

Utilization of Maternal Health Services in Nepal

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ABSTRACT

Introduction: High maternal mortality has been a major public health problem in Nepal. It has one of the highest maternal mortality rates in South Asia. This study aims to examine the effects of women's autonomy on utilization of maternal health services in Nepal using data from the 2001 Nepal Demographic and Health Survey.

Methods: The analysis was based on 3119 currently married women aged 15-49 years who had given birth during three years preceding the survey. Decision making, employment status, control over use of own earnings, control over livestock, and spousal communication on family planning were used to explore the dimensions of women's autonomy.

Results: Logistic regression analysis revealed that women who could make decisions alone on their own health care were more likely to use antenatal care than those whose husband or someone else made the decisions. Spousal communication on family planning was also associated with the use of antenatal care. Nonworking women were found to have a greater utilization of health services. Both for women and their husbands, a higher level of education, higher household economic status, and urban residential area was associated with higher utilization of maternal health services in Nepal.

Conclusion: The findings suggest that there is a need to include husbands and parents-in-law in maternal health programmes, to educate Nepalese girls to higher levels, and to teach maternal health knowledge in primary school to increase utilization of maternal health services in Nepal.

Key words: Maternal health, Women's autonomy, Service utilization, Nepal.

INTRODUCTION

High maternal mortality has been a major public health problem in Nepal. It has one of the highest maternal mortality rates in South Asia. The maternal mortality ratio was estimated to be 539 per 100,000 live births in 1996,¹ and is still continuing to be as high as 500 to 550.² A recent estimate by UNFPA shows that lifetime risk of maternal death for the country is one in 21.³ This ratio is one of the highest in the world indicating that a sizable number of mothers die during childbirth. About 40 percent of annual pregnancies are considered to be highly risky for the mothers and the children⁴ Nepal is one of the few countries where female life expectancy is nearly equal to male life expectancy,⁵ and it has also been reported that women's life expectancy is even lower than men's.⁶ The low utilization of health services may have contributed to a high maternal mortality and morbidity in Nepal.

One important factor contributing to high level of maternal mortality in Nepal may be the under utilization of maternal health services which is commonly referred to as the proximate determinant of maternal mortality.⁷ However, other reasons can be geographical and urban/rural disparities of health status and inefficiency of health system. Women's unequal access to health services, education, lack of decision making power and other sociocultural practices may have also contributed to high level of maternal mortality and morbidity in Nepal. Under such a poor and low utilization of maternal health services in Nepal, it is important to identify the most important determinants of low utilization of maternal health services.

Even though research has identified a number of predictors of utilization of maternal health services,

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less research has focused on the relationship between women's autonomy and the use of health services.⁷ Early empirical explorations of the relationship between female autonomy and health seeking behavior tended to rely on education and occupation status as proxy indicators.⁸ However, recent studies particularly in South Asia have attempted to measure female autonomy more directly focusing on developing indicators of women's mobility, participation in the household decision making, and control over financial resources.^{9,10} Though some studies have found positive associations between such indicators and use of health services, results have been mixed and have tended to reaffirm the complex and multidimensional nature of women's autonomy.

Despite the apparent conceptual and methodological difficulties highlighted above, available evidence strongly suggests that women's autonomy in particular, *thought to be related with variety of demographic and health outcomes*.¹¹ This relationship clearly warrants further attention, particularly in settings such as Nepal, where antenatal care (ANC), natal care (NC) and postnatal care (PNC) coverage remains low. Since, the status of Nepali women is low, with low levels of autonomy,^{2,12} their position in their household level need to be further explored in terms of health services utilization. Furthermore, women's role in the household can directly or indirectly affects their lives, particularly in such a setting where women are disadvantaged due to their lower social and economic status.¹³ Recognizing the importance of the family as the basic social unit, women's role in the family may be seen as acting as agents of change in many aspects of life, including utilization of health services.¹⁴ It is also less arguable that it usually takes long period of time to change socioeconomic factors but some cultural proxies can be minimized if an effective intervention could be implemented. This study is an attempt to examine the effects of women's autonomy on utilization of maternal health services and aim to fulfill the knowledge gap in the literature for such a society where women are grossly suffering from bureaucratic patriarchal culture. With the light of above mentioned problems, the study tries to answer the following specific research question-what is the effect of women's autonomy on utilization of health services? The ultimate objective of this study is to provide program administrators and policymakers with information useful for improving maternal health programs in Nepal. The immediate objective is to examine the effect of women's autonomy on the utilization of maternal health services in Nepal.

