

ASSOCIATION OF ANTENATAL CARE UTILIZATION WITH SOCIAL SUPPORT IN RURAL AND URBAN AREAS OF KATHMANDU DISTRICT OF NEPAL

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ABSTRACT: Antenatal care (ANC) is an important determinant of maternal mortality rate and one of the basic components of maternal health care and is also a key strategy for reducing maternal mortality. This study aimed to explore the antenatal care utilization and non utilization with social support in rural and urban areas of Kathmandu district of Nepal. A cross-sectional study was carried out in two randomly selected urban and rural areas and all delivered women (urban = 188 and rural = 104) with child less than 12 months of age was interviewed with pretested questionnaire in both areas of Kathmandu district of Nepal. Association of ANC utilization with several factors related to society, family members and health services was determined by using Chi-square. Eighty-four percent of the total respondents had at least one ANC visit (rural 87.5% > urban 83%), among the ANC users, 58% had Complete ANC utilization (urban 59.6% and rural 56%). ANC utilization and non utilization had significant association with inspired by mother in law, inspired by father in law, inspired by self, social barriers, household barriers, time factor and health service related factors. The study shows that social supports and the family supports are positively influencing factors for the ANC utilization while different kind of barriers are negatively associated with ANC utilization. Therefore, increase in social support programs like involvement in mother's group, education targeting role of family members and general population on ANC visits and the overall reduction in barriers to the health services utilization should be focused to increase the ANC utilization.

Keywords: Antenatal care, Social support, Kathmandu district, Nepal

INTRODUCTION

Antenatal care is an important determinant of maternal mortality rate and one of the basic components of maternal health care on which the life of mothers and babies depend [1]. The global attendance of complete ANC clinic by pregnant women was 53% compared to only 36% in low income countries, estimated during the period of 2005 to 2010 [2]. Similarly, ANC utilization in developing countries is only 65% compared to 97% in developed countries [3]. According to the Nepal demographic Health survey 2011, it has been shown that there was difference in the use of ANC services among urban and rural pregnant women (urban 88%, rural 55%), the use of ANC were strongly related to mother's education level, women's age, parity, place of delivery. Nepal is one of the countries with higher maternal and neonatal mortality in South East Asia Region, MMR was 281/100000 live births during the period of 1999-

2006 [4]. Government of Nepal, SLTHP (Second Long Term Health Plan) has given priority to safe motherhood programme to reduce maternal and neonatal mortality from current rate of 281 and 46 to 250 and 34.4 respectively by 2017. Similarly, the targets have also been assigned to increase ANC visit (4 or more) by pregnant women up to 80% by 2017 [5]. ANC has been established in high countries for a long time and has brought about remarkable achievements in reducing maternal and neonatal mortality, most of the low and middle income countries have applied the same ANC programme used in high countries with some local adjustments for local contexts [6]. The use of ANC varies between low income countries in Africa and Asia compared to high income and developed countries in Europe and America [2]. ANC utilization also differs within a country according to mother's age, education, occupation, household income, parity, place of residence, cost and availability of services [7-9]. Study in Indonesia; found that family support and encouragement have positive effect on ANC visits. Among the pregnant

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women, 77.9% visited ANC 4 times or more who had family support and encouragement [10]. An qualitative study in Nepal, found that mothers in law have a strong influence on ANC utilization as the mothers in law have positive influence when they encourage for ANC check up and also have negative influence and they didn't support and encourage for ANC check up as they expect that daughter in law should fulfill their household duties and they also perceived that ANC check up was not beneficial based on her own past experiences [11]. This study defined Antenatal care utilization into non-utilization, utilization and complete utilization. The pregnant women who didn't visit even at least once to the antenatal care clinic were considered as a non-utilization of antenatal care. The pregnant women who had at least one antenatal care visit were considered as antenatal care utilization and the pregnant women who had four or more ANC visits were defined as complete utilization of ANC. In Brazil, increased utilization of Antenatal care was associated with higher socioeconomic status, job during pregnancy and social supports which were found to be the significant social determinants [12]. In Nepal, SLTHP (Second Long Term Health Plan) has targeted ANC visits upto 80% by 2017 [5]. This target coverage has number of challenges and research gap which needs to be studied before it can be met. Similarly, until now, there have been no quantitative studies conducted to study antenatal care utilization and non utilization with different aspects of social supports in the urban and rural areas of Kathmandu district of Nepal. Therefore, to effectively implement the ANC coverage and participation by pregnant women, number of factors including social supports is the determinants which can have significant impacts on ANC utilization. The objective of this study is to assess the antenatal care utilization and non utilization with social support in rural and urban areas of Nepal therefore; the results of this study should lead to policy recommendations to improve maternal health care (ANC visits) for pregnant women in Nepal.

