

ORIGINAL ARTICLE

Factors Affecting the Place of Delivery among Mothers Residing in Jhorahat VDC, Morang, Nepal

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ABSTRACT

Background: In Nepal, the maternal mortality ratio is 281 per thousand live births, among which 40% mortality occurs during home delivery. Home delivery increases the risk of maternal and neonatal mortality and morbidity due to the birth not assisted by skilled attendant. This study was carried out to determine the factors affecting the place of delivery among the mothers residing in Jhorahat VDC, Morang district, Nepal.

Methods: A mixed method study using interviews based on semi-structured questionnaire (n=93) among mothers and two focus group discussion among decision makers of the house and female community health volunteers was conducted between November to December 2012. For quantitative data, Chi-square test and Fischer's Exact test were used to examine the association between the selected variables and place of delivery.

Results: More than half (58.1%) of the mothers had institutional delivery and 41.9% of them had home delivery. The most common reason for home delivery was easy and convenient environment (66.7%) and that for institutional delivery was safety (77.8%). There was a significant association between caste, education of mothers, education of spouse, occupation of spouse, per capita income, time to reach the nearest health center, parity, previous place of delivery, number of antenatal visit, knowledge about place of delivery, planned place of delivery, and place of delivery.

Conclusion: Maternal health services, such as prenatal care, skilled assistance during delivery and post-natal care, along with adequately equipped health institutions, play a major role in the reduction of maternal morbidity and mortality. Concerted efforts should be made both at community and government levels to increase institutional delivery.

KEYWORDS: Antenatal care, Home delivery, Maternal health, Place of birth, Traditional birth attendant

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INTRODUCTION

Pregnancy is a physiological process, but there is a risk of maternal mortality and morbidity by pregnancy related complications during labour, delivery and postnatal period.¹ There were an estimated 358,000 maternal deaths in the world. Among them, developing countries accounted for 99% of them.² In many developing countries, more than a third of pregnant women have no access to or contact with health professionals before they deliver, and 57% of births occur without a skilled attendant present.³

The first 24 hours of delivery is the most critical period for the postpartum mother. Women delivering in a health facility should remain for observation for the first 24 hours period, and those who deliver at home need close observation as well, preferably by a Skilled Birth Attendant (SBA) who can recognize the signs of problems, manage, and refer immediately when needed⁴. The presence of skilled attendants at births and availability of emergency obstetric care have been shown to greatly reduce maternal deaths since obstetric complications have been widely studied.^{4,5}

In 1997, the Government of Nepal (GoN) initiated Safe Motherhood Program (SMP) to decrease maternal mortality. Out of three strategies, one is encouraging institutional delivery. Also, SBA policy was endorsed in 2006. Under Aama program, GoN is providing free institutional delivery, incentive to women for 4 antenatal care (ANC) visits and the safe delivery incentive program.⁶ As the result of continued government encouragement of institutional deliveries through free delivery services and payment for transportation costs, the percentage of births in a health facility has doubled in the past five years (from 18 percent in 2006 to 35 percent in 2011). Still two thirds of the births takes place at home. Children delivered at home are usually more likely to be delivered without assistance from a trained provider, whereas children delivered at a health facility are more likely to give birth to their baby by a trained health professional.⁷

As stated by WHO, immediate and effective professional care at the time of delivery can make the difference between life and death for both women and their newborns.⁸

Place of delivery is a crucial factor which affects the health and well being of both the mother and newborn.⁹ Therefore, it is essential to explore the cause of home delivery and reduce the maternal and neonatal morbidity and mortality by identifying the factors associated with it.

This study used mixed method approach to combine the strengths of quantitative and qualitative studies and explore a more complete picture of the respondents. Hence, this mixed method study was designed to address the following research objectives:

Quantitative objectives: To assess the factors affecting the place of delivery and find out the association between the place of delivery and selected variables.

Qualitative objective: To explain the various factors affecting place of delivery.