Hypotheses: Women who could make decision regarding (own health care, large household purchases, household purchases for daily needs, and visiting family or relatives) either alone or jointly are more likely to utilize maternal health services than those whose husband or someone else made the decision. Employed women are more likely to utilize maternal health services than nonworking women.

Women who had some control over use of earnings are more likely to utilize the maternal health services than those who did not have control over use of earnings.

Women who could independently sell the livestock are more likely to utilize the maternal health services than those who could not sell it independently.

Women who discussed family planning with their husband are more likely to utilize the maternal health services than those who did not discuss.

METHODS

Source of Data and Sample Design: The data for this study came from the 2001 Nepal Demographic Health Survey (NDHS), which was conducted under the auspices of the Family Health Division of the Department of Health Services, Ministry of Health, Nepal. The survey was implemented by New ERA, a local research organization with technical support from Macro International Inc., ORC Macro. The 2001 NDHS was a nationally representative survey of ever married women in the reproductive age groups of 15-49. Data were collected from 8,726 ever-married women. The sample for the NDHS, 2001 was selected on a two stage stratified sampling. The first stage, 257 primary sampling units (PSUs), 42 in urban areas and 215 in rural areas were selected using systematic sampling with probability proportional to size. The primary sampling unit was a ward or group of wards in rural areas and sub wards in the urban areas. The second stage, systematic samples of 34 households per PSU on average were selected.

Sample Size and Unit of Analysis: The study deals with 3119 currently married women who had given birth during the past three years preceding the survey. The analysis was limited to those women listed as usual resident of the community in which they were surveyed. The NDHS 2001 collected information on the utilization of antenatal care, delivery care, and postnatal care only for the last birth.

Data Analysis: Frequency and percentage distribution were carried out to describe the general features of sociodemographic factors, women's perceptions of problems in accessing maternal health care services, women's autonomy and utilization of maternal health services. Since, all dependent variables are dichotomous; a binary logistic regression model was employed to examine the effects of women's autonomy, sociodemographic factors on utilization of maternal health services. Binary logistic regression is a form of regression used when the dependent variable is dichotomous and independent variables are of any types (i.e. nominal, ordinal, interval, and ratio level). Moreover, logistic regression does not assume linearity of the relationship between each independent variable and the dependent variable, it does not require normally distributed variables, and it does not assume homoscedasticity. In general, it has less stringent requirements. The clustered natures of commands were used with Stata Version 9.0.

RESULTS

Univariate Analysis: Relatively higher proportions of the women were in the younger age groups, with more than two thirds (68%) of them were under age 30 and nearly one third women were between 20-24 age group (Table 1). Respondents were mostly concentrated in the age group 20-34 (77%). The distribution of respondents by parity shows that more than two fifths women had 2-3 children and nearly one tenth women also had seven or more children. Nearly three in four women did not have any formal schooling in Nepal. Only 14% of the women had primary level of schooling while remaining 13% had secondary or tertiary level of schooling. Nearly one third of respondents' husband did not have any formal education and only 5 % had tertiary level of schooling. More than half of the respondents' husbands were employed in agricultural sector, while one fifth of them were employed in modern sector, such as professional, technical, managerial, clerical or sales workers and the rest were laborers. With regard to the relationship with the head of household, nearly three in five women were wife of the household head. Nearly half of the women had more than 7 persons in their household. One in five women had four or less household members in their household. One in every three household was in the lowest quartile category of household economic status. Most women had resided in rural areas (91%). Highest percentages of the women (28%) had concentrated in Central Development

Region (CDR). 72% of the women reported that getting money for treatment was the big problem and 60% of the women considered "not wanting to go alone" to be the big problem in accessing health services. Likewise, more than half women also considered that having to take transport, distance to health facility, and lack of female provider as the big problem. Relatively lower percentage of women considered "getting permission to go" to be the big problem when compared to the other types of the problems.

