ANTENATAL CARE AMONG WOMEN IN RURAL NEPAL: A COMMUNITY-BASED STUDY

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ABSTRACT

Background and Objective: The uptake of antenatal care (ANC) is generally poor and inadequate in many developing countries such as Nepal. The purpose of our study was to assess the utilization and associated factors of antenatal care uptake among rural women in Nepal. The study was carried out in two villages and surrounding areas of Kathmandu district in 2006.
Sample and Method: A descriptive, cross-sectional study, which was conducted among 150 women of reproductive age who had delivered a live baby within the 24 months preceding the survey. All women were interviewed using a semi-structured questionnaire.
Findings: Women were influenced by their mother-in-laws on whether or not to use ANC. Utilization of ANC was associated with many factors: women having their second or subsequent pregnancy, illiteracy; Tamang ethnicity, women whose husbands were farmers, and women who were farmers themselves ($p<0.001$). Younger women and those with secondary education were statistically more likely to have used ANC. Twenty-two percent of women did not receive ANC. Services offered during ANC included for most women supply of supplementary iron and folic acid tablets (95%) and checking of maternal weight (94%). Few women reported having received information on danger signs of pregnancy (27%), and 16% women had experienced health problems during their last pregnancy.
Conclusion: The utilization of ANC (at least one visit in pregnancy) in our rural study was encouraging as it was higher than the national average, and even fewer women manage to get four ANC visits as recommended by the World Health Organization. The accessibility of ANC programs that incorporate an awareness-raising element to encourage pregnant women to attend may help improve ANC uptake.

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INTRODUCTION

Complications of pregnancy and childbirth such as haemorrhage, hypertensive disorders of pregnancy are leading causes of death among women of reproductive age in developing countries (Li, Fortney, Kotelchuck & Glover, 1996). Antenatal Care (ANC) can play a role in the reduction of maternal mortality. ANC can help prevents maternal and neonatal deaths by identifying pregnancy-related complications early. Secondly, ANC offers an opportunity to educate women on obstetric danger signs and motivate them and their families to seek appropriate and timely referral to a maternity care provider (Bullough et al., 2005). Similarly, other interventions which are part of ANC such as routine iron and folic acid supplementation, serologic screening for Human Immunodeficiency Virus (HIV) and syphilis and treatment of syphilis, routine measurement of fundal height, and tetanus immunization are beneficial to mother and child health (Lumbiganon, 1998). The World Health Organization, Department of Reproductive Health and Research, Family and Community (WHO, DRHRFC) has recommended a four-visit ANC schedule for low-risk pregnancies (WHO, DRHRFC, 2003). However, a recent systematic review found many barriers to the uptake of ANC in developing countries (Simkhada, van Teijlingen, Porter & Simkhada, 2008). Although, ANC has been improving steadily in South Asia, only 54% of pregnant women are receiving ANC at least once from a skilled health worker as compared to 98% of pregnant women in industrialized countries (Abouzahr & Wardlaw, 2003).

The Government of Nepal is committed to achieving the Millennium Development Goal of reducing the maternal mortality ratio by three quarters between 1990 and 2015 (United Nations Development Program [UNDP], 2005). Therefore, the safe motherhood program is strongly advocated in the current national plan to improve maternal health. The National Maternity Care Guidelines were developed in 1996 (Family Health Division, Ministry of Health [FHD, MOH], 1996) for the maintenance of standards of maternity practice. It was estimated that the maternal mortality rate was 740 per 100,000 live births in 2000 in Nepal (WHO, 2006). Whilst evidence suggests that access to ANC is insufficient to meet the population's need, as 26% of pregnant women in Nepal do not receive any ANC at all and, of the remainder only 29% of pregnant women receive the recommended four check-ups (Demographic and Health Survey, 2006). Reason for this low ANC usage include shyness (some women do not want to expose their body) and poor access in rural Nepal to health care, and a lack of affordable women-oriented health services (Simkhada et al., 2008). Gender inequality is deeply rooted in Nepalese culture which restricts women's access to skilled health care (Furuta & Salway, 2006). Generally when a woman marries she becomes part of her husband's

family, where the men or older females such as her mother-in-law are in charge (Simkhada, van Teijlingen, Porter, & Simkhada, 2006). Moreover, the low socio-economic status of women is also associated with under-utilization of ANC (Eijk et al., 2006).