MATERIALS AND METHODS

Quantitative method: A mixed method study, with convergent parallel design, was conducted in Jhorahat Village Development Committee (VDC) of Morang District, using simple random sampling technique (Lottery method). Female Community Health Volunteers (FCHVs) keep the record of all the pregnant women and mothers who have given birth in their respective wards. FCHVs of all the wards were visited and prepared the list of the mothers who had given birth one year prior to the data collection. All the mothers (n=93) who met the inclusion criteria, i.e. mothers who have had delivered one year preceding the date of data collection and permanent resident of Jhorahat VDC, were included. Those mothers who were not willing to participate and who had delivery on the way to hospital were excluded from the study. For content validity, consultation with the research supervisor and experts in the related field was done. A semi-structured questionnaire was prepared in Nepali (local) language

through extensive literature review and then back translated to English after consultation with language experts. Pretesting was done in 10% of the samples in the adjacent VDC. The feedbacks from the pretest were incorporated and necessary amendments, i.e. addition, deletion and modifications, in the questionnaire were made. To maintain the reliability, KR21 was calculated. The scale reliability coefficient was 2.72. The questionnaire included socio-demographic variables, past obstetric history, information related to the pregnancy, labour and delivery details including reasons to deliver in the home or institution of the last child delivered one year prior to the data collection. Data collection was performed from November to December 2012. Data collection took place through face to face interviews with the mothers by door to door visit by researcher herself. In the case of lack of availability of the respondent at their home during the initial visit, upto three visits were done. Ethical approval was obtained from Institutional Ethics Review Board (IERB) of BP Koirala Institute of Health sciences (BPKIHS), Dharan (Ethical Code number: Acd. 450/071/072). Permission was obtained from the office of VDC, Jhorahat. Informed verbal consent was taken from all the respondents before the interview. Privacy and confidentiality were maintained throughout the study. The respondents were explained about the nature of the study and were made aware about the withdrawal from the interview on their own will at any time.

Data collected were entered in MS Excel 2007 and SPSS 16.0 version was used for data analysis. Descriptive statistics were presented in frequencies, percentage, mean and standard deviation. Chi-square and Fischer exact test were used to test the significant association between independent and dependent variables. The significance level was set at $P=0.05$.

Qualitative method: After the completion of interview with the mothers, two Focus Group Discussions (FGDs) were undertaken in the same VDC to explore the findings and for triangulation. One FGD was among the decision makers of the house and another

was with FCHVs. Each FGDs lasted for 20 to 30 minutes. Twelve decision makers from each house of the interviewed mothers were selected by lottery method. Among nine FCHVs in that VDC, only eight participated in FGD. Place for FGD was selected based on the convenience of the participants.

Topic guide was made in accordance to the study objectives. The FGDs were recorded by taking note as well as with a voice recorder and transcribed in English language. Then codes and terms were identified and tallied to come up with some categories. This was later used to establish the themes based on the objective of the study. Finally, theme analysis was done and the findings were triangulated with the quantitative data. Qualitative and quantitative data were collected simultaneously. Data analysis of both quantitative and qualitative data was done independently. The result was merged for comparison and interpretation was done to see whether there is convergence or divergence of the result.

RESULTS

Quantitative phase: The age of the mothers ranged from 16 to 45 years. Among them, the majority (88.2%) were in the age group of 20-34 years with a mean age 25.23 ± 4.80 . Hindu was the leading religion (93.5%). More than two thirds of them (68.8%) were living in joint family. Nearly one third of the mothers (31.2%) were illiterate. The majority of them (91.4%) were housewife. Most of them (88.2%) were living below the poverty line. Most of the spouses (31.2%) had completed secondary level of education. Nearly half of the spouses (48.4%) were daily wage laborer by occupation.