More than three in four women had not involved in making decisions regarding their own health services. More than one half of the women (55%) reported that their husband alone made the decision about their own health care and more than one fifth said someone else made the decision. 76% of the women did not have final say on purchases of large household items either independently or jointly and nearly one half of the respondents' husband alone made the decision on consumer durables of the household. 65% of the women stated that their husband or someone else made the decision on household purchases for daily needs.

More than two thirds women said that their husband or someone else made decision regarding for visits to family or relatives in their household. It seems that decisions making in Nepalese women is quite low and respondents' husband alone had much higher level of final say in each area of decisions making. Although 86% of all the respondents were working, only 6 % of women had involved on how their earnings were spent. A large majority of women did not own livestock. Among those who own livestock, more than one third reported that they could not sell livestock independently. About half reported having discussed family planning at least once with their husband in the past year. Only one in seven (14%) women had made four or more antenatal visits during their pregnancy and more than half women did not make any antenatal visits at all. Only 12% of deliveries were institutional and 14% of births were attended by trained medical personnel.

Logistic Regression Analysis: In this section, the results of the logistic regression analysis predicting the utilization of maternal health services are discussed. To control for the confounding influence of the sociodemographic and other factors, models were fitted for each of the dependent variable to identify the independent associations between the indicators of women's autonomy and use of maternal health services.

Table 1: Operationalization and percentage distribution of all studied variables

Variable name	Measurement Level & Description	Categories	%	Mean
Independent variables: Sociodemographic factors				
Age	Interval level variable indicating the age of the respondent at the time of childbirth	15-19 years old	8.95	27.10
		20-24 years old	31.07	
		25-29 years old	27.83	
		30-34 years old	18.18	
		35-39 years old	9.17	
40-49 years old	4.81			
Parity	Interval level variable indicating number of children ever born	One	20.33	3.38
		2-3	40.65	
		4-5	23.21	
		6 or high	15.82	
Women's education	Ordinal variable indicating women's highest level of educational attainment.	No schooling	73.39	
		Primary education	13.79	
		Secondary or tertiary	12.82	
Husband's education	Ordinal variable indicating educational level of respondent's husband	No schooling	34.92	
		Primary education	27.19	
		Secondary education	32.41	
		Tertiary	5.48	
Husband's occupation	Nominal variable indicating type of occupation of respondents' husband	Agricultural sector	55.53	
		Modern sector	21.55	
		Laborer	22.92	
Relationship with the household head	Nominal variable indicating respondent's relationship to the head of the household	Head	6.67	
		Wife	58.99	
		Daughter in law	28.76	
		Other relative	5.58	
Household size	Interval level variable indicating number of household members	4 or less	21.03	7.03
		5-6	31.49	
		7-8	23.71	
		9 or more	23.47	
Household economic status	Ordinal measure of asset index indicating economic status of the household constructed by principal component analysis(PCA) method from nine different household amenities	First (or Poorest)	32.93	
		Second	26.03	
		Third	16.86	
		Fourth (or Richest)	24.17	

Variable name	Measurement Level & Description	Categories	%	Mean
Residential area	Dichotomous variable indicating Urban -rural status of the women	Urban	9.04	
		Rural	90.96	
Region of residence	Nominal variable indicating Place of region where a particular woman resided (5 regions)	Eastern	22.57	
		Central	27.61	
		Western	14.65	
		Mid-western	13.98	
		Far western	21.19	
Independent variables: Perceived problems in accessing health services				
Knowing where to go for treatment	Ordinal variable indicating the degree of women's perceived problem related with knowing where to go for treatment	Not a big problem	52.23	
		A small problem	17.41	
		A big problem	30.36	
Getting permission to go for treatment	Ordinal variable indicating the degree of women's perceived problem related with getting permission to go for treatment	Not a big problem	59.89	
		A small problem	20.58	
		A big problem	19.93	
Getting money for treatment	Ordinal variable indicating the degree of women's perceived problem related with getting money for treatment	Not a big problem	13.11	
		A small problem	15.17	
		A big problem	71.72	
Distance to health facility	Ordinal variable indicating the degree of women's perceived problem regarding distance to health facility	Not a big problem	21.58	
		A small problem	23.02	
		A big problem	55.40	
Having to take transport	Ordinal variable indicating the degree of women's perceived problem regarding having to take transport	Not a big problem	26.19	
		A small problem	17.28	
		A big problem	56.52	

