Factors Affecting the Utilization of Delivery Care Services in Eastern Nepal

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ABSTRACT

Background

Maternal health has been the utmost priority program implemented by the Government of Nepal, popularly known as the Aama program. The achievement of sustainable development goals in 2030 underlay the utilization of maternal and health care services. Institutional delivery is one of the key focused indicators to measure the country's efficacy in delivering maternal and health care service utilization. The study was conducted in eastern Nepal focusing on the factors affecting institutional delivery.

Objective

To assess the relationship of demographic, socio-cultural, and socio-behavioral factors with the utilization of delivery care services and to assess factors other than demographic, socio-cultural and socio-behavioral affecting the perception towards health services, accessibility to health services, and utilization of delivery care services.

Method

This study was cross-sectional and descriptive. A total of 401 recently delivered women were taken for the face-to-face interview. A multistage sampling technique has been taken to select the sample household as a primary sampling unit. Ethical approval has been obtained from Nepal Health Research Council.

Result

In the multivariate model, education level, family type of women, perceptions and awareness about the health facilities (should a pregnant woman go for a medical check-up, and quality of service of private health institutions is better than public health institutions were found to have a significant influence on the behaviors related to institutional delivery.

Conclusion

Our study stated that perception of quality of care, regular access to health services, receiving a higher level of education, and living in the joint family are very important which tend to improve the other determining factors for utilization of delivery care service in eastern Nepal.

KEY WORDS

Institutional delivery, Maternal health, Utilization

INTRODUCTION

Maternal Health was marked as a Priority-1 Program in the Essential Health Care Package formulated in the late 1990s which accelerated the merge of the safe motherhood program with other vertical programs. The Basic Health Service (BHS) Package 2078 and Emergency Health Service Package 2078 have included maternal health components adequately. Similarly, more focus on institutional delivery care particularly on the development of emergency obstructive care and birthing centers was emphasized by the National Safe Motherhood and Newborn Health Long-Term Plan (2006-2017).[1] To address the delay in reaching care and increase institutional delivery, the Maternity Incentive Scheme (MIS) was introduced in 2005 which provided cash incentives to those mothers who have had their delivery at the government health facilities.[2] The Sustainable Development Goals (SDGs) and the Global Strategy for Women's, Children's, and Adolescents' Health (2016-2030) have set goals that Nepal is dedicated to fulfilling. The Global Strategy Monitoring Report 2018 classifies key action areas where regional and global progress toward the SDGs has lagged, and it urges increasing multisectoral, multi-stakeholder initiatives that extend the lifespans of women, children, and adolescents.[3] Still, 21% of the births are outside the health facility, the common barriers to access to health care encountered by women aged 15-49 were not wanting to go alone, distance to health facilities, and getting money for treatment.[4] The coverage of Nepal and India is relatively low as compared with Sri Lanka as it had been able to provide maternal health services to nearly all of the mothers in recent years.[5] This study was conducted focusing the Sunsari district of eastern Nepal taking primary objective to assess the factors affecting delivery care which has been one of the key gaps in maternal healthcare utilization in Nepal.

A study regarding the maternity incentive scheme on safe delivery services among 96 women of rural Kavre focused on the use of incentives as it helped to change the behavioral practice of delivery of women (78%) by skilled birth attendants in hospitals.[6] Similarly, factors like the feeling of safety, staff attitude, support during labor and post-partum and the cost associated with birth were considered as the barriers to influencing the perception of women for choosing the type of health facility in Cambodia.[7,8] Studies have shown that factors like religion, caste/ethnicity, location of residency and wealth quintiles are some of the demographic factors that have significant effects on institutional deliveries.[9] Other factors like the location of delivery and the person assisting, with a clear shift away from giving birth in a medical facility toward giving birth at home.[10] A study done on Morang showed no significant association between the occupation of the mother and institutional delivery which is similar to the study done at Kavre. A community-based cross-sectional study done in Chitwan, Nepal showed that women with a better wealth index are five times more likely to deliver in health facilities than women with a poorer wealth index.[7] The national statistics reveal that provincial variation in the women delivering in health facilities. Only 62 % of deliveries were in health facilities in Province 1. Also, 17% of the women who did not deliver in health facilities reported that the location of health facilities was far. Migration played a vital role in utilizing the delivery services among the women.[11]

