups within 7 days. However, this study analyzes the first PNC check-up, that within 42 days because the NDHS does not record data on the number of PNC check-up in that time period. This study comprises 1,978 women aged 15–49 years who had a live birth in the two years preceding the survey on childbirth, and postnatal care interventions.

## Results and Discussion

The NDHS 2006, 2011, and 2016 data were used to study the changes over time with respect to the use of maternal health care. The findings of the research study are presented in tables. This section comprises the information related to antenatal care and delivery care services and postnatal care.

### Trends of Antenatal Care of Nepal

Antenatal care from a trained provider is important in order to monitor the risks associated with pregnancy and delivery for the mother and her child. The quality of antenatal care can be monitored through the content of services received and the kind of information mothers are given during their visit.

Table 1: Percentage distribution of live births in the five years preceding the survey by antenatal care provider during pregnancy, Nepal, 2006- 2016

Antenatal care provider	2006	2011	2016
Doctor	21.2	26.9	43.0
Nurse/midwife	22.5	31.4	40.6
Health assistant/AHW	12.5	11.4	8.6
MCHW	13.5	12.9	0.8
VHW	2.1	1.4	-
Traditional birth attendant	0.1	-	-
FCHV	1.6	0.9	0.9

Other	0.2	-	0.2
No. ANC	26.2	15.2	5.9
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Number of women	4,066	4,148	3,998

Source: Nepal Demographic Health Survey, 2006, 2011, & 2016.

Table 1 indicates that percentage of births to women receiving antenatal care from doctor has been increased from 21 percent in 2006 to 27 percent in 2011 and 43 percent in 2016. The percentage of births to women receiving antenatal care from Female Community Health Volunteer (FCHW) has been decreased from 1.6 percent in 2006 to 0.9 percent in 2011 and also 0.9 in 2016. Doctor and nurse/midwife are the key persons to provide antenatal care.

### Number of Antenatal Care Visit

Antenatal care is a key maternal service in improving a wide range of health outcomes for women and children. Regular antenatal care is very helpful in identifying and preventing adverse pregnancy outcomes. WHO has recommended that a woman should have at least four ANC visits to provide sufficient antenatal care. It also emphasizes the necessity of more frequent visits in case of any complications.

Table 2: Percentage distribution of women who had a live birth in the five years preceding the survey by number of antenatal care (ANC) for more recent live birth, 2006-2016

Number of ANC visits	2006	2011	2016
Not ANC visit	26.2	15.2	5.9
1 ANC visit	8.5	6.1	3.6
2 -3 ANC visits	35.8	28.6	21.2
4 + ANC visits	29.4	50.1	69.4
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Number of women	4066	4148	3998

Source: Nepal Demographic Health Survey, 2006, 2011, & 2016.

There has been a significant decrease over the past ten years in the proportion of mothers with no antenatal visits. Table 2 indicates that forty-four percent of women made their first antenatal care visit before the fourth month of pregnancy in 2006 and it has decreased to 25 percent in 2016. This study shows that 70 percent of the women received four or

more ANC visits in 2016. It is comparably higher than in previous NDHS studies in Nepal: 50 percent in 2011 and 29 percent in 2006.

## **Delivery Care**

Increasing the percentage of births delivered in health facilities is important for reducing deaths arising from complications of pregnancy. The expectation is that if complications arise during delivery in a health facility, a skilled attendant can manage the complication or refer the mother early to the next level of care. Hence, Nepal is promoting safe motherhood through initiatives such as providing free delivery care and transportation incentive schemes to women delivering in health facilities. Subsidies are also provided to health facilities for free delivery on basis of deliveries conducted (MoH, et al., 2016).

## **Trend of Delivery Care Providers in Nepal**

Health care services after delivery are important for the survival and well-being of both the mother and neonate. Data on delivery care were obtained for all births that occurred in the five years preceding the survey.

Table 3: Percentage distribution of live birth in the five years preceding the survey by delivery care providers, Nepal, 2006 to 2016

<b>Delivery care providers</b>	<b>2006</b>	<b>2011</b>	<b>2016</b>
Doctor	10.4	17.3	31.4
Nurse/midwife	8.3	18.8	26.7
Health assistant/AHW	4.1	3.9	3.9
MCHW	-	2.6	0.3
FCHV	2.2	3.2	2.9
Traditional birth attendant	18.8	11.3	5.3
Relative/other	49.7	40.4	19.6
No one	6.5	3.1	10.0
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Number of births	5545	5391	5060

*Source: Nepal Demographic Health Survey, 2006, 2011, & 2016.*

Table 3 shows the percentage of births assisted at delivery by skilled birth attendants increased from 19 percent in 2006 to 58 percent in 2016. In 2011. From 2006 to 2016, doctors were the major provider during delivery. There has been a significant decline in the proportion of deliveries attended by traditional birth attendants and relatives in 2016 compared to that in 2006. Whereas, the proportion of births taking place without any type of assistance seemed to be decreasing in the first half of the decade from 6.5 percent to 3.1 percent but again increased to 10 percent in 2016.

Table 4: Percentage distribution of live birth in the five years preceding the survey by place of delivery, Nepal, 2006 to 2016

<b>Place of delivery</b>	<b>2006</b>	<b>2011</b>	<b>2016</b>
Government sector	13.1	26.0	43.1
Non-government sector	3.7	2.1	0.6
Private sector	0.9	7.2	10.2
Outside Nepal	-	-	3.4
Home	81.0	63.1	41.4
Other	1.3	1.6	1.2
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Total no. of births	5,545	5,391	5,060

*Source: Nepal Demographic Health Survey, 2006, 2011, & 2016.*

The table shows that in 2006, about 13 percent of births were delivered in the government sector and it has increased by 26 percentage points in 2011 and 43 percent in 2006. About 81 percent delivered at home in 2006. It has decreased to 63 percent delivered at home in 2011 and still 41 percent of births take place at home.

