



ORIGINAL ARTICLE

Socio-economic and Demographic Determinants of Antenatal Care Services Utilization in Central Nepal

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ABSTRACT

Background/Objective: The importance of maternal health services in lessening maternal mortality and morbidity as well as neonatal deaths has received substantial recognition in the past decade. The lack of antenatal care has been identified as a risk factor for maternal mortality and other adverse pregnancy outcomes. The purpose of this study was to determine the factors affecting attendance of antenatal care services in Nepal.

Methods: This is a cross-sectional descriptive study carried out in Central Nepal. Using semi-structured questionnaire, interviews were conducted with married women aged between 15-49 years, who had delivered their babies within one year. Systematic random sampling method was used to select the sample. Results were obtained by frequency distribution and cross-tabulation of the variables.

Results: More than half of the women were not aware of the consequences of lack of antenatal care. Age, education, income, type of family were strongly associated with the attendance at antenatal care service.

Conclusions and Public Health Implications: In Nepal and in other developing countries, maternal mortality and morbidity continue to pose challenges to the health care delivery system. Variety of factors including socio-demographic, socio-economic, cultural and service availability as well as accessibility influences the use of maternal health services.

Key words: Antenatal care • Maternal health services • Antenatal care services • Nepal

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Background and Introduction

The maternal health care services that a mother receives during her pregnancy and at the time of delivery are important for the well being of the mother and her child. Antenatal care (ANC) is an essential component of maternal and child health services. Pregnancy-related complications are a leading cause of death among women in the reproductive ages in developing countries. Proper antenatal care check-up and delivery under safe and hygienic conditions can significantly lessen the risk of maternal morbidity and mortality as well as neonatal deaths. The importance of maternal health services in reducing maternal and infant morbidity and mortality has been emphasized in a number of studies^[1,2,3].

The Government of Nepal has developed various policies and strategies to move towards the commitments to the Millennium Development Goals (MDG) 5. The maternal mortality trend derived from household surveys in 1996 and 2006 suggests that Nepal may achieve the MDG5 which aims at reducing in maternal mortality for a three-quarter by 2015. However, the related MDG indicator on the proportion of women who are receiving maternal health services during pregnancy is still low. Nearly 27% of pregnant women in Nepal are deprived of antenatal care by skilled provider and 15% received no antenatal care at all^[4]. A comprehensive study that shows the relation between associated factors determining the actual attendance at antenatal care services is urgent. Hence this study was carried out to find out the factors affecting the utilization of antenatal care services.

Methods

This is a cross-sectional descriptive study carried out in Makawanpur district of Central Nepal. Makwanpur District, a part of Narayani Zone, is one of the 75 districts of Nepal. The district, with Hetauda as its district headquarters, has one Municipality and 43 Village Development Committee (VDCs). It covers an area of 2,426 km². The total population of this district is 420,477 among which married women of reproductive age are 112,187^[5]. A screening camp was organized to understand the prevalence of uterine prolapse in Makwanpur District. Data for

ANC visit were collected from the women who visited the screening camp. No formal written ethical approval was obtained, however, verbal consent was obtained from each individual participant prior to interview.

Altogether, eight camps were conducted for 5 days in different parts of the district to understand the prevalence of uterine prolapsed women in that area. From the same screening camp, information on ANC coverage was collected from married women of reproductive age who had a live birth in the one year preceding the survey.

Initially, each screening camp was identified as a cluster. Then, all the women in the clusters were listed and numbers were given to those women who had delivered their babies within one year. Twenty seven samples were drawn from each cluster (random systematic). To begin with the sampling ratio, K/n (K =total population size/ n =size of desired sample) and the random start was identified. Then each sample was extracted by choosing every K^{th} entry. After taking an informed verbal consent, an interview was taken with the help of semi-structured questionnaire to collect all the required information.

The collected data were coded, entered into and analyzed with software SPSS version 16^[6]. Results were obtained by the frequency distribution and cross-tabulation of the variables. Chi-square tests were performed to determine whether there were statistically significant associations between the antenatal visits and socio-demographic variables and other related indicators as well. The p value was set at <0.05 for statistical significance.

