

Utilization of Antenatal Care Services and Pregnancy Outcomes among Mothers in a Hospital of Banke

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ABSTRACT

Introduction: Antenatal care is essential care package providing to women during pregnancy. Adequate and effective antenatal care service utilization helps in increasing good maternal and newborn outcomes. The objective of the study was to find out the utilization of antenatal care services and pregnancy outcomes among mothers.

Methods: A cross-sectional study design was used among 196 mothers attended at postnatal ward in Bheri hospital. Non-probability purposive sampling technique was used to select sample for the study. The data were collected using face to face interview technique by using structured schedule and antenatal record review. The collected data were analyzed by using descriptive statistics (frequency, percentage, mean and standard deviation) and inferential statistics (chi square test).

Results: Findings showed that 5.1% of mothers had complete utilization of antenatal care services. More than half (63.8%) had good maternal outcomes (no hypertension, no pre-eclampsia etc.) and 54.1% had good neonatal outcomes (well breathing, APGAR score more than seven within one minute and normal birth weight). There was a statistically significant association of utilization of antenatal care services with respondents' occupation ($p=0.001$). There was a statistically significant association between respondents' occupation and maternal outcomes ($p=0.015$). There was statistically significant association between respondents' education and newborn outcomes ($p=0.042$).

Conclusions: The majority of respondents had incomplete utilization of antenatal care services. The majority of respondents have good maternal outcomes, and more than half respondents have good newborn outcomes. Activities to encourage public for utilization of complete antenatal care services by concerned health authorities might increase utilization of antenatal care services.

Keywords: Mother, pregnancy outcomes; utilization of antenatal care services

INTRODUCTION

Antenatal care (ANC) is the term for medical attention that skilled healthcare providers provide to pregnant mothers during their pregnancy with the goal of achieving the greatest possible health outcomes for both the mother and the unborn child. Antenatal care includes risk assessment, health promotion, health education, and management of pregnancy-related illnesses.¹

Globally, 287,000 women died during and following pregnancy and childbirth. Almost 95% deaths occurred in low and lower middle-income countries.² Most of these complications develop during pregnancy and most are preventable or treatable. The major complications (nearly 75%) of all maternal deaths are: severe bleeding and infections mostly occur after childbirth, high blood pressure during pregnancy may cause pre-eclampsia and eclampsia as well as delivery

complications and abortion.¹ Antenatal care services provide health promotion, screening and diagnosis, and disease prevention. It is vital health care services to reduce the risk of stillbirths, preterm labor and pregnancy complications. Maternal deaths occur in developing countries due to lack of health care service utilization during pregnancy and childbirth. According to WHO recommendations, pregnant women should make their initial visit within the first 12 weeks of pregnancy, and then again at 20, 26, 30, 34, 36, 38, and 40 weeks. Improved maternal and fetal health is one way that timely and adequate prenatal care lowers perinatal mortality.³ This is also one of the key components to achieve the Sustainable Development goals by 2030. Therefore, the researchers were interested to find out the utilization of antenatal care services and pregnancy outcomes among mothers.

METHODS

A descriptive cross-sectional study was conducted in the Bheri hospital of Banke from September to October 2023. A sample size of 196 postnatal mothers was calculated from data of delivered cases in the study setting. Postnatal mothers aged 19-49 years who had delivered by vaginal or caesarean section admitted in postnatal ward in Bheri hospital and stay at least 24 hours were included in the study. Non-probability purposive sampling technique and record review was used to select sample for the study. Mothers who were unwilling to participate and who were diagnosed with mentally ill were excluded in the study.

Ethical approval was obtained from Universal College of Medical Sciences' Institutional Review Committee to conduct the study. Written informed consent was obtained voluntarily from each mother by explaining about the purpose, risk and benefits of the study. Brief history was taken through interview and pregnancy outcome was filled from patient admission chart.