MATERIALS AND METHODS

Subjects and procedure

A Cross-sectional study was carried out in two urban (Dhapasi VDC) and rural (Jhormahankal VDC) areas of Kathmandu district of Nepal. These two urban and rural areas were selected by simple random sampling. Delivered women's address was found from the health post register and female community health volunteer which was followed by individual home visit. All delivered women (urban

= 188 and rural = 104) with child less than 12 months of age was interviewed with pretested questionnaire to explore the ANC utilization and non utilization with social support in both areas. Current inclusion criteria for the subject included the women who delivered a child of less than 12 months and living in that area (Jhor Mahankul and Dhapasi VDC) for last 6 months. The data collection was done by using the structured questionnaire that was developed based on literature review. The written informed consent was taken prior to the interview. Ethical approval was taken from Nepal Health Research Council, Government of Nepal.

Statistical analysis

SPSS software licensed version 17.0 was used for quantitative data analysis in descriptive statistics to present the frequency of each variable and inferential statistics to determine the association between dependent and independent variables. Chi-square analysis was used to determine the effects of social support and barriers on the ANC utilization and non utilization by women during their last pregnancy with statistically significance of each analysis against the p-value of 0.05.

Validity and reliability

There were total 46 close ended questions. All questions were translated in Nepali language after the review of questionnaire by 3 experts. The scores for each items were assigned as +1, 0, and -1 for the aspect of content validity to assess Index of item-objective congruence (IOC). The result of validity was 0.83. To determine the test-retest reliability of the interview, the questionnaires were pre-tested in 30 subjects for two times, 1-week apart. The reliability of the questionnaires was determined by Intraclass correlation coefficient for continuous data and Kappa coefficient for categorical data [13, 14]. In this study, questionnaires had the coefficients of 0.85.

RESULTS

Demographic characteristics

Most of the demographic characteristics findings were same in both urban and rural areas except for major source of income and control of economic activities. Most of the respondents (urban 49.5% and rural 47.1%) were between the age of 20-24 years, upper caste group (urban 82% and rural 73%) and Hindus by religion (80% in both areas), housewife by the occupation, more than 85% of the respondents were literate and more than 40% of the respondents were secondary level educated in both

Table 1 Social supports with ANC utilization and Non utilization

Social support	Urban (n=188)			Rural (n=104)			Total (n=292) n (%)
	No utilization (n=32) n (%)	Utilization (n=156)		No utilization (n=13) n (%)	Utilization (n=91)		
		<4 ANC (n=63) n (%)	≥4 ANC (n=93) n (%)		<4 ANC (n=40) n (%)	≥4 ANC (n=51) n (%)	
Involvement in Social activities							
No	5 (15.6)	9 (14.3)	10 (10.8)	2 (15.4)	5 (12.5)	3 (5.9)	34 (11.6)
Yes	27 (84.4)	54 (85.7)	83 (89.2)	11 (84.6)	35 (87.5)	48 (94.1)	258 (88.4)
Involvement in Mothers group							
No	32 (100.0)	51 (81.0)	73 (78.5)	13 (100.0)	36 (90.0)	44 (86.3)	249 (85.3)
Yes	0 (0.0)	12 (19.0)	20 (21.5)	0 (0.0)	4 (10.0)	7 (13.7)	43 (14.7)
Decision maker in health care							
Husband	7 (21.9)	12 (19.0)	31 (33.3)	3 (23.1)	17 (42.5)	15 (29.4)	85 (29.1)
Self	10 (31.2)	23 (36.5)	25 (26.9)	4 (30.8)	10 (25.0)	15 (29.4)	87 (29.8)
Both	15 (46.9)	28 (44.4)	37 (39.8)	6 (46.2)	13 (32.5)	21 (41.2)	120 (41.1)