Result and Discussion

Awareness and Utilization of ANC Services. Like many other developing countries, a sizable population of women in Nepal lacks awareness of and few utilize ANC services. This study result shows that only 104 women i.e., 47.7% attended at least one ANC service which was lower than the national average (58.3%). The percentage of pregnant women attending at least four ANC visits was found to be 30.7% which was lower than the national data available (50.1). The proportion of women receiving antenatal care from a skilled provider (24%) has more than doubled (58%) in the

past 15 years^[4]. The mean number of ANC services received by pregnant women was 3.8835 (SD 1.42) against 4, the recommended number of check-ups under safer motherhood program (see Table 1).

Age, Religion, Caste System and ANC Utilization.

Younger women (≤ 25 years) are more likely to receive antenatal care than older women (≥ 31) (Table 1). The relationship between age and the utilization of

ANC services was found to be statistically significant. Women in lower age group were more likely to have ANC services for more than four times than the women in higher age group. As in a study by Swenson^[7] women who were under the age of 30 were more likely to receive ANC services than were those over 30 years of age. Within ethnic group, disadvantaged groups such as Janajatis like Magar, Rai, Tamang, Danuwar were less likely to receive ANC

Table 1. Association Between Study Factors of Respondents and Ante Natal Care Visits

Indicators	N	%	ANC Visit (N=216)			Frequency of ANC Visits (N=104)		p Value
			No	Yes	p Value	1-3 visits	≥ 4 visits	
Current age (Mean age -30.43 years ; SD- 3.26 years)								
Up to 25	20	9.3	25.0	75.0	p=.009	25.0	50.0	P=.004
26-30	83	38.4	48.2	51.8		12.0	39.8	
Above 31	113	52.3	60.2	39.8		19.5	20.4	
Ethnic group								
Upper caste groups	62	28.7	33.9	66.1	p<.000	16.1	50.0	p<.000
Disadvantages Janajatis	99	45.8	67.7	32.3		12.1	20.2	
Dalit	55	25.5	45.5	54.5		27.3	27.3	
Religion								
Hindu	109	50.5	55.0	45.0	p=.018	16.5	28.4	p=.024
Buddhist	76	35.2	57.9	42.1		18.4	23.7	
Christian	31	14.4	29.0	71.0		16.1	54.8	
Family type								
Single	112	51.9	45.5	54.5	p=.038	12.5	27.9	P=.081
Joint	104	48.1	59.6	40.4		21.4	33.0	
Female Education								
No education	71	32.9	74.6	25.4	p<.000	12.7	12.7	p<.000
Primary	79	36.6	58.2	41.8		7.6	34.2	
Secondary	23	10.6	30.4	69.6		26.1	43.5	
SLC above	43	19.9	16.3	83.7		37.2	46.5	
Female occupation								
Agriculture	147	68.1	65.3	34.7	p<.000	12.2	22.4	p<.000
Wage labor	7	3.2	42.9	57.1		0.0	57.1	
Service	26	12.0	19.2	80.8		26.9	53.8	
Housewife	36	16.7	25.0	75.0		33.3	41.7	

Indicators	N	%	ANC Visit (N=216)			Frequency of ANC Visits (N=104)		p Value
			No	Yes	p Value	1-3 visits	≥ 4 visits	
Husband occupation								
Agriculture	60	27.8	61.7	38.3	p= .052	13.3	25.0	p<.000
Wage labor	44	20.4	52.3	47.7		4.5	43.2	
Service	66	30.6	51.5	48.5		21.2	27.3	
Business	36	16.7	50.0	50.0		13.9	36.1	
Foreign employment	10	4.6	10.0	90.0		80.0	10.0	
Family income								
Below 10000	123	56.9	74.8	25.2	p<.000	8.9	16.3	p<.000
10001-15000	66	30.6	30.3	69.7		24.2	45.5	
Above 15001	27	12.5	3.7	96.3		37.0	59.3	
Age at 1st pregnancy (Median age- 24 years; SD- 2.382 years)								
Up to 20	12	5.6	83.3	16.7	p=.006	16.7	0.0	P<.000
21-25	152	70.4	48.0	52.0		13.8	38.2	
26-30	45	20.8	64.4	35.6		22.2	13.3	
Above 31	7	3.2	14.3	85.7		57.1	28.6	
Parity (Mean child birth - 2.1667; SD- 0.69550)								
1	31	14.4	32.3	67.7	p=.039	29.0	38.7	p=.041
2	124	57.4	51.6	48.4		17.7	30.6	
3	55	25.5	63.6	36.4		7.3	29.1	
4	6	2.8	66.7	33.3		33.3	0.0	
Place of delivery								
Home	115	53.2	85.2	14.8	p<.000	13.9	0.9	p<.000
Health facility	101	46.8	14.9	85.1		20.8	64.4	
Mass media exposure								
Yes	121	56.0	41.3	58.7	p<.000	19.0	39.7	p=.001
No	95	44.0	66.3	33.7		14.7	18.9	
Total	216	100	113	103		37	67	
			(52.3)	(47.7)		(17.0)	(30.7)	