## **Postnatal Check-up**

The postnatal period is important for mothers, as evidence has shown that they are more likely to develop life-threatening complications such as postpartum hemorrhage during this period. A postnatal visit from health personnel can help to prevent or treat most of these conditions. It is recommended that women receive at least three postnatal checkups, the first within 24 hours of delivery, the second on the third day following the delivery, and the third on the seven days after delivery (MoH et al., 2016).

Table 5: Percent distribution of women aged 15-49 who had given birth within five (NDHS, 2006) and two (NDHS, 2011, & 2016) years preceding the survey by the timing of the first postnatal checkup for the last birth in Nepal

<b>Time after delivery of mother's first postnatal check-up</b>	<b>2006</b>	<b>2011</b>	<b>2016</b>
Less than 4 hours	19.7	33.9	45.1
4-23 hours	7.3	7.2	9.4
1-2 days	4.4	3.5	2.3
3-41 days	1.0	9.0	0.14
Don't know	0.6	0.2	0.3
No postnatal checkup	67.0	53.5	41.5
<b>Total number of women</b>	<b>4066</b>	<b>2030</b>	<b>1978</b>

*Source: Nepal Demographic Health Survey, 2006, 2011, & 2016.*

Table 5 depicts the proportion of women with a post-natal check within 2 days after delivery increased from 45 percent in 2011 to 57 percent in 2016. There has been a significant decrease over the past ten years in the proportion of mothers with no postnatal check-up. Twenty-seven percent of women made their first postnatal check-up within 24 hours of birth in 2006 and it has significantly increased to 54.5 percent in 2016.

### **Postnatal Check-up Provider**

The postnatal period; although critical, is still the most neglected period in Nepal. The use of the recommended three postnatal checkups within seven days after delivery plays a vital role in preventing maternal and neonatal deaths. Providing postnatal care services at right time could help to reduce maternal and newborn deaths.

The study reveals that percentage of women who received their first postnatal care from a doctor/nurse/midwife increased from 39 percent in 2011 to 52 percent in 2016. Two percent of mothers received care from a health assistant, or auxiliary health worker in 2006 and 3.9 percent in 2016. The proportion of births with no postnatal checkup seemed to be decreasing from 67 percent in 2006 and 43 percent in 2016 (Table 3).



Table 6: Percent distribution of women aged 15-19 who had given birth within five (NDHS, 2006, & 2011) and two (NDHS, 2016) years preceding the survey by the provider at the first postnatal check for the last live birth in Nepal

Postnatal check-up provider	2006	2011	2016
Doctor	9.2	16.2	52.5
Nurse/midwife	9.3	22.7	
Health assistant/AHW	2.1	2.7	3.9
MCHW/VSW	1.1	1.7	0.3
FCHV	-	1.2	1.0
Traditional birth attendant	11.0	-	-
Relatives/others	0.4	-	0.0
No check-up	67.0	55.5	43.3
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Number of women	4,066	2030	1,978

Source: Nepal Demographic Health Survey, 2006, 2011, & 2016.

## Discussion

The study analyzes the trends of maternal health care utilization over the period of 2006 to 2016 in Nepal. There is a substantial increase in the utilization of antenatal care (ANC) by skilled health providers from 2006 to 2016, 44 percent to 84 percent respectively, (MoH et al., 2017). This study shows that 70 percent of the women received four or more ANC visits in 2016. It is comparably higher than in previous NDHS studies in Nepal: 50 percent in 2011 and 29 percent in 2006. However, national-level demographic surveys of India, (2015) and Bangladesh (2014) demonstrated the coverage of at least four ANC visits to be 50 percent (International Institute for Population Sciences, & ICF, 2017) and 31 percent (NIPORT et al., 2016), respectively.

Women who complete ANC visits are probably encouraged to use effective measures for safe delivery. The use of recommended ANC service, place of delivery and skilled attendance during delivery were significantly associated with the utilization of postnatal care. Timely contact between pregnant women and healthcare professionals during ANC visits may inspire women and help them realize the value of giving birth in a health facility. This study shows the percentage of women who received their first postnatal care from a doctor/nurse/midwife increased from the 2006 to 2016. The percentage of first PNC check-ups within 42 days among women for their last childbirth has slightly increased

over the period 2006 to 2016. The availability of health services and understanding of the importance of postnatal check-ups are very important in improving uptake.

## **Conclusion**

The study analyzes the trends of maternal health care utilization over the period of 2006 to 2016 in Nepal. This study provides a better understanding of antenatal care, delivery care and postnatal care. This study analyzes the utilization of maternal healthcare services among women of the reproductive age group in Nepal is still inadequate. A substantial proportion of women did not receive WHO-recommended adequate antenatal care (ANC), or delivery care (DC) and postnatal care (PC) services in this country. Still, two-fifth of delivery takes place at home. Nearly half of the mothers had not utilized postnatal services. However, this study analyzes the first PNC check-up, that within 42 days because the NDHS does not record data on the number of PNC check-ups in that time period. Thus, there is a scarcity of updated information in Nepal regarding the utilization of sufficient postnatal check-ups according to WHO's protocol. In addition, improving the quality of the service and timely service, particularly in government health facilities may increase the use of Maternal health services. To turn the goals of universal health coverage into reality, policies and programs should focus on increasing the uptake of essential maternal and child health services.

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