In this study, complete utilization: utilization of antenatal care services completely (≥ 8 times) and incomplete utilization: partial utilization of antenatal care services (< 8 times). Maternal

outcomes refer to good maternal outcomes (without complication) and poor maternal outcomes (experienced complications e.g. pregnancy related problems like pregnancy induced hypertension, pre-eclampsia, eclampsia, postpartum hemorrhage etc.). Regarding newborn outcomes, good outcomes: breathing well, normal birth weight, APGAR more than 7 within one minute and poor outcomes: e.g. Low birth weight, preterm birth, poor feeding, stillbirth, early neonatal death, meconium aspiration, congenital anomalies and others.

After getting administrative approval, the first author collected data using face to face interview method. A self-developed structured questionnaire was used to interview respondents. In addition, record reviews were used to gather data. The completeness of all the data was promptly reviewed and checked immediately. The gathered information was examined, coded, edited, and categorized and entered, cleared, and arranged in Microsoft office Excel worksheet. Then, using the Statistical Package for Social Sciences Software version 20, the acquired data were analyzed using descriptive statistics (frequency, percentage, mean, and standard deviation) and inferential statistics (Chi square test). Association of antenatal care services utilization, maternal, and neonatal outcomes with selected socio-demographic variables of women and her husband was assessed using Chi Square test. The p value of less than 0.05 was considered as significant.

RESULTS

Mothers' socio-demographic variables shows that 33.2% were 23-26 years age group. Mean age was 25.24 ± 3.97 . About 43.9% had secondary education and 10.2% had no education. The majority (73.5%) were homemakers, 39.3% belonged to joint families. In education, 43.9% of husbands had secondary education. Regarding occupation, 44.4% of husbands were service (Table 1).

Table 2 shows 39.3% of the mothers were first gravid. Cent percent had done antenatal visit. Almost all (95.9%) had done eight times visit

Only 14.8% had taken folic acid, 85.2% had taken iron tablets 96.9% had done deworming, 98.5% had taken tetanus diphtheria vaccine, 90.8% had done blood test, 98.5% had done urine test, 99.5% had done blood pressure check and ultrasound respectively. Majority (69.4%) had received counseling on PMTCT and HIV testing. About 27% had done height measurements and 99% had done weight measurements. Received education on diet 96.9%, on personal hygiene including genital hygiene 76.5%, on rest and sleep

91.5%, on smoking 79.5%, on alcohol 77.5%, on sexual intercourse 45.4%, on travel 83.6%, on danger signs 87.7% and heavy workload 92.8%. Clean clothes preparation for baby and mother 83.6%, money saving 83.0%, identify blood donor 55.6%, transportation 68.3% on identify the health centers 90.8%.

About the status of utilization of antenatal care services, it shows that only 5.1% had complete utilization of antenatal care services (Table 3).

Table 1: Socio-demographic Characteristics of Mother (n=196)

Variables	Number	Percentage
Age (in years)		
19-22	56	28.6
23-26	65	33.2
27-30	58	29.5
31-34	17	8.7
Mean age \pm SD=25.24 \pm3.97		
Education		
No education	20	10.2
Basic education	66	33.7
Secondary education	86	43.9
Above secondary	24	12.2
Occupation		
Homemaker	144	73.5
Daily wages	6	3.1
Agriculture	9	4.6
Services	19	9.7
Self employed	18	9.2
Family type		
Nuclear	51	26.0
Joint	77	39.3
Extended	68	34.7
Education of husband		
No education	8	4.1
Basic education	68	34.7
Secondary education	86	43.9
Above secondary	34	17.3
Occupation of husband		
Daily wages	14	7.1
Agriculture	40	20.4
Services	87	44.4
Self employed	55	28.1

Table 2: Antenatal related Characteristics of Mothers (n=196)