We conducted a community-based quantitative study on utilization of care around pregnancy and childbirth among rural women in two villages, which are known as Village Development Committees (VDCs) in Nepal (Dhakal et al., 2007). Very few studies on this subject are carried out in rural settings and none have been undertaken in this area of the country. A huge part of Nepal, especially rural areas, remain fairly inaccessible due to poor infrastructure including limited electricity services, transport and communication. Therefore, our study attempted to assess the range of ANC services used, barriers to utilization, perceived health problems and care-seeking behaviour. Women were asked for their views and recommendations on how to improve ANC services (Dhakal et al. 2007).

In Nepal, there are nearly 4,000 VDCs or villages, each consisting of nine wards. Each VDC has a sub-health post which provides primary health care including ANC to pregnant women at the community level. Female Community Health Volunteers (FCHVs) are located in each ward and support the health services (Nepal, Ministry of Health, 1998), by delivering basic health care in areas where there is often no other health care provider available (United States Agency for International Development [USAID], n.d.).

METHODOLOGY AND PARTICIPANTS

Study Design

Our study is descriptive and used a cross-sectional design. This design provided a useful, time and cost efficient method for collecting information regarding the utilization of ANC among rural women. The study was conducted in March and April 2006.

Study Population

The study population comprised all women in the reproductive age group (15-49 years old) residing in two rural areas of Kathmandu Valley who had delivered a live baby in preceding 24 months. Rural areas there consist of small towns and villages with people living up to two hours walking away from the main road. The study population was estimated on the basis of the last national census data (Central Bureau of Statistics [CBS], 2001) due to the lack of accurate contemporary information. According to the last census data the total population of the two VDCs (called ‘C’ and ‘D’) chosen as sites for data collection was 8,569 people and it is estimated that the under-two-year old population comprises 4.23% of the total population (CBS, 2001). Hence, the study population was estimated to be a total of 362 women in the two VDCs combined and a convenience sample was drawn of 150 women. The size of the sample was calculated on the basis of the last census data and information gained at local level by FCHVs. The sample size was 41% of the target population. The first author visited house to house with the help of local FCHVs to reach all targeted women. Ethical approval was granted by the Nepal Research Council and local authorities of the relevant VDCs.

Data Collection

A validated questionnaire was adapted from the Nepal Demographic and Health Survey (2006) and the Nepal Multiple Indicator Surveillance (CIETinternational 1998). A pilot study (van Teijlingen & Hundley, 2005) was conducted among eight married women in the two study areas prior to the full study. Some improvements to the questions were made after the pilot study. Data were collected using face-to-face interviews with individual women by the first author (female) using a semi-structured questionnaire at their home or in their village. Prior to data collection women were informed of the aim of the study and assured that their identity and the information they provided would be treated as confidential and they would remain anonymous.

Inclusion criteria were married women of reproductive age who had delivered their last child within 24 months preceding the study. If a woman had more than one child under 24 months, only the most recent pregnancy and delivery was consider in this study. Unmarried and women outside of the reproductive age group, and currently pregnant women were excluded.

Statistical Analysis

Data were entered and analysed using the SPSS version 13.0 for Windows. Descriptive statistics such as median and inter-quartile range was provided for skewed continuous data. Spearman rank correlation coefficient was obtained between two ordinal data. Appropriate chi-square tests were used to find association between socio economic and demographic characteristics of women and antenatal care. The Odds Ratio (OR) and its 95% Confidence Interval (CI) were calculated to measure the strength of the association between demographic and socio-economic factors and antenatal care. Those factors that were significant at 20% level in the univariate analysis were considered for the multivariate analysis. Multivariate logistic regression with backward elimination method was used to find best combination of factors predicting ANC. A p-value of less than 0.05 was considered to be statistically significant.