* Numbers in the bracket indicates percentages

services than the Brahmin and Chetri. Upper caste groups like Brahmin, Chetri and Dalit women were more likely to complete the recommended number of ANC checkups than the women in disadvantaged janajatis. Similar to other studies^[8,9,10,11] the relationship between ethnicity and ANC visits was found to

be statistically significant. Within religion, Christians are more likely to go for ANC visits than the Hindus and Buddhists. Similar to this study, results from various studies^[8,11,12] show the significant association between the religion and attendance of ANC services.

Education and ANC Services. There is a significant difference between the type of family and the attendance of ANC service. Nearly 55% of women living in nuclear family received antenatal care as compared with 40.4 % of women in joint family. But women living in joint families were more likely to attend regular ANC services than the women in single families. The use of antenatal care services gradually increases with an increase in mother's level of education. Women with higher education were twice more likely to receive antenatal care than women with no education. This means that education is a determining factor in the utilization of ANC services which is in contrast with the findings of Simkhada et al.^[13]. As compared to those with higher education, women with lower education were more likely to attend irregular ANC services. Previous studies also have reported low maternal education as a predictor of ANC services^[8,9,11,14,15,16,17,18,19,20,21,22].

Occupation and ANC Services. There was a significant difference in the utilization of antenatal care services between the women engaged in service and the women in agriculture. Nearly 81% women involved in service received antenatal care, compared with only 34.7% of women in agriculture. Women in waged labor and in service were more likely to attend regular ANC services than any other occupation which contrasts with the study result provided by Gubhaju^[9] and Gill et al.^[22] Akin to the study by Islam et al.^[23] and Gebreselassie^[24], in this study also significant association was observed when looking at the percentage of women receiving ANC service according to husband's occupation. Women in families with high income were three times more likely to receive ANC services than the women in the families with low income. Similar findings have been reported in previous studies^[8,9, 12,16,17,18,19,20,21,23,25] that women from less income are less ANC attendants than those of more income.

Parity and ANC Services. The relationship between age at first pregnancy and the utilization of ANC services was also found to be statistically significant. As the age at first pregnancy increases, the chances of receiving ANC services also increase. The proportion of women receiving ANC services among

women with low age at first pregnancy was 16.7%. That figure increased to 85.7% when the age at first pregnancy increased to 31 years and above. Antenatal care is particularly related to birth order. Similarly, in this study also women with lower parity are more likely to receive ANC services in contrast to women with higher parity which is similar with the findings of various studies^[10,12,13,14,26] that parity had a statistically significant effect on adequate attendance. This study results contradicts the findings by Onasoga et al.^[21].