Variables	Number	Percentage
Gravid		
First	77	39.3
Second	72	36.7
Third	26	13.3
Four or more	21	10.7
Antenatal visit done	196	100
Number of antenatal visit		
One	3	1.5
Two	1	0.5
Three	4	2.0
Eight	188	95.9
Supplements intake		
Folic acid	29	14.8
Iron tablets	167	85.2
Deworming	190	96.9
Tetanus diphtheria vaccine	193	98.5
Investigations		
Blood test	178	90.8
Urine test	193	98.5
Ultrasound	195	99.5
HIV test	60	30.6
Measurements		
Blood pressure	195	99.5
Height	53	27.0
Weight	194	98.9
Women got health education		
Nutrition	190	96.9
Personal hygiene focus on genital	150	76.5
Rest and sleep	180	91.8
Avoidance of smoking	156	79.5
Avoidance of alcohol	152	77.5
Avoidance of sexual intercourse	89	45.4
Avoidance of long travel	164	83.6
Danger signs	172	87.7
Avoidance of heavy workload	182	92.8
Preparation of clean clothes	164	83.6
Saving money	163	83.0
Identify blood donors	109	55.6
Arrangement of transportation	134	68.3
Identify the health centers	178	90.8

Table 3: Respondents' Status of Utilization on Antenatal Care Services

Variables	Number	Percentage
Complete utilization (ANC visit \geq 8)	10	5.1
Incomplete utilization (ANC visit < 8)	186	94.9
Total	196	100.0

Table 4 shows mothers' outcomes. The majority (63.8%) of mothers had no complications and 36.2% had poor outcomes. Poor outcomes among mothers included pregnancy induced hypertension 17.8%, preeclampsia 6.1%, eclampsia 1.02%, postpartum hemorrhage 16.3%, urinary tract infection 5.1%, wound infection 3.06% and shock 1.5%. Newborn related variables where in good outcomes, breathing well babies were 65.3%, APGAR score more than seven within one minute 63.8% and normal weight babies were 82.7%. Regarding

poor outcomes, low birth weight 17.3 preterm birth 7.6%, poor feeding 30.6%, stillbirth 2%, neonatal death 1%, meconium aspiration 10.7%, congenital anomalies 3.5 % and skin infections 1.5 %.

Table 5 shows the association of utilization of antenatal care services with mothers socio-demographic variables. There was statistically significant association of utilization of antenatal care services with occupation ($p < 0.001$).

Table 4: Pregnancy outcomes related characteristics (n=196)

Variables	Number	Percentage
Maternal Good outcomes	125	63.8
Poor outcome* (n=71)	71	36.2
Pregnancy induced hypertension	35	17.8
Preeclampsia	12	6.1
Eclampsia	2	1.02
Postpartum haemorrhage	32	16.3
Urinary tract infection	10	5.1
Infection	6	3.06
Shock	3	1.5
Neonatal good outcomes*		
Breathing well	128	65.3
APGAR score more than seven within one minute	125	63.8
Normal weight	162	82.7
Poor outcomes*(n=90)		
Low birth weight	34	17.3
Preterm birth	15	7.6
Poor feeding	60	30.6
Stillbirth	4	2
Neonatal death	2	1
Meconium aspiration	21	10.7
Congenital anomalies	7	3.5
Skin infection	3	1.5

*Multiple responses

Table 5: Association Regarding Status of Utilization of Antenatal Care Services with Socio-demographic Variables of Mother (n=196)