FINDINGS

Utilization of Antenatal Care

The prevalence of at least one ANC visit during the last pregnancy was 78% (95% CI = 71% - 84%). The median time of the first antenatal visit was at three-month into the pregnancy with inter-quartile range (IQR) 3 months and 5 months. More than half of the women (51%) had received their first ANC check-up during the first trimester and the remaining women (48%) received in second trimester including a small proportion (3%) in third trimester. More than three quarters of the women (78%) who had attended any ANC had attended the recommended four or more antenatal visits during their last pregnancy. The median frequency of antenatal visits was found to be 4 (IQR 4-6) times. The majority of women (63%) had attended their last antenatal visit during the ninth month of pregnancy. Moreover, the number of ANC visit is correlated with not having the first consultation for ANC until the last trimester ($r=0.51$; $p<0.001$). Forty-two percent of women received ANC from a local health worker such as Mother and Child Health Workers (MCHWs) or Auxiliary Health Workers (AHWs), 39 percent from a doctor and 20 percent from a nurse. The majority of women (53%) had received ANC at a hospital, a SHP (48%) or other places (7%) such as mobile clinics or clinics run by a

non-governmental organization (NGO). Few women attended both the hospital and the SHP antenatal clinics.

Table 1: Association of Demographic, Socio Economic Factors & Antenatal Check Up

			ANC (number)			
	N=150	**%**	**Yes (n=117)**	**No (n=33)**	**Odds Ratio/ Confidence Interval**	**p-value**
Age group						
<20	16	11	14	2	1.00	
20 – 24	76	51	65	11	0.84 (0.08 – 4.57)	0.013
25 +	58	39	38	20	0.27 (0.03 – 1.39)	
Ethnicity						
Brahmin/Chhetri+others	61	41	60	1	1.00	0.001
Tamang	89	59	57	32	0.03 (0.0-0.21)	
Education of women						
Illiterate	73	49	42	31	1.00	0.001
Primary+ Secondary	77	51	75	2	27.68 (6.37-121.4)	
Occupation of women						
House wife + others	43	29	42	1	1.00	0.001
Farmer	107	71	75	32	0.06 (0.0-0.40)	
Education of husband						
Illiterate	21	14	9	12	1.00	0.001
Primary + Secondary	129	86	108	21	6.73 (2.56-18.32)	
Occupation of husband						
Other jobs*	77	51	71	6	1.00	0.001
Farmer	73	49	46	27	0.14 (0.05-0.40)	
# of family members						
3-4	34	23	29	5	1.00	
5-8	88	59	65	23	0.49 (0.13-1.49)	0.331
9+	28	19	23	5	0.79 (0.16-3.92)	
# of children						
1 or 2	113	75	99	14	1.00	0.001
3 or more	37	25	18	19	0.13 (0.05-0.34)	
# of pregnancies						
1	68	45	61	7	1.00	0.001
2	36	24	30	6	0.57 (0.15-2.14)	
3 or more	46	31	26	20	0.15 (0.05-0.43)	
Age at first pregnancy						
<18	53	35	41	12	1.00	1.00
19 +	97	65	76	21	1.06 (0.43-2.52)	
Miscarriages						
Yes	13	9	12	1	1.00	0.17
No	137	91	105	32	0.27 (0.03-2.18)	

= Number, * other jobs include formal, foreign and other jobs.