In this regard, the study will support widening the horizon of methodological knowledge to study the relationship between economic disparities, religion, and utilization of delivery care among ever-married women, which can be advantageous for other researchers and students and support reviewing the existing policies to enhance the uptake maternal health services. This study has contributed to enhancing safe motherhood and child health programs in Nepal by designing targeted financial assistance for poor and poorest women, strengthening/introducing interpersonal communication between service providers and receivers, and helping groups for assistance in the community with support from the female community health volunteers and improve the quality of care in the health facility.

METHODS

The study was cross-sectional, and conducted in Sunsari district located at Koshi province of Nepal. The field level data collection was done in 2018. The study was focused on being implemented in Sunsari District as the district have a diverse ethnic variation where people following Buddhism are among the top 2 religion at the province level and the women in the district are also transitioning in terms of utilization of delivery services into opposing scenarios. Moreover, there are rare studies that have been conducted addressing the utilization of maternal in a country like ours in terms of ethnicity rather than Hinduism. A total of 401 women of the reproductive age group were enrolled in the study. The sample size was calculated through the Stat calculator of Epi Info 7 with the following values:

Two-sided confidence level = 95.0%

z value: level of confidence according to the standard normal distribution (for a level of confidence of 95%, z = 1.96)

p-value = estimated proportion of the population that presents the characteristic. Here the proportion of prevalence of maternal health service utilization among Buddhist women is mostly unknown, hence (p) = 50% was used for the sampling = 0.5

q value = 1- p = 1 – 0.5 = 0.5

d value = tolerated margin of error (for example we want to know the real proportion within 5%)

Using the WHO standard formula for baseline studies the sample size calculated is Sample size (n) = z^2pq/d^2 = $1.96*1.96*0.5*0.5/(.05)^2$=384

Considering the non-response rate (non-response rate (r)= 5%.), the final sample size was calculated as n*r = 401.

The study followed the multistage sampling technique. In the first stage of sampling, one district was randomly selected. As per the district profile of the district published in 2074, the eligible population of married women with at least having a child are 17,374.[12] In the second stage, 3 village development committees (VDCs) and 3 municipalities were further randomly selected. The total number of married females within the population area according to the National Population and Housing Census 2011 was 136, 708. In the third stage, one ward (primary sampling unit) was randomly selected from former village development committees (VDCs) in each municipality with 60,251 households. At the fourth stage of sampling, the households were listed based on stratified random sampling. Two strata were developed (Buddhist and Hindu). At the final stage of sampling, two strata of ever-married women of reproductive age group having at least one living child, three years proceeding to survey were selected as the ultimate respondents. From each selected household, one woman was interviewed.

Ethical approval was taken from the Nepal Health Research Council. Written Informed consent was taken from the women before proceeding with the interview.

For household and individual level information, structured questionnaires were used and face-to-face interviews were done among the married women. The content and design of these questionnaires were formulated based on the MoHP regular monitoring and supervision system to observe the relationship between poverty, ethnicity and utilization of delivery care among ever-married women. Demographic Health Survey questionnaires were used to collect the information about background characteristics of the household and individual respondents, knowledge and attitudes towards delivery care, individual's perceived severity, perceived barriers towards delivery care among ever-married women and care-seeking behavior. The questionnaire was developed in English at first and then translated into the Nepali language. Pretesting of the tools was done on about 10% of the sample size selected from the other VDC of the same district, which was similar to the study area, and accordingly, some modifications were made to the questionnaire.