Variables	Status of utilization		χ^2 value	p- Value
	Complete utilization No. (%) (n=10)	Incomplete utilization No. (%) (n=186)		
Age (in years)			0.013F	0.908
19-26	6(5.0)	115(95.0)		
25-29	4(5.3)	68(94.7)		
Education			7.020L	0.071
No education	0(0)	20(100)		
Basic education	1(1.5)	65(98.5)		
Secondary education	6(7)	80(93)		
Above secondary	3(12.5)	21(87.5)		
Occupation			0.000F	0.001
Earning	1(0.7)	143(99.3)		
Not earning	9(17.3)	43(82.7)		
Family type			0.238L	0.875
Nuclear	4(7.8)	47(92.2)		
Joint	4(5.2)	73(94.8)		
Extended	2(2.9)	66(97.1)		
Gravida			0.128L	0.988
First	4(5.2)	73(94.8)		
Second	4(5.6)	68(94.4)		
Third	1(3.8)	25(96.2)		
Fourth or above	1(4.8)	20(95.2)		
Husband Age			1.000F	0.619
20-32	8(5.2)	145(94.8)		
33-44	2(4.7)	41(95.3)		
Husband Education			5.73L	0.125
No education	0(0)	32(100)		
Basic education	2(4.5)	42(95.5)		
Secondary education	4(4.7)	82(95.3)		
Above secondary	4(11.8)	30(88.2)		
Husband Occupation			5.63L	0.131
Daily wages	0(0)	14(100)		
Agriculture	1(2.5)	39(97.5)		
Service	3(3.4)	84(96.6)		
Self employed	6(10.9)	49(89.1)		

*Significant at p value <0.05 chi-square Likelihood Fisher test

Table 6: Association between Maternal Outcomes and Socio-demographic Variables of Respondents (n=196)

Variables	Good outcomes	Poor outcomes	p-value
	No. (%)	No. (%)	
Age (in years)			0.037
19-26	84 (69.4)	37 (30.6)	
27-34	41(54.7)	34 (45.3)	
Education			0.149
No education	8 (40)	12 (60.0)	
Basic education	20 (30.3)	46 (69.7)	
Secondary education	36 (41.9)	50 (58.1)	
Above secondary	7 (29.2)	17(70.8)	
Occupation			0.002
Earning	101 (70.1)	43 (29.9)	
Not earning	24 (46.2)	28 (53.8)	
Family Type			0.546
Nuclear	33(64.7)	18(35.3)	
Joint	52(67.5)	25(32.5)	
Extended	40(58.8)	28(41.2)	
Gravida			0.265
First	52(57.5)	25(32.5)	
Second	47(65.3)	25(34.7)	
Third	12(46.2)	14(53.8)	
Fourth or above four	14(66.7)	7(33.3)	
Husband age			0.836
20-32	97(63.4)	56(36.6)	
33-44	28(65.1)	15(34.9)	
Education			0.349
No education	21(65.6)	11(34.4)	
Basic education	23(52.3)	21(47.7)	
Secondary education	58(67.4)	28(32.6)	
Above secondary	23(67.6)	11(32.4)	
Occupation			0.290
Daily wages	9(64.3)	5(35.7)	
Agriculture	30(75.0)	10(25.0)	
Services	50(57.5)	37(42.5)	
Self-employed	36(65.5)	19(34.5)	

*Significant at p value <0.05 χ^2 =chi-square L=Likelihood ratio

Table 6 shows the association between maternal outcomes and socio-demographic variables. There was a statistically significant association between maternal age ($p=0.037$) and occupation ($p=0.002$) with maternal outcomes.

Table 7 shows the association between neonatal outcomes and socio-demographic variables. There was a statistically significant association between maternal education ($p=0.042$) and neonatal outcomes.

Table 7: Association between Neonatal Outcomes and Socio-demographic Variables of Respondents and husband (n=196)

Variables	Neonatal outcomes		χ^2 -value	p-value
	Good outcome No (%) (n=106)	Poor outcome No (%) (n=90)		
Age (in years)			1.714	0.191
19-26	61(50.4)	60(49.6)		
27-34	45(60.0)	30(40.0)		
Education			8.205	0.042
No education	10(50)	10(50)		
Basic education	30(45.5)	36(54.5)		
Secondary education	47(54.7)	39(45.3)		
Above secondary	19(79.2)	5(20.8)		
Occupation			0.475	0.491
Earning	80(55.6)	64(44.4)		
Not earning	26(50.0)	26(50.0)		
Family type			0.711	0.701
Nuclear	29(56.9)	22(43.1)		
Joint	43(55.8)	34(44.2)		
Extended	34(50)	34(50)		
Gravida			0.830	0.980
First	41(53.2)	10(31.2)		
Second	39(54.2)	26(59.1)		
Third	15(57.7)	41(47.7)		
Fourth or above	21(61.8)	13(38.2)		
Age (in years)			0.904	0.342
20-32	80(52.3)	73(47.7)		
33-44	26(60.5)	17(39.5)		
Education			6.762	0.080
No education	22(68.8)	10(31.2)		
Basic education	18(40.9)	26(59.1)		
Secondary education	45(52.3)	41(47.7)		
Above secondary	21(61.8)	13(38.2)		
Occupation			4.457L	0.216
Daily wage earners	11(78.6)	3(21.4)		
Agriculture	20(50.0)	20(50.0)		
Services	44(50.6)	43(49.4)		
Self employed	31(56.4)	24(43.6)		