Variable name	Measurement Level & Description	Categories	%	Mean
Not wanting to go alone	Ordinal variable indicating the degree of women's perceived problem regarding not wanting to go alone	Not a big problem	22.51	
		A small problem	17.89	
		A big problem	59.60	
Concern no female health provider	Ordinal variable indicating the degree of women perceived problem regarding concern of lack of female health provider at health facilities	Not a big problem	28.04	
		A small problem	20.05	
		A big problem	51.91	
Independent variables: Women's autonomy				
Decision making on own health care	Nominal variable indicating decision making on women's own health care	Respondent alone	10.39	
		Respondent jointly	12.22	
		Husband or someone else	77.40	
Decision making on large household purchases	Nominal variable indicating decision making on large household purchases	Respondent alone	8.98	
		Respondent jointly	14.90	
		Husband or someone else	76.11	
Decision making on household purchases for daily needs	Nominal variable indicating decision making on household purchases for daily needs	Respondent alone	20.62	
		Respondent jointly	14.43	
		Husband or someone else	64.96	
Decision making on visiting to family or relatives	Nominal variable indicating decision making on visiting to family or relatives	Respondent alone	11.16	
		Respondent jointly	21.16	
		Husband or someone else	67.68	
Employment	Nominal measure indicating whether the women were currently working	Not working	14.20	
		Working	85.80	
Control over use of earnings	Nominal variable indicating whether the women had control over use of their own earnings either alone or jointly	Yes	6.44	
		No	93.56	

Variable name	Measurement Level & Description	Categories	%	Mean
Control over livestock	Nominal variable indicating the composite index whether the women own livestock and whether she stated that she could sell this livestock without consulting anyone.	Do not own livestock	76.24	
		Own but can not sell	14.52	
		Own & can sell independently	9.23	
Spousal communication on family planning	Dichotomous variable indicating the extent of family planning discussion with her husband in the last year	Discussed at least once	46.24	
		Not discussed	53.74	
Dependent variables: Use of health services				
Use of antenatal care	Dichotomous variable indicating whether a woman had received four or more antenatal visits during her last pregnancy	Less than four visits	85.83	
		Four or more visits	14.17	
Place of delivery	Dichotomous variable indicating whether a woman delivered at home or health facilities (institutional)	Home delivery	88.07	
		Delivery at health facilities	11.93	
Birth attendants	Dichotomous variable indicating whether birth delivery attendants were trained provider or without trained provider	Without trained provider	85.83	
		With trained provider	14.17	
Total			3119	

The model in each dependent variable includes all potential factors that may have influence on use of health services. In other words, at the multivariate level, the net effect of each independent variable on maternal health services is tested taking into account the effect of other independent variables, using a binary logistic regression analysis;

$$\ln \frac{p}{1-p} = \vec{X} \vec{\beta} + \epsilon$$

Where, p is the likelihood of maternal health services in the i^{th} sample

\vec{X} is a vector of independent variables
 $\vec{\beta}$ is the corresponding vector of coefficients
 ϵ is the stochastic disturbance term.

After assessing multicollinearity among the independent variables, it was found that two variables “age of women” and “parity” was strongly correlated ($r=0.81$). So the variable age was dropped in the logistic regression model since parity showed greater degree of correlation to the dependent variables (Table 2).

Table 2: Pearson’s correlation matrix (N= 3119)

	Age	Parity	ANC	POD	BA
Age	1.00				
Parity	0.81	1.00			
Antenatal care (ANC)	-0.13	-0.21	1.00		
Place of delivery(POD)	-0.09	-0.15	0.39	1.00	
Birth attendants(BA)	-0.12	-0.21	0.41	0.75	1.00

Note: All correlation coefficients were significant at $p < 0.001$. Age and parity were measured in interval scale and others are dummy variables: 1= health service used; 0= not used