Two enumerators were hired and trained for the data collection. Enumerators were well-oriented before the data collection procedure. Enumerators having a minimum educational background of bachelor's level with experiences in data collection at the field level and having sound knowledge of statistics were selected. The two candidates close to the above-mentioned criteria were appointed as the enumerators for the data collection. A short 2-day orientation was organized by the researcher for a better understanding of the study objectives, research instruments, sample population, data collection techniques and proper data management between the enumerators for gathering quality data. However, the principal investigator himself monitored the data collection process and supervised them to preserve the quality and minimize potential biases. The collected data were entered into the software where further support was taken the experienced colleagues for the data entry purposes. The entered data were analyzed as per the need of the study where the overall analysis of the data was done by the researcher himself with minimal external support for data generation.

Place of delivery refers to the institution where women delivered their last child. The variable had been categorized into deliveries at home and health facilities. A health facility is any location where women can have access to delivery services in the presence of skilled health workers. Health facility includes all public, private and non-government sectors.

The study variables of the research are divided into six broader categories which are Socio-Demographic factors; including variables such as age, caste/ethnicity, education level, occupation, marital status and migration history; Household-related factors, including the size of the family, place of residency and sex of the HH head, Exposure to media, Economic factor; includes the economic status of the women as per wealth index (poor, middle and rich), Religious factor, Health service-related factors; includes, information regarding maternal and child health, access and availability of health services.

All recorded data were coded to facilitate the data entry process. Data were entered into EpiData version 3.1 and imported to Statistical Package for the Social Sciences (SPSS) for analysis. The quantitative data were discovered and analyzed accordingly to gain insights into the existing trends or patterns. For this, univariate (percentages, frequency distribution, and graphic presentation), bivariate (Chi-Square- [(O-E)2/E]) and Multivariate (multiple regression and logistic regression) techniques were used to analyze the data. As univariate analysis only provides a glimpse of the data through the summarization, the relationship between the other variables is equally necessary to be analyzed to fulfill the main objective of the study. Hence, bivariate and multivariate analyses were carried out among variables to understand the relationship of one variable with another.

For bivariate analysis, the Chi-square test was used to examine the association between variables under study and health care utilization as being both the independent and dependent variables categorical. It defines the difference between the expected frequencies and the observed frequencies. Those variables (socio-economics and

demographic-age, education, caste, occupation, economic, marital status, type of family and sex of household head, background information of the study participants-readership of newspaper, listening of radio, watching TV and ever drink alcohol, perception of the participant toward health and health services-visit for medical check-up, importance on immunization for children satisfaction with health services, adequate of health services, availability of existing health services, quality of health services provided private health institution, perception about free distribution of basic medicines from SHP, HP and PHC, accessibility of the services-place of residence, hospital/PHC/HP in the ward, time to reach nearest health facility, utilization of the services-antenatal check-up in last pregnancy, experienced any pregnancy-related problem, place of delivery, postnatal check-up after delivery, religion, agree and disagree on the provided services) were further subjected to multivariate analysis. The variables that were statistically significant during the bivariate analysis were then subjected to multivariate analysis to analyze the multiple factors at once. It also helps to study the pattern of the data and make clear comparisons. Here, a multiple regression model was used to establish the cause-and-effect relationship. Similarly, the odds ratio was calculated to compare the relative change in the response variable for predictor variables. In multivariate analysis, binary/logistic regression models were used to establish the cause-and-effect relationship. The logistic regression model existed in the biological sciences in the 20th century, but it is widely applied in several areas of social science.[13] Although the logistic regression model can be applied to any type of data, they are usually used for cross-sectional data. In binary logistic regression, the response variable contains two categories; true or false (yes or no), etc. The Statistical Package for Social Sciences (SPSS) version 22 was used to analyze the data.

Reliability and Validity of Research Instruments: For maintaining reliability and validity, a standard process (A modified Law she content validity ratio CVR = (ne-N2)/ N2) was adopted. For validity, standard tools prepared by WHO was adopted and some modification was made for preparing the set of questionnaires. Great attention was paid to maintaining internal and external validity. For reliability, pretesting (30 respondents from rural areas and 10 respondents from urban) was done in Haripur and Chimdi.