More than half (58.1%) of the mothers were multiparous with parity ranging from 1 to 5. Almost all the mothers had attended ANC in their preceding pregnancy and most of them (76.3%) had visited ≥ 4 times. Three fourths (75.0%) had visited nearby health post or primary health care center for antenatal checkup. The majority (96.8%) of the mothers had taken iron tablets and tetanus

toxoid immunization during their recent pregnancy. Most of the mothers (92.5%) had planned pregnancy. Just more than half (52.7%) of them had planned to deliver their baby in an institution. More than half of the mothers (58.1%) had institutional delivery. Most (88.2%) of the mothers had delivered vaginally. The decision about where to deliver the baby was taken by both mother and spouse (51.6%) followed by mother herself (23.7%). Among the home delivery, 59% of the births were attended by TBAs followed by medical personnel (20.5%) (Table 1).

Among 39 mothers who had home delivery,

26 (66.7%) said that home delivery was easy and convenient, followed by previous deliveries at home (48.7%), continuity of care at home (25.6%), and precipitated labour (20.5%). Among 54 mothers, who had institutional delivery, 77.8% reported safety, followed by fear of complication at home (70.4%), emergencies attended faster (51.9%) and decision of family members (27.8%) (Table 2).

The results showed that there was no association between the age, religion, family type, occupation of mother and the place of delivery. Caste was categorized according to

Table 1: Obstetric Profile of Mothers (N=93)

Obstetric Profile	Category	N (%)
Parity	Primiparous	39 (41.9)
	Multiparous	54 (58.1)
Mean±SD=1.86±0.92		
Number of a visits	No	1 (1.1)
	1-3	21 (22.6)
	≥4	71 (76.3)
Place of ANC ^a visit	Government Hospital	10 (10.9)
	Health Post/Primary Health care Center	69 (75.0)
	Private Hospital	13 (14.1)
Tetanus toxoid immunization	Yes	90 (96.8)
	No	3 (3.2)
Iron supplementation	Yes	90 (96.8)
	No	3 (3.2)
Planned pregnancy	Yes	86 (92.5)
	No	7 (7.5)
Complication during pregnancy	Yes	4 (4.3)
	No	89 (95.7)
Planned place of delivery	Home	44 (47.3)
	Institution	49 (52.7)
Place of delivery	Home	39 (41.9)
	Institution	54 (58.1)
Mode of delivery	Vaginal Delivery	82 (88.2)
	Caesarean Section	11 (11.8)
Decision makers about place of delivery	Mother herself	22 (23.7)
	Spouse	4 (4.3)
	Mother and her spouse	48 (51.6)
	Others	19 (20.4)
Attendant during home delivery (N=39)	Traditional Birth Attendants	23 (59.0)
	Neighbours	3 (7.7)
	Mother in Law	2 (5.1)
	Medical personnel	8 (20.5)
	None	3 (7.7)
Previous place of delivery (n=54)	Institution	19 (35.2)
	Home	35 (64.8)

a: Antenatal care

Table 2: Reasons for Home Delivery and Institutional Delivery

Reasons	N (%)*
Reasons for home delivery (N=39)	
Home delivery is easy and convenient	26 (66.7)
Privacy will be maintained	6 (15.4)
All my previous deliveries were at home	19 (48.7)
Lack of money	6 (15.4)
Hospital is too far	1 (2.6)
Family members prefer home delivery	1 (2.6)
Attitude of health personnel	2 (5.1)
Continuity of care in home	10 (25.6)
No need to leave other children	1 (2.6)
Precipitate labour/too short labour	8 (20.5)
Less intervention at home	1 (2.6)
Lack of family members to take to hospital during labour	1 (2.6)
Fear of hospital	1 (2.6)
Reasons for institutional delivery (N=54)	
Previous good experience in the hospital	3 (5.6)
Easy availability of transport	1 (1.9)
Decision of the family member	15 (27.8)
Free delivery services	6 (11.1)
Safety	42 (77.8)
Fear of complication at home	38 (70.4)
Emergencies attended faster	28 (51.9)
Complications during labour at home	2 (3.7)
Prolonged labour at home	7 (13.0)
Crossing of expected date of delivery	2 (3.7)
Others	4 (7.4)

*Multiple response

the Nepal Government system. Upper caste (Brahmin/Chhetri) was more likely to deliver at institution ($P=0.011$). Educated mothers were more likely to deliver at institution ($P<0.001$). Educational status of the spouse, occupation of the spouse, per capita income of the family members, and distance to the health institution were also the most significant factors for institutional delivery (Table 3).