Use of Antenatal Care: Compared with the women whose husband or someone else made the decision about their own health care, those who alone made decision were 1.61 times more likely to use antenatal care after controlling for sociodemographic and other potential confounders (odds ratio=1.61) (Table 3). Similarly, women who alone made the decision regarding the purchases daily household needs were 97% more like to use antenatal care services than those women whose husband or someone else made the decision (odds ratio=1.97). Working women were 36% less likely to have received antenatal care than nonworking women while controlling the effects of confounding variables (odds ratio= 0.64). Women who had some control over use of their earnings were no more likely to receive such care than women with no control over use of their earnings. The discussion of family planning had positive effect on the receipt of antenatal care. In the full model, the odds of receiving such care were 37 % higher among those who reported some discussion with their husband than among those who reported none (odds ratio = 1.37).

Women’s education, husband’s secondary and tertiary level of schooling and high economic status of

household all had positive effect on the use of antenatal care. Women who had relationship of wife and daughter in law with the household head were more likely to have received antenatal care than among those who were themselves household head. Urban women were 61% more likely to have received antenatal care. Parity and women’s perception regarding economic accessibility of care had negative effect on the use of antenatal care. However, women’s perception of lack of female health provider had a positive effect on the use of antenatal care.

Place of Delivery: The model predicting the place of delivery is also shown in table 3. From the model, it was found that none of the decision making variables had effect with the likelihood of giving birth at medical institutions. When compared to the nonworking women, working women were 45% less likely to give birth at medical institutions (odds ratio= 0.55) while controlling the effects of potential confounders. Control over use of earnings and family planning discussion did not retain its effect after all the potential confounders were accounted for.

Control over livestock did not have any effect while controlling the effects of potential confounders. Variables such as women’s education, husband’s education, economic status of household and urban status of women all had positive effect with the likelihood of giving birth at medical institutions. In particular, women having secondary or tertiary level of schooling were 2.75 times more likely to give birth at health facilities than among those who did not have any formal schooling. Women from high economic status group were 2.43 times more likely to give birth at health facilities than women from low economic status group. Women from urban area were 2.24 times more likely to give birth at medical institutions than women from rural area. Women who perceived lack of female provider as ‘a small problem’ were 40% less likely to give birth at health facilities than those who perceived lack of female health provider as ‘not a big problem’ (odds ratio = 0.60).

Birth Attendants: The results for analyses pertaining to care at delivery with an assistance of trained birth attendants are shown in Table 3. The model shows that decision making regarding the women’s own health care did not retain its effect while controlling the effects of all other variables. The effects of other areas of decision making variables on the receipt of trained personnel at

Table 3 : Odds ratios from logistic regression analysis for maternal health care utilization by women's autonomy and selected variables

Variables	Antenatal Care	BAMI	TBA
Women's Autonomy [Decision Making (DM) and Others]			
DM on own health care (HS=R)			
Respondent alone	1.61*	1.54	1.76
Respondent jointly	0.86	1.25	1.02
DM on large household purchases (HS=R)			
Respondent alone	0.73	0.72	0.74
Respondent jointly	1.53	0.99	1.50
DM on household purchases for daily needs (HS=R)			
Respondent alone	1.97*	1.47	1.38
Respondent jointly	0.79	1.27	0.90
DM on visiting to family or relatives (HS=R)			
Respondent alone	1.03	0.73	0.56
Respondent jointly	0.84	0.95	0.68
Employment (Not working =R)			
Working	0.64**	0.55**	0.50***
Control over use of earnings (No=R)			
Yes	1.12	1.42	1.55
Control over livestock (Do not own livestock =R)			
Own but can not sell livestock	1.03	0.92	0.96
Can sell livestock independently	0.91	0.75	0.85
Spousal communication on FP (Not discussed= R)			
Discussed at least once	1.37*	1.12	1.03
Sociodemographic factors			
Women's education (No schooling=R)			
Primary	1.48*	1.44	1.49
Secondary or tertiary	2.04**	2.49*	2.54***
Parity (Number of children ever born)			
	0.79***	0.92	0.83***
Husband's education (No schooling=R)			
Primary	0.94	1.33	1.39
Secondary	1.45*	1.55*	1.61**
Tertiary	1.84*	2.75**	2.51**
Husband's occupation (Agricultural sector= R)			
Modern sector	1.29	1.08	1.40*
Laborer	0.94	1.10	1.30
Relationship with the household head (Head=R)			
Wife	1.90*	0.89	1.24
Daughter in law	2.50*	1.01	1.41
Other relative	2.06	2.19	2.59*
Sociodemographic factors (contd.)			
Household size	0.97	0.99	0.98