RESULTS

The mean age of the respondents was found to be 28.65 years. Two-thirds of the respondents belonged to the age group of 20 to 29 years. The majority of the women were literate. 34.86% of the women had obtained a school leaving certificate (SLC) or above. Followed by literate/ primary 30.17%, and lower secondary 26.18%. Around 82% of the women were primarily engaged in household chores as their main occupation. 62.3% of the women belong to middle class in wealth status (Table 1).

Table 1. Background characteristics

		n (%)
Age of the participant (Mean, SD) 28.65, 8.54	17-19	20 (4.99)
	20-24	140 (34.91)
	25-29	134 (33.42)
	30-34	56 (13.97)
	35 and above	51 (12.72)
Educational Status	No education	36(8.98)
	Literate/primary	121(30.17)
	Lower secondary	105(26.18)
	SLC & above	139(34.66)
Occupation	Housewife	328(81.80)
	Agriculture	19(4.74)
	Small business	18(4.49)
	Wage labour	23(5.74)
	Others	13(3.24)
Caste	Upper Caste	71(17.7)
	Indigenous	169(42.1)
	Lower caste	59(14.7)
	Other castes	102(25.4)
Economic status	Poor	92(22.94)
	Middle	250(62.34)
	Rich	59(14.71)
Type of family	Nuclear	354(88.28)
	Extended	47(11.7)
Religion	Hindu	234(58.35)
	Buddhist	120(29.93)
	Muslims	39(9.73)
	Others	8(2.00)

Table 2 presents the variables significant in the Chi-square test. Delivery at a health facility with the assistance of a skilled health worker is a key approach to improving maternal health and reducing maternal and newborn complications. 90% of women from rich and 83% from middle family status reported that they delivered at a health facility; however, 42% of poor women gave birth at home. Even 17% of the middle-class and 10% of rich-class women also gave birth at home. 84% of Buddhist and 79% of Hindu women delivered at the health facility, which is highly significant whereas 39% of Muslim and 38% other women delivered at home. The majority of so-called upper and indigenous castes reported they delivered at health facilities compared to the so-called lower and other castes. More than one-third of women from the so-called lower caste delivered at home. Similarly, 12% of the upper caste and 14% of the indigenous caste also gave birth at home. More than 95% of women from extended families reported that they deliver at a health facility whereas 24% of women

Table 2. Bivariate analysis of the sample characteristics

Background characteristics	Place of delivery		N	p-value
	At home (%)	At HFs (%)		
Economic status* **				0.000
Poor	41.6	58.4	89	
Middle	16.8	83.2	253	
Rich	10.2	89.8	59	
Religion*				0.030
Hindu	20.9	79.1	234	
Buddhist	15.7	84.3	120	
Muslims	38.5	61.5	39	
Others	37.5	62.5	8	
Caste/Ethnicity* **				0.000
Upper Caste	11.6	88.4	69	
Indigenous	13.7	86.3	178	
Lower caste	35.1	64.9	57	
Other caste	33.0	67.0	97	
Type of family**				0.003
Nuclear	23.5	76.5	356	
Extended	4.9	95.1	45	
Education level* **				0.000
No education	44.4	55.6	36	
Literate/primary	32.2	67.8	124	
Lower secondary	18.8	81.3	96	
SLC & above	7.4	92.6	145	
Watching TV* **				0.000
Everyday	15.9	84.1	300	
Once a week	36.4	63.6	27	
Not at all	42.2	57.8	74	
Should a pregnant woman go for a medical check-up* **				0.000
No	77.3	22.7	22	
Yes	18.1	81.9	379	
Quality of service of private health institution is better**				0.008
Disagree	33.3	66.7	75	
Agree	18.4	81.6	326	