*Significant at p value<0.05 χ^2 =chi-square L=Likelihood ratio

DISCUSSION

Regarding socio-demographic characteristics, 38.8% mothers were 20-24 years age group, 43.9% 73.5% were homemakers. Regarding family type, 39.3% belonged to joint families. Regarding husbands, 36.2% were 25-29 years of age group, 43.9% had secondary education, and 28.1% were self-employed. There were 39.3% first gravid and 10.7% were gravid four or more. Regarding type of delivery, more than half (51.5%) were normal vaginal delivery and only 6.6% were vaginal instrumental delivery. According to study findings of Kaski, Pokhara, 97.0% of women had done ANC visit during pregnancy which is similar in this study that is 100%.⁴ The study findings of the Bhairahawa showed that antenatal visit 2 times 2.67%; 3 times 4%; 4 or more times 93.3% which is similar in this study that is one time 1.5%, two times 0.5%, three times visit 2% and four or more times visit 95.9%.⁵ The study findings of the Rupandehi, Nepal 82% had taken folic acid supplementation during pregnancy which is inconsistent with the findings of this study that is 29%.⁶ The inconsistency result might be due to variation in sampling technique that is purposive sampling technique and setting that is non-governmental hospital. The study findings in Gorkha, Nepal which showed 82% mothers had received iron supplementation which is similar 85.2% had taken iron supplementation during pregnancy.⁷ The findings of the study in Bhairahawa showed that 98.0% mothers had received albendazole tablets during pregnancy which is similar in this study that is 96.9%.⁵ The study findings in Jumla, Nepal showed 96.5% of mothers had received TD vaccine which is similar in this study that is 98.5%.⁸ The findings of the study in Demographic health survey in Nepal showed 11% of women received PMTCT counseling and done HIV test during pregnancy which is contrast in this study that is 30.6% due to sampling technique and ecological variation.⁹ The findings of the study in Kaski, Nepal showed 92.8% had done blood test which is similar in this study that is 90.8%.¹⁰ The study findings showed in Bhairahawa, Nepal cent percent of women had done urine test and 98.6% of women had done ultrasound which is similar in this study that is

98.5% urine test and 99.5% done ultrasound.⁵ The findings of the study in Demographic health survey in Nepal showed 91.8% women had checked their blood pressure which is similar in this study that is 99.5%.⁹ The findings of the study in Jumla, Nepal which showed 86.9% of mothers had taken height measurement during antenatal visit which is contrast in this study that is 27.0%. The inconsistency result might be due to variation sampling technique that is simple random sampling technique.⁸ The findings of the study in Jumla, Nepal which showed 98.6% of respondents had taken weight measurement in antenatal visit which is similar in this study that is 99.0%.⁸ The findings of the study in Kaski, Nepal which showed 97.6% had received advice on diet which is similar in this study that is 96.6%.¹⁰ The findings of the study in Bhairahawa showed that 90.54% of mothers had received education on avoidance of sexual intercourse and danger signs 39.86% which is contrast in this study that is 45.4% and 87.8%. This inconsistent result might be due to variation in settings that is non-governmental hospital.¹¹ The findings of the study showed that on personal hygiene 76.5%, on rest and sleep 91.8%, on smoking 79.6%, on alcohol 77.6%, on travelling 83.7%, and on heavy workload 92.9% had received counseling. The findings of the study in Demographic health survey in Nepal showed 79.2% respondents had counseled on complication readiness which is similar in this study that is 76.5%.⁹ The findings of the study in Butwal, Nepal showed 81.1% of the women had done complete ANC which is contrast in this study that is full utilization 5.1% and partial utilization 94.9%. The inconsistency result might be due to variation in sampling technique that is cluster random sampling technique.¹¹ The findings of the study in Sri Lanka which showed maternal outcomes without complication 91.7% which is contrast in this study that is 63.8%. The inconsistency result might be due to variation in setting.¹² The findings of the study in Northern Ethiopia which showed 20.9% had hypertension and 8% of mother had pre-eclampsia which is similar in this study that is 17.9% had pregnancy induced hypertension and 6.1% had pre-eclampsia.¹³ The findings of the study in Sri Lanka which showed eclampsia