Exposure to Media and ANC Services. The relation between mass media exposure to the utilization of ANC services was found to be statistically significant. As the exposure to mass media increases the chances of attending ANC services also increases. Nearly two-third of women who are exposed to mass media used ANC services more often than did women with no exposure. (See Table 1)

Tetanus Toxoid, Iron Fortification and ANC Services. Out of 47.7 % women who attended ANC visit during their entire pregnancy, nearly 64 % of women make four or more antenatal care visits. More than two-thirds (71.8 %) of women received two or more doses of Tetanus Toxoid injections and 88.3 % received Iron tablets during their last pregnancy. Even all the women who attended ANC services do not receive all the doses of Tetanus Toxoid and iron tablets. Women who make more than 4 visits are more likely to have had Tetanus Toxoid injection and Iron tablets than the women who make less than three antenatal care visits. Among the women who receive ANC services about 93.9 % of them receive Tetanus Toxoid injection. Similarly, among the women who attended ANC services less than 3 times or about 32.4% received Tetanus Toxoid and two-third (67.6%) received iron tablets. However, iron tablets were consumed by all the women who received ANC services four times or more. (See Table 2)

Place of Delivery and ANC Services. This study results depicts that still more than half percentage of births (53.2%) takes place at home and only 46.8 % of births take place in a health facility. The percentage of institutional delivery is higher than the national data (35.3%). Among the women who

Table 2. Ante Natal Care Visits and Frequency Distribution of Women who Obtained Tetanus Toxoid and Iron/Folic Acid Tablets in Last Pregnancy

Frequency of ANC Visits	Frequency	Percentage	Tetanus Toxoid % Within frequency of ANC Visits			Iron / Folic acid Tab % Within frequency of ANC Visits		
			Yes	No	P value	Yes	No	P value
Less than 3	37	35.9	12(32.4)	25(67.6)	p<.000	25(67.6)	12(32.4)	p<.000
More than 4	66	64.1	62 (93.9)	4 (6.1)		66 (100)	0(0.0)	
Total	103	100	74(71.8)	29(28.2)		91 (88.3)	12 (11.7)	

* Numbers in the bracket indicate percentages

gave birth at health facility, 85.1% women received ANC services whereas 14.9 % did not receive such services. However 14.8 % women received ANC services even though they gave birth at home.

The report by Nepal Demographic and Health Survey^[4] (NDHS) also reveals the trend of home delivery is higher than institutional delivery in Nepal. Pregnant women need to know about how to access a trained health personnel during delivery and this kind of information can be sought at the time of ANC visit. For this reason, ANC visit could influence the type of delivery.

About 17% of the women delivered their babies at home even they attended ANC services. However, 13.3% women who did not receive any antenatal checkups delivered their babies in a health facility. Among the women who made less than 3 antenatal care visits during their entire pregnancy, 43.2% delivered their babies at home. Women who have

had more than four visits to health facilities during pregnancy are more likely (98.5 %) to deliver their baby in health facility than the women who made less than three antenatal care visits (56.8%). Various studies show that ANC visit can help women to opt for institutional delivery. Previous studies^[27,28,29] have shown that ANC promotes institutional delivery, similar finding was observed in this study area as well. Increase in ANC visit decreases the chances of home delivery. Among the women who receive ANC services more than four times, only 1.5 % delivered their babies at home. The frequency of ANC visits and place of delivery was statistically significant. (See Table 3)

Conclusions and Public Health Implications

In spite of everything, more than half of the women were unaware of the benefits or consequences of antenatal care visits. Varieties of factors including

Table 3. Ante Natal Care Visits and Place of Delivery

ANC Visits	N	%	Home Delivery		Institutional Delivery		p value
			N	% within ANC visits	N	% within ANC visits	
No	113	52.3	98	86.7	15	13.3	p<.000
Yes	103	47.7	17	16.5	86	83.5	
Frequency of ANC Visits							
Less than 3	37	35.9	16	43.2	21	56.8	
More than 4	66	64.1	1	1.5	65	98.5	
Total	103	100.0	17	16.5	86	83.5	

socio-demographic, socio-economic, cultural and service availability as well as accessibility influence the use of maternal health services. The significance of the results of this study is that maternal age, maternal education, occupation of both parents, higher household economic status and type of family all increase probability of use of maternal health care services during pregnancy. It was found that higher levels of education were associated with greater use of antenatal care services. Significant difference was also observed between the religion and attendance of antenatal care services. The higher the income, the higher the attendance of ANC services was found among the respondents. Maternal mortality and morbidity in developing countries continue to pose challenges to the health care delivery system. In order to motivate pregnant women, husbands and other family members for the better health of mother and the child, extensive informative services regarding the importance of ANC services needs to be incorporated in public health intervention programs.

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