***Significant at p < 0.000 level; **Significant at p < 0.01 level; *Significant at p < 0.05 level

from nuclear families choose delivery at home. A high proportion of women who have lower secondary or above education delivered at health facilities whereas 44%and 32% of illiterate and primary-level educated women respectively still delivered at home. As the educational level decreases, the percentage of home deliveries also increases. So, there is a reciprocal relationship between education level and home deliveries. A huge number of women who do not watch TV or watch TV once a week give birth at home compared to women who watch TV every day. There is a huge difference in institutional delivery rate among women who go for medical check-ups versus those who do not during pregnancy. Almost 82% of women who went for a medical check-up during pregnancy were delivered at a health facility whereas only about 28%of those who did not go delivered at a health facility. 26% of the respondents who were satisfied with services at public health institutions chose to deliver at home, compared to more than one-third of the people who were not satisfied with the quality of services at public institutions.

In the multivariate model, education level, family type

Table 3. Logistic regression model

Variables	Place of delivery			p-value
	Adjusted Odds Ratio (AOR)	95% CI		
		Lower	Upper	
Education level*				
No education (ref)	1.000			
Literate/primary	1.947	0.87	3.02	0.151
Lower Secondary	2.879	1.68	4.08	0.007
SLC & above	7.387	6.05	8.73	0.000
Family type*				
Nuclear (ref)	1.000			
Extended	14.461	12.18	16.74	0.022
Not at all	1.375	0.59	2.17	
Should pregnant women go for medical check-up* **				
No (ref)	1.000			0.000
Yes	34.149	32.35	35.95	
The quality of service of private health institutions is better**				
No (ref)	1.000			0.006
Yes	3.610	2.67	4.55	

*** Significant at p<0.000 level; ** Significant at p<0.01 level; * Significant at p<0.05 level

of women, perceptions and awareness about the health facilities (should a pregnant woman go for a medical check-up, and quality of service of private health institutions is better than public health institutions) were found to have a significant influence on the behaviors related to institutional delivery.

Women who perceived that a pregnant woman should go for a medical check-up were 34 times more likely to deliver at a health facility than those who didn't perceive the importance of pregnancy check-ups. Similarly, women who perceived that the service of public health institutions was sufficient were 2.9 times more likely to deliver public health institutions than those women who perceived it to be insufficient. Likewise, women who perceived that the quality of service of a private health institution was better were 3.6 times more likely to deliver at health facilities than those who did not perceive better.

DISCUSSION

The study unfolded the various factors and their associations with each other regarding the utilization of delivery care in Eastern Nepal. The study concluded that still more than 20% of the respondent prefer delivering at home putting them and their newborn at a significant risk of maternal complications. In regards to the analysis of demographic characteristics, economic status has a significant association with the place of delivery. A higher proportion of women from rich families tend to practice intuitional deliveries. Similarly, the sex of the household head was significantly associated with the place of delivery. Though women's autonomy is the important determinant of women's use of safe delivery care, this study's findings showed contrary findings. Religion was not significantly associated with the place of delivery.[14] Though cultural norms affect the utilization of health services during delivery, this study did not show any statistical significance. Interestingly, Buddhist women in a higher proportion utilized the health facilities for delivery than Hindus, Muslims, and others. The various other factors such as the cast/ethnicity, type of family, level of education, watching TV, tendency to seek, availability and quality medical care were also positively associated with the place of delivery. This study also does not show a significant association between the place of delivery and residence.