Variables	Antenatal Care	BAMI	TBA
Household Economic Status (Lowest quartile=R)			
Second	1.11	1.11	1.47
Third	1.51	1.59*	1.53
Fourth or highest quartile	3.27**	2.43***	3.09***
Residential area (Rural=R)			
Urban	1.61*	2.24***	1.86**
Region of residence (Mid- western=R)			
Eastern	1.72	0.79	1.35
Central	1.59	1.31	1.35
Western	1.84	1.02	0.67
Far-western	1.44	1.15	1.13
Perceived problems			
Knowing where to go for treatment (NBP=R)			
A small problem	0.93	1.08	0.99
A big problem	1.02	1.42	1.01
Getting permission to go for treatment (NBP=R)			
A small problem	0.81	0.97	0.77
A big problem	0.68	0.97	0.99
Getting money for treatment (NBP=R)			
A small problem	0.88	0.92	0.74
A big problem	0.68*	0.75	0.65*
Distance to health facility (NBP=R)			
A small problem	0.78	0.83	0.85
A big problem	1.27	1.09	0.99
Having to take transport (NBP=R)			
A small problem	0.98	1.10	1.25
A big problem	0.95	0.70	0.72
Not wanting to go alone (NBP=R)			
A small problem	0.97	0.75	0.67
A big problem	0.95	0.84	0.85
Concern no female health provider (NBP=R)			
A small problem	1.30	0.60**	1.01
A big problem	1.39*	0.98	1.20
Pseudo R²	0.28	0.2352	0.29
Wald Chi-Square	571***	474***	536***
Log pseudo likelihood	-916	-872	-903

* p< 0.05. **p< 0.01. ***p< 0.001.
 HS = Husband or someone else. R = Reference category.
 NBP = Not a big problem. BAMI = Birth at Medical Institution.
 TBA = Trained Birth attendants

delivery were much weaker. Working women were 50% less likely to have delivery care from trained health personnel than non working women (odds ratio= 0.50). The discussion of family planning and control over use of earnings did not retain its effect while controlling the effects of all other factors.

Women and their husband secondary or tertiary level of schooling and high economic status of household had positive effect on the receipt of trained birth attendants. Women whose husbands were employed in modern sector were 40% more likely to have trained health personnel at birth when compared to the women whose husband were employed in agricultural sector. Women who had the relationship other than wife or daughter in law with the household head were 2.59 times more likely to have trained health personnel at birth than those women who were themselves household head. Urban women were 86% more likely to get assistance of trained health personnel than rural women. Parity and women's perception of economic accessibility of care (getting money for treatment) had negative effect on the receipt of skilled birth attendants.

DISCUSSION

This study identified number of factors that have influence on utilization of maternal health services in Nepal. Among the women's autonomy variables, decision making regarding women's own health care and household purchases for daily needs had positive effect with the likelihood of receipt of antenatal care. It is similar to the study carried out in North Indian city.⁹ This suggests that if women were more involved for their own health care, they would be more likely to use antenatal care. With regard to the other areas of decisions making, this study did not show any influence on the use of maternal health services. Furthermore, the joint decision making did not also have effect on the use of health services. Thus, the first hypothesis is only true for women's sole decision making power regarding their own health care and household purchases for daily needs with the use of antenatal care services.

It was hypothesized that working women are more likely to utilize the maternal health services. However, this study revealed that nonworking women were more likely to receive maternal health services than working women. This may be the reason that most women in Nepal are working for family's survival in the agriculture sector and most of them are from rural area. Women who had some control over use of earnings were also no more likely to have received maternal health services than those who had no control (also includes non working women). One possible argument is that working women experience time constraints that reduce their opportunities for receiving antenatal care. A few previous studies have shown that employment in the informal sector does not necessarily uplift the

position of women. For example, Riley, Momsen found that employment was negatively associated with some aspects of autonomy.^{15, 16} This seems to be the case in Nepal.