ANC uptake was different among different age groups (p=0.013), with older women significantly less likely to seek ANC than younger women. The ‘Tamang’ ethnic

group was less likely to have utilized ANC than Brahmin/Chhetri and other ethnic groups (p=0.001). The occupation of the woman and her husband's occupation influences her having ANC. Woman or her husband having farming as their occupation were less likely to seek ANC than those working in the formal sector or those being housewives or having other jobs. It was observed that if women or their husbands were educated to at least primary school level women were more likely to seek ANC than women who were illiterate or whose husbands were illiterate. The number of family members a woman had was not associated with the level of ANC uptake. Women with three or more pregnancies or children were less likely to seek ANC than women with one or two children (p=0.001). Age at pregnancy and miscarriages were not associated with ANC uptake.

Education levels of women, occupation of husband in the formal sector, having fewer children and ethnic group women other than those from the Tamang community were significantly associated with seeking ANC (See Table 2).

Table 2: Association of Demographic, Socio economic Factors and ANC Check Using Multivariate Logistic Regression Analysis

Factors	Adjusted OR	95% CI*
Ethnicity – Tamang	0.11	0.01-0.97
Educated woman	9.13	1.83-44.18
Occupation of husband – Farmer	0.26	0.08-0.82
Number of children 3 or more	0.23	0.08-0.64

Services Offered During ANC

Table 3 (See Table 3 here) highlights what kind of services women who received during their ANC.

Table 3: Tests and examinations during antenatal visit (n=117)

ANC examination	Number	%
Weight	110	94
Height	51	44
Blood pressure	103	88
Urine test	70	60
Blood test	73	62
Conjunctiva for anaemia	94	80
Ankle for swelling	97	83

Nearly all (95% of those who had received any ANC) had been given iron/folic acid. The minimum duration of taking iron/folic acid was one week and the maximum 36 weeks. The majority of women (70%) had received a T.T. (tetanus toxoid) injection during pregnancy. Among T.T. recipients, 65% had received two or more doses and 5% had had only one dose. Many had their weight checked (94%), blood pressure measured (88%), conjunctiva for anaemia (80%) and ankle checked for swelling (83%) at least once during their antenatal visits. Table 3 further shows that only 44% of women reported had their height checked, or urine tested (60%) or blood tested (62%). The majority of women (79%) reported having received health advice during their ANC. Most women received suggestions for a nutritious diet (84%), while only 27% got advice on danger signs in pregnancy (See Table 4).

Table 4: Advice given by health workers to women during antenatal visit (n=117)

Topic for advice	Number	%
Nutritious diet	77	84
Danger signs	25	27
Place of delivery	34	37
Breast feeding(colostrums)	29	31
Rest/reduction of heavy workload	35	38

Only 24% women had received ANC free of charge. The median cost per visit was found to be the equivalent of 10 cents (IQR= 3 to 70). Interestingly, only 8% of women received ANC free of cost from hospitals compared to 34% who had received free ANC from sub-health posts in the community. Women who received ANC were asked their satisfaction with the services which they had received. Almost all (97%) women were satisfied on ANC.

Household Decision on the Utilization of Antenatal Care

Women, who had received ANC, were asked about the decision-making process, and more women reported that the mother-in-law (37%) made the decision to go for ANC, than they did themselves (30%), or their husbands (27%) or others (6%). Moreover, mother-in-laws (40%) and husbands (40%) had more power in decision-making on the utilization of ANC within Brahmin/Chhetri households. Similarly, in the Tamang ethnic group, mother-in laws (33%) and husbands (26%) had more influence on the ANC decision than the women themselves.

Perceived Barriers to ANC

All women were asked what they perceived to be the three key barriers to accessing ANC in their community. The main problems were: no perceived need to attend ANC (38%); distance to a health facility (36%); no money (19%); no transportation (15%); lack of skilled health workers locally (11%); and having, no time available to attend an ANC clinic (8%).

Suggestions for Improvement of Antenatal Care in the Community

Suggestions for the improvement of ANC were sought from all women. Again up to three suggestions were asked from all participants. Availability of health services (46%) in their own villages, increased awareness of ANC among women and their family members (35%) and availability of better trained health worker in villages were the main suggestions. In addition, 18% of women suggested more support from family members and 16% more medicine being made available.