The majority of nations, including Nepal, who want to hasten their progress toward the SDGs can use these guidelines. A report on maternal mortality in Nepal following the national population and housing census 2021 revealed that MMR was found to be 151 per 100,000 live births. Of the 12,976 deaths among women of reproductive age (15-49 years), 653 were pregnancy-related, comprising five percent of the total deaths in this age group. Of the 653 pregnancy-related deaths, 622 (95 percent) were classified as maternal deaths. The overall proportion of maternal deaths among the deaths of women of reproductive age was 4.8 percent. Koshi province had a maternal mortality of 157 per 100,000 live births which is higher than the national average.[15] Nepal Demographic Health Survey (NDHS) shows that 80% of deliveries are conducted by a skilled provider, with 41% attended by a nurse or auxiliary nurse midwife and 39% by a doctor. The proportion of deliveries conducted by skilled providers increases with increasing mother's education, from 61% among mothers with no education to 96% among those with more than a secondary education. Skilled delivery assistance in Koshi province was 82% which is higher than that of the national average.[3,7] Mothers' education has been consistent with the findings from other studies.[3,7] Findings revealed that family type and regular access to health services were statistically significantly influenced institutional delivery and retained in the final model. This is consistence with the findings of previous studies conducted in Nepal.[16,17] The results have significant ramifications for safe motherhood initiatives in Nepal and other developing nations. Given that need factors can have a significant impact on a woman's decision to give birth in a medical facility, she should receive comprehensive counseling and persuasion about the advantages and safety of in-facility delivery. Any behavioral intervention, including those for complication readiness and birth preparedness, is unlikely to be effective unless it has a high level of ability to alter the women's attitude and purpose. Health professionals, preferably female health workers at an institution or female community health volunteers at home visits, can be the actors for improved institutional deliveries. Our study stated that perception of quality of care, regular access to health services, receiving a higher level of education, and living in the joint family are very important which tend to improve the other determining factors. This study comes up with policy and programmatic implications. Evidence suggests that public health facilities are crucial in need of improving the delivery of health care services. Contextual intervention such as enhancing the capacity of the public health facilities through the supply of better-trained nurses and midwives, improved health education and counseling could benefit the women in utilizing the delivery care services, Therefore, nursing staff needs further capacity-building activities at health facilities to reduce supply side barriers. Furthermore, women should receive quality care irrespective of the types of health facilities whether it is private or public. Home deliveries are still a concern, so a target-based intervention approach could be beneficial in reacting to the hard-to-reach areas and populations. This study is also concerned that availability and affordability are still negative catalysts for the utilization of delivery care services. These findings have been consistent with multiple studies conducted in several parts of the world.[18-20] In contrast to the other study, exposure to mass media was not found to be a significant predictor of delivery care utilization in the logistic regression model.[21,22] Another facet of women's empowerment is encouraging remote and rural women to participate in income-generating activities. This can be accomplished by assisting them in starting their businesses, which includes bettering their access to resources including marketplaces, training, microfinance, and property. In the Terai, where gender stratification is prevalent and women's lack of autonomy is largely the product of traditional circumstances, there is a need for a specifically developed empowerment program for women. This implied deciding that pregnant women could seek health care services whenever they need them. This factor was observed to be the utmost predictor for utilizing the delivery care service (AOR=34.149, 32.35-35.95). Nepalese programs and policy initiatives should create a strong legislative framework to empower women to participate in family decision-making. Furthermore, improving their access to and control over economic resources, as well as helping them to define and realize their rights, are critical methods of empowering people to make more autonomous decisions.

During the study, there were various strengths and limitations encountered. The study can identify the recent status of delivery care among women along with several factors that are responsible for its utilization. Being community-based research, this study was able to demonstrate the tendency of utilizing delivery care in both rural and urban settings. Similarly, the results of the findings are constructed on the additional study of representative statistics of the nation by using standardized tools. Nevertheless, there are some shortcomings to this study. First, because the study is based on cross-sectional data, the correlations discovered in the analysis are associational rather than causal. Second, there was no information on the quality of maternal health services received by respondents; this is significant since disadvantaged groups may receive inadequate treatment compared to those who have access to higher-quality care.

CONCLUSION

According to our findings, perceptions of the quality of medical care, regular access to health services, a higher level of education, and living in a joint family are all critical factors that influence the utilization of delivery care services in eastern Nepal. Further inquiry on socio-economic inequality in future research could be the additional marker in maternal and health care research in the future.

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