had 0.5% and wound infection had 0.9% which is similar in this study that is eclampsia had 1.0% and wound infection had 3.0%.¹² The findings of the study in Ethiopia which showed 4.3% had postpartum hemorrhage which is contrast in this study that is 16.3%. The inconsistent result might be due to variation in sample size, sampling technique setting and duration of data collection period.¹⁴ The findings of the study Sri Lanka which showed 58% had good outcomes in neonates which is similar in this study that is 54.1%.¹² The findings of the study in Sri Lanka which showed 0.9% meconium aspiration and 0.5% poor feeding which is contrast in this study that is meconium aspiration 10.7% and poor feeding 30.6%. The inconsistency result might be due to variation in sampling technique non-probability consecutive sampling technique and population that is advanced age 35 years.¹² The findings of the study in Kathmandu which showed 15.3% low birth weight which is similar in this study that is 17.3%.¹⁵ The findings of the study in Sri Lanka which showed still birth 0.5%, preterm birth 3.2%, congenital anomalies 0.5% and skin infection 2.3% which is similar in this study that is still birth 2%, preterm birth 7.7%, congenital anomalies 3.6% and skin infection had 1.5%.¹² The findings of the study in Ethiopia which showed 2.7% neonatal death which is similar in this study that is 1.0%.¹⁴ The finding of the study in Chitwan which showed occupational status the respondents was significantly associated with antenatal care services utilization which is similar in this study that is association of utilization of antenatal care services with occupation ($p < 0.001$).¹⁶ There was no statistically significant association of utilization of antenatal care services with respondent age, education, family and gravid. There was no statistically significant association of utilization of antenatal care services with spouse age, education and occupation. There was a statistically significant association between maternal age ($p = 0.037$) and occupation ($p = 0.015$) with maternal outcomes. Whereas, education, family type and gravid were not statistically significant association with maternal outcomes. There was no statistically significant association between respondents' spouse age, education and occupation with maternal outcomes. There

was statistically significant between maternal education and neonatal outcomes ($p = 0.042$). Whereas, age, occupation, family type and gravid were not statistically significant association with neonatal outcomes. There was no statistically significant association between respondents' spouse age, education and occupation with neonatal outcomes.

CONCLUSIONS

Study concludes that all the mothers have done antenatal visit. Almost all mothers had completed four or more than four antenatal visit according to protocol of government of Nepal. Regarding maternal outcomes, the majority mothers have a good outcome and in neonatal outcomes, more than half has good outcome. The pregnancy induced hypertension was the commonest problem among mothers. Whereas, poor feeding was commonest problem among new borns. The occupation of mothers tends to be associated with utilization of antenatal care services. Age and occupation tends to be associated with maternal outcome. Likewise, education was associated with neonatal outcomes. Based on these findings, the availability and quality of antenatal care services needs further strengthening and increasing awareness regarding the antenatal services and its benefits among the general population.

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CONFLICT OF INTEREST: None

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