Table 2 Facilitation and inspiration of ANC utilization

	Urban (n=156)		Rural (n=91)		Total (n=247) n %
	<4 ANC	≥4 ANC	<4 ANC	≥4 ANC	
	(n=63)	(n=93)	(n=40)	(n=51)	
	n (%)	n (%)	n (%)	n (%)	
Facilitation of ANC visits (n=247)					
Husband	14 (22.2)	17 (18.3)	7 (17.5)	11 (21.6)	49 (19.8)
Relatives	15 (23.8)	37 (39.8)	18 (45.0)	21 (41.2)	91 (36.8)
Inspiration of ANC visits					
Husband	45 (71.4)	59 (63.4)	24 (60.0)	26 (51.0)	154 (62.3)
Mother in law	21 (33.3)	43 (46.2)	9 (22.5)	23 (45.1)	96 (38.9)
Father in law	11 (17.5)	26 (28.0)	6 (15.0)	16 (31.4)	59 (23.9)
Relative	16 (25.4)	27 (29.0)	12 (30.0)	9 (17.6)	64 (25.9)
Self	44 (69.8)	76 (81.7)	27 (67.5)	39 (76.5)	186 (75.3)

settings. There was difference in major source of income; business (urban 38% and rural 11%) was major source of income in urban areas whereas agriculture (urban 13% and rural 58%) was a major source of income in rural areas and more than half of the respondents had monthly income less than 20000 NPR. Likewise, almost 70% of the respondents were lived in joint family and most of the house was headed by father in law in both areas and only few houses were headed by respondent herself and there was difference in economic controls in urban and rural areas, in urban areas economic activities were controlled by husband and wife (urban 46% and rural 40%) while in rural areas economic activities were controlled by husband (urban 41% and 46%).

Social support with ANC utilization and non utilization of ANC

Pregnant women of both urban and rural areas had good family and social support. Almost all of the respondents were involved in social activities in both areas but they were not interested to mother

group. Among the non ANC users none of them involved in mother group. Both husband and wife taken health care decision jointly in both areas followed by husband and self in both areas (Table 1).

Facilitation and Inspiration of ANC visit

Most of the respondents were facilitated by relatives for ANC visit in both areas but more than 40% of the respondents were facilitated by mother in law as well in urban areas. In both areas, respondents were inspired by self for ANC visit followed by husband (Table 2).

Barriers for ANC Utilization and non-Utilization

Table 3, there were several barriers for no ANC visit, among them time factor was leading barrier for no ANC visit followed by social barrier in both areas. Among the non ANC users, social and household barriers were the main barriers for no ANC visit in both areas whereas time factor as a barrier was predominant in both areas among the respondents who had ANC visit but didn't have complete ANC utilization.

Table 3 Barriers for ANC utilization and non-utilization

	Urban (n=188)			Rural (n=104)			Total (n=292) n (%)
	No utilization (n=32) n (%)	Utilization (n=156)		No utilization n (n=13) n (%)	Utilization (n=91)		
		<4 ANC (n=63) n (%)	≥4 ANC (n=93) n (%)		<4 ANC (n=40) n (%)	≥4 ANC (n=51) n (%)	
Barrier for ANC							
Social barrier	23 (71.9)	14 (22.2)	13 (52.0)	9 (69.2)	11 (27.5)	11 (61.1)	81 (27.7)
Time factor	19 (59.4)	56 (88.9)	18 (72.0)	6 (46.2)	30 (75.0)	9 (50.0)	138 (47.2)
Economic barrier	13 (40.6)	33 (53.4)	10 (40.0)	7 (53.8)	13 (32.5)	5 (27.8)	81 (27.7)
Cultural barrier	2 (6.2)	2 (3.2)	3 (12.0)	0 (0.0)	2 (5.0)	3 (16.7)	12 (4.1)
Household barrier	23 (71.9)	36 (57.1)	16 (64.0)	7 (53.8)	24 (60.0)	8 (44.4)	114 (39.0)
Health service barrier	10 (31.2)	4 (6.3)	7 (28.0)	4 (30.8)	3 (7.5)	8 (44.4)	36 (12.3)
Due to shyness	3 (9.4)	4 (6.3)	5 (20.0)	1 (7.7)	5 (12.5)	8 (44.4)	26 (8.9)