Health Problems during Pregnancy and Seeking Care

Only 16% of women reported having health problems, these included: swollen legs (46%), vomiting in early pregnancy (29%), backache (25%), burning urination (17%), dizziness (12%), vaginal bleeding, jaundice (8%) and high blood pressure (4%). The majority women (79%) had sought care for those problems from a health professional. For the women who did not seek help, the main reason was not being aware of available health services; not perceiving a need; and no time due to workload.

DISCUSSION

Our study showed that the utilization of ANC among rural women is found to be encouraging as the overall rate of utilization of ANC (78%) in the study area is better than the national percentage (72%). Similarly, the percentage of women attending the recommended number of ANC visits (4 or more) is found to be much better than national average (NDHS, 2006). It could be due to the rapid urbanization taking place in nearby VDCs of Kathmandu valley. Our study result agreed with another study conducted in a VDC of Kathmandu district (Pradhan, 2005).

The National Maternity Care Guidelines (FHD, MOH, 1996) in Nepal suggests that women should seek ANC from trained local health workers as soon as a pregnancy is suspected. However, only about half of women (51%) attended their first ANC visit in the first trimester. Low ANC attendance during the first trimester has been found in many developing countries (Mwaniki, Kabiru, & Mbugua, 2002; Ndyomugyenyi, Neem, & Magnussen, 1998). Evidence shows that having first ANC visit in the second trimester is common in many developing countries, and even in rural Australia (Trinh & Rublin, 2006). Accessing ANC late in pregnancy may be associated with a lack of awareness, a perception that ANC is not necessary, or that ANC services available are of low quality.

Our study revealed that a mother-in-law's advice is vital in utilization of ANC in Nepal. The majority of women listed their mother-in-laws' views as key influencing on their decision-making whether or not to attend ANC. Recent studies in Nepal found that mothers-in-law play a significant influence in the uptake of reproductive health care (Masvie, 2006; Simkhada, Porter & van Teijlingen, 2010). This contrasts with rural western Kenya where most of women (87%) decided for themselves to visit the ANC (Eijk van et al., 2006). Due to the social system in Nepal, most people are living in extended families and most of the younger women do not have decision making power within the household. They are controlled by either their mother-in-law or husband. This is even more common in Brahmin/Chhetri families. Similarly, women in Nepal have a lower social status than men, which restricts women's access to the utilization of ANC (Matsumura & Gubhaju, 2001). Moreover, decisions about mobility of women and expenditure on health care are controlled by men or older women of the household, which may limit women's search for health care in general (Vlassoff, 1994).

This study has explored several associated factors with the utilization of ANC as similar to postnatal care such as ethnicity, education of women, occupation of husband and number of children (Dhakal et al., 2007). Tamang women, women with many children, illiterate and farmer women have less access to ANC. The main barriers are a lack of awareness, time and distance to the health facility. Similarly, older age and high parity women are less likely to receive ANC, as there was significant reduction in the proportion of women receiving ANC as the number of number of living children increases, as reported in other studies (Dhakal et al., 2007; Shakya & McMurray, 2001; Chandhiok, Dhillon, Kambo & Saxena, 2006). Education was found to be a positive factor for ANC uptake in our study. Other studies have shown that women with secondary education are more likely to receive at least four antenatal visits than women with less or without education (AbauZahr & Kwardlaw, 2003; Pradhan, 2005; Matsumura & Gubhaju, 2001, Shakya & McMurray, 2001; Simkhada et al., 2008).

Generally poverty had an impact of seeking ANC, as women living off farming and those from lower caste background (i.e. Tamang) are less likely to use ANC. Similarly, the higher the husband's education and occupation levels, the higher the uptake of ANC (Fatmi & Avan, 2002; Dhakal et al., 2007). Poverty levels are, of course, also related to cultural beliefs and media exposure which are both influential factors in the uptake of ANC (Simkhada et al. 2008).