It was expected that the women who could sell the livestock independently are more likely to utilize the maternal health services. However, this study did not support the assumed hypothesis. This can suggest that this type of women's autonomy may not lead to increased utilization of maternal health services.

The results from this study showed that women's discussion of family planning with their husband had positive effect on the use of antenatal care. This supports the assumed hypothesis. This effect is largely independent of other sociodemographic factors. Although, the mechanism of this strong relationship is not so clear, but, one possible explanation could be explained by the fact that individuals who discuss family planning tend to be more open to modern ideas and hence are more likely to receive antenatal care. However, this would not explain why women who discussed family planning were no more likely to receive delivery care (institutional delivery and trained birth attendants) than those who did not discuss family planning to their husband. The possible explanation could be the fact that women usually have sufficient time for antenatal checkup where as deliveries are often occurred in an emergency, which might have created lack of time in reaching the health institution during delivery.

This study, as well as several other studies found that women's education as one of the most important predictors of utilization of maternal health services.^{9,17,18,19}

This may be because education provides a wide range of favorable behaviors to women.^{20, 21} Secondary and tertiary level of husband's education had positive effect on the use of health services. This result is also consistent with several other studies such as Raghupathy,²¹ Doan & Brewster.²² Household economic status showed positive influence on the use health services which is also consistent with the findings of Castro et al.²³; Pebley, Goldman & Rodriguez.²⁴ This may be because household status reflects the ability of the household to pay for the costs that are associated with using health services. Parity showed negative effect particularly for antenatal care and trained birth attendants and the result is consistent with other studies.²⁵ The possible explanation could be women pregnant with first child were more cautious about their pregnancies and

therefore sought trained professional and that women who have had at least three pregnancies may tend to believe that modern care is not as necessary due to the experience and knowledge accumulated from previous pregnancies and births.²⁶ Urban women were more likely to utilize maternal health services. This may be because of urban area are generally developed where facilities are easily available. The negative association between women's perception getting money for treatment and use of maternal health services (especially for antenatal care and trained birth attendants) possibly reflects the confounding influence of the economic status of the household.

CONCLUSION

This study suggests that utilization of maternal health services may be related to women's autonomy as indicated by decision making about women's own health care and spousal communication on family planning. This further suggests that not all dimensions of women's autonomy are equally important for every maternal health services. In other words, the effects are not consistent across the indicators of autonomy, and they require careful interpretations. Both decision making on own health care and spousal communication are important for antenatal care but not for other types of maternal health services.

This study concludes that current low levels of use of health services are not fully explained by women's low power within the household at the present moment since many other decision making variables and control over use of earnings did not lead to increased utilization of maternal health services in Nepal. Many other factors, notably, women's education, husband's education, economic status of household, parity, and women's perception of lack of money in accessing the maternal health services had effect on the use of maternal health services. The findings of the study suggest that future

interventions programmes will have greater impact if the socioeconomic factors of service uptake are also addressed to increase service utilization. Furthermore, the positive effect of women's decision making about their own health care and use of antenatal care suggests that awareness program should be launched targeting among both pregnant women and key actors such as husband or in-law parents. Such programmes should also focus on raising the value attached to women's health rather than just focusing on modern health care services. This can be done by adopting appropriate method of counseling. Similarly, the influence of spousal communication on antenatal care services suggests that the intervention should be targeted in involving more male in maternal health programmes. An integration of maternal health and family planning programme could minimize the problem.

The positive effect of women's education on the use of maternal health services highlights the need of educating Nepalese girls in terms of higher schooling and teaching maternal health knowledge in primary education. Further research should be carried out by incorporating more autonomy variables such as control over household resources, freedom of movement, and a concentrated effort must also be made to examine the effects of different types of empowerment programs such as success of some credit and loan programs as documented in Schuler and Hashemi.²⁷ Since the study of women's autonomy is likely to be context specific, a qualitative approach may provide more insight to fully explore the relationship between women's autonomy and maternal health service utilization. Future data collection efforts should involve careful consideration of whether they represent contexts faithfully and are adequate for capturing women's autonomy.

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