Table 4 Association between social support and ANC utilization

Social support	ANC utilization (n %)		p- value
	Non utilization (n=45)	ANC utilization (n=247)	
Involvement in Mother Group			0.001*
Yes	0	43 (17.4)	
No	45 (100)	204 (82.6)	
Barrier for ANC			
Social barrier	32 (71.1)	49 (33.6)	<0.001*
Time factor	25 (55.6)	113 (77.4)	0.004*
Health service barrier	14 (31.1)	22 (15.1)	0.016*

*p-value less than 0.05 indicate significance

Association between social support and ANC Utilization

Most of the respondents were involved in different social activities. However, only few respondents were involved in mother's group. Among those respondents who were involved in mothers group, they were found positively associated with ANC utilization. In Nepal, mother group is formed by the community which takes care of pregnant women and informed them for regular and timely ANC visit in the community. There were several barriers for no ANC visit and among them social barrier, time factor and health service barriers had statistically significant association with ANC utilization (Table 4).

Association between social support and ANC utilization among pregnant women

Among the all complete ANC users, most of the respondents were involved in social activities and decision taken by both on health care utilization. Similarly, ANC visits were facilitated by relatives followed by mother in law and husband respectively. Most of the ANC visit was inspired by respondents herself and among all of the inspiration, inspired by self, inspired by mother in law and inspired by father in law were significantly

associated with complete ANC utilization. Among the several barriers, social barriers, time factor (distance), health service related barriers and shyness were significantly associated with complete ANC utilization. Mothers who had social and time factors as barrier were more likely to visit less than four time antenatal visits (Table 5).

DISCUSSION

Total 84.6% of respondents had ANC utilization (Urban 83% and Rural 87.5%). Among them 58% had complete ANC utilization (Urban 59.6% and Rural 56%). In this study, most of the respondents were involved in social activities in both areas but there was no significant association with ANC utilization and very few of them were involved in mothers group, however, those who were involved in mothers group had positive association with ANC utilization. In Nepal, mothers group is formed by the community that takes care of pregnant women and informs them for regular and timely ANC visit in the community. Most of the respondents were inspired by self for ANC check up followed by husband, mother in law, FCHV, relatives and father in law. Among all the sources of inspiration for ANC visit, ANC utilization and

Table 5 Association between social support and ANC utilization among pregnant women

Social support	ANC utilization (n=247)		p-value
	ANC utilization <4 ANC (n=103)	Complete utilization ≥4 ANC (n=144)	
Facilitation during ANC visits			0.170
Husband	21 (20.4)	28 (19.4)	
Relatives	33 (32.0)	58 (40.3)	
Mother in Law	41 (39.8)	45 (31.2)	
Friends	8 (7.8)	8 (5.6)	
Inspiration of ANC visits			
Husband	69 (67.0)	85 (59.0)	0.203
Mother in Law	30 (29.1)	66 (45.8)	0.008*
Father in Law	17 (16.5)	42 (29.2)	0.024*
Self	71 (68.9)	115 (79.9)	0.050*
Type of barriers			
Social barriers	25 (51.0)	24 (49.0)	<0.001*
Time factor	86 (76.1)	27 (23.9)	0.006*
Health service related factors	7 (31.8)	15 (68.2)	<0.001*

*p-value less than 0.05 indicate significance

complete ANC utilization had significant association with the inspiration from self, inspiration from mother in law, inspiration from father in law ($p < 0.05$). Similarly, most of the ANC visits were facilitated by mother in law, relatives and husband in both settings, in urban area facilitated by mother in law more than others and in rural area facilitated by relatives more than others but the association between facilitation of ANC visit and ANC utilization was not significant. Most of the respondents felt themselves that ANC visit was for better health of both mother and child while some of the respondents were suggested by family members for ANC visits. ANC utilization and complete ANC utilization had significant association with social barrier for no ANC visit, similarly, complete ANC utilization also had significant association with time factor, and health service related factors and shyness was associated with incomplete ANC utilization. Among non ANC users, social barrier and household barrier and time factor were predominant barriers in both areas for no ANC visit. These results show that the mothers of both settings in Kathmandu district who had family support for their ANC visits, inspired by family members for ANC visit and who didn't had social barriers and household barriers and time factor as a barriers were more likely to use ANC clinic and complete ANC visit whereas for those mothers who didn't had inspiration and facilitation for ANC visit and had social, household and time factor as a barrier for ANC visit were less likely to visit ANC clinic. Family support, inspiration, social barrier, household barrier and time factor all may influence the ANC utilization.