Evidence has shown that ANC is an important intervention that improves the safety of birthing for both the mother and child and significantly increases the likelihood of having skilled assistance during childbirth (Shakya & McMurray, 2001). However, about one-quarter of women in our study did not receive ANC for a variety of reasons. The major obstacles to the utilization of ANC are lack: of awareness, unavailability and inaccessibility or distance to health facilities, poverty, charges and associated costs, and poor services offered at the local health facilities (Ikamari 2004; Larsen, Lupiwa, Kave, Gillieatt & Alpers, 2004). Although, ANC is free of charge in Nepal, only less than one-fourth of women who had received ANC reported that their ANC had been free. Cost of ANC may include: travel cost, and other pregnancy-related diagnosis cost.

Table 3 shows that only 44% women had their height measured, though maternal height is part of a complex set of determinants of pregnancy outcomes (Spencer & Logan, 2002). Lack of measurement facilities in the health institutions might be the main reason for low levels of measurement. Similarly in Table 3, the proportion of women who had a urine or blood test was fairly low. In Nepal, there is a provision of free supply of iron and folic acid tablets and T.T. injection to each pregnant woman (FHD, MOH, 1996), which explains the high uptake of iron and folic tablets in our study, although T.T. coverage was lower. More than three-quarters of pregnant women had received health advice on different topics during their antenatal visits. However, advice on place of delivery (37%) is quite low. Similarly, only 27% was informed on danger signs in pregnancy. The ANC service in the study area is seen to be worse with respect to advice on danger signs than the national Nepalese average (Demographic and Health Survey, 2006) and parts of rural Kenya (Pradhan, 2005).

Our study demonstrated that 32% of the women had received ANC from local health workers such as MCHW/AHW which is higher than the 28% nationally (Demographic and Health Survey, 2006). It is proffered that the availability of ANC in sub-health posts in the VDC level improves women's access. However, more women (55%) who received ANC from hospitals were 'very satisfied' than women (39%) who received ANC from sub-health posts in the community. This might be related to confidentiality and the facilities for ANC check-ups separate room, instruments and laboratory test facilities. The perception of quality of ANC is an important factor to increase in uptake of ANC (Acharya & Cleland, 2000).

Women in this study experienced low levels of health problems during pregnancy. Perhaps some did not perceive that they had health problems or assumed that only relatively serious conditions should be mentioned as health problems during ANC visits (CIETinternational, 1998: 8). Moreover, limited capacity to recognize danger signs is a major obstacle to seeking care (Mesko et al., 2003).

Limitation of the Study

During the time of the study security situation was very unstable in Nepal. The Maoists were engaged in a violent conflict with the government and it was not safe to visit to certain remote areas. Therefore, the study was limited by the areas which might not comprehensively reflect the normal situation of rural Nepal. Similarly, our study could not cover large geographical areas due to limited time and resources. Data were collected from women who were at their home, so that there might be selection bias since the visits were during the day. Similarly, due to lack of information about target population we changed our target group to included women having a live child under 24 months rather than 12 months. This change might be arisen recall bias.

CONCLUSIONS

The uptake of ANC was encouraging in the study areas which showed higher ANC utilization rates than national data. Most notably 78% of women who had received ANC had attended four or more antenatal visits. Moreover, the ANC services offered appeared to be satisfactory although some components of the ANC examination such as measuring height and advice given to pregnant mothers about danger signs are found to be poor. More interestingly, the study showed that mother-in-laws in Nepal play a vital role in decision-making on the utilization of ANC. Not perceiving the need for ANC and no time due to work were the main reasons behind the non-utilization of ANC. Similarly, a lack of awareness of ANC and distance to a health facility were the main perceived barriers to access to ANC. The main factors influencing on utilization of ANC were ethnicity, education of women, occupation of husband and number of children. Availability and accessibility of high quality ANC services and awareness of ANC among pregnant women, mother-in-laws and husbands are helpful step to improve ANC.

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