These results are consistent with the study in Indonesia, where encouragement by their family member had significant association with ANC utilization. Up to 77.9% of pregnant women completed ANC visits by the encouragement from family members [10]. A qualitative study in Nepal, found that mothers in law have a strong influence on ANC utilization as the mothers in law have positive influence when they encourage for ANC check up and also have negative influence and they didn't support and encourage for ANC check up as they expect that daughter in law should fulfill their household duties and they also perceived that ANC check up was not beneficial based on her own past experiences [11]. A study in Brazil, Antenatal care was associated with high social capital, socioeconomic status and working during pregnancy and contextual social capital and social support were found to be social determinants for the appropriate use of antenatal care and they also found that lower social capital, socioeconomic status and low social support were associated with inadequate ANC utilization [12]. A study in Ethiopia, found ANC utilization had positive association with husband's attitude and they also found that family matters, lack of awareness, too far facility, no husband support all contributed for no ANC visit [15]. This shows that inspiration from family members and familial supports are vital for the ANC utilization similarly, the inaccessibility of health facilities and barriers were found to be common among different countries. Husband's refusal was one of the major reasons for non utilization of ANC [16]. The family where health care decision taken by both were more likely to

have ANC visit and religious and distance were one of the reasons for no obtaining ANC visit [17]. A study in Pakistan, they found 49% of non ANC users and among them didn't know ANC was required, no inspiration or advised by anyone, no permission from home, health facilities was far away and transportation not available was main reason for no ANC visit and they also described that women's lack of autonomy was a serious constraint to receive antenatal care and cultural restrictions on mobility were significant barrier to women's access to maternal health services and they also found that among ANC users, 82% of the respondents were accompany with their family member and only 18% were went alone for ANC check up [18]. In a systematic review, the social support by family members and relatives were found to affect the ANC utilization significantly [19]. In a setting of Kathmandu, where rural and urban population has been studied in terms of ANC utilization, the significantly associated factors for the enhancement of ANC utilization were encouragement from family members, and participation in mothers group while barriers as found in different studies were similar as time factors, social barriers and health service related barriers.

Due to time constraints and study design, only two VDC and only recent delivered women were included in this study with sample size only 292 (urban=188 and rural 104) so the context of two VDC of the Kathmandu district may not represent all delivered women of the Nepal. In this study women had various inspiration, supports and facilitation for ANC visit those who had ANC utilization and availability of time factor is another important factor for women in developing countries because they spend more time in their multiple responsibilities such as take care of their children, collecting water or fuel, cleaning and cooking etc. so they have less time for their own work.

CONCLUSIONS

Antenatal care utilization in rural (87.5%) and urban (83%) areas of Kathmandu district is consistent with the target of SLTHP (Second Long Term Health Plan) which is 80% but complete ANC utilization is still low, only 58% had complete ANC utilization (urban 59.6% and rural 56%). Facilitation of ANC by family members, inspiration of ANC visit, social barrier, household barrier, and distance to reach health facility (time factor) are the major influencing factors for ANC utilization. Role of other family members and social supports are

found to be crucial in many aspects of women's pregnancy related matters and the ANC utilization. So, awareness regarding antenatal care towards the family members will be very useful, which inspires the pregnant women for ANC visit which will also support the health of mother with the better pregnancy outcome. Health education and behavior change communication (BCC) are key components of health promotion that may increase in knowledge and behaviors regarding key health issues of all castes, ethnic group and disadvantaged groups. Therefore, BCC and health education can ultimately create demand for quality health services, improvement of health access and trust in health services. These all can encourage people to utilize health service thereby improving antenatal care utilization. The education program should include message to prevent some traditional misunderstandings in a view to promote ANC utilization while reducing the barriers through education and awareness. At the same time barriers like inaccessibility and the time factors related issues should be dealt by implementing the regulatory policies and enhancing the accessibilities and availabilities of the health services. Similarly, a qualitative study should be conducted to explore the different factors which have been found from this study to understand the enhancing factors and barriers of ANC utilization and non-utilization.

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