The prevalence of institutional delivery was more seen among primiparous mother than multiparous ones ($P=0.007$). Those mothers who had ANC visit ≥ 4 times and planned for institutional delivery had institutional delivery ($P<0.001$). Multiparous mothers who had given birth at home in their previous pregnancy had higher prevalence of home delivery ($P=0.003$) (Table 4).

Qualitative Phase: Result of FGD Antenatal Care Visit

Regarding the antenatal checkup during

the pregnancy, a key informant expressed “*We recommend the mothers to go for ANC at least four times and in between if any complication arises. Those who do not go for ANC give the reason of poor economic status, some say their husband do not take them to hospital for ANC, and some say it is not necessary to go as everything is fine.*”

Attendant during Home Delivery

One of the FGD participant among decision makers stated “*We call TBAs to deliver at home and for that we provide them with some money and clothes. If local medical personnel are available, we call them and provide them with some money for the service they provided.*”

A key informant FCHV said “*Mothers who deliver at home are attended by TBAs. If the community people inform us about the home delivery, we visit their home and apply Kawach (Chlorhexidine) around the umbilicus*

Table 3: Association of Place of Delivery with Socio-Demographic Variables (N=93)

Characteristics	Category	Place of Delivery		P value
		Home (N=39) N (%)	Institution (N=54) N (%)	
Age group in years	≤19	2 (28.6)	5 (71.4)	0.69*
	>19	37 (43.0)	49 (57.0)	
Religion	Hindu	37 (42.5)	50 (57.5)	1.00*
	Christian	2 (33.3)	4 (66.7)	
Caste group	Upper caste	1 (8.3)	11 (91.7)	0.01**
	Others	38 (46.9)	43 (53.1)	
Family type	Nuclear	11 (37.9)	18 (62.1)	0.59**
	Joint/Extended	28 (43.8)	36 (56.2)	
Education of mother	Illiterate	23 (79.3)	6 (20.7)	<0.001**
	Literate	16 (25.0)	48 (75.0)	
Occupation of mother	Housewife	37 (43.5)	48 (56.5)	0.46*
	Others	2 (25.0)	6 (75.0)	
Education of spouse	Illiterate	12 (92.3)	1 (7.7)	<0.001**
	Literate	27 (33.8)	53 (66.2)	
Occupation of spouse	Daily wage labourer	28 (62.2)	17 (37.8)	<0.001**
	Others	11 (22.9)	37 (77.1)	
Per capita income in US\$	<1.25	38 (46.3)	44 (53.7)	0.02*
	≥1.25	1 (9.0)	10 (91.0)	
Time to reach nearest health center in minutes	≤30	12 (27.9)	31 (72.1)	0.01*
	>30	27 (54.0)	23 (46.0)	

*Fisher's Exact Test; **Pearson Chi Square

Table 4: Association of Place of Delivery with Obstetric Characteristics (N=93)

Characteristics	Category	Place of Delivery		P value
		Home N (%)	Institution N (%)	
Parity	Primiparous	10 (25.6)	29 (74.4)	0.01*
	Multiparous	29 (53.7)	25 (46.3)	
ANC visit	<4	16 (72.7)	6 (27.3)	<0.001*
	≥4	23 (32.4)	48 (67.6)	
Planned pregnancy	Yes	34 (39.5)	52 (60.5)	0.13**
	No	5 (71.4)	2 (28.6)	
Planned place of delivery	Home	31 (70.5)	13 (29.5)	<0.001*
	Institution	8 (16.3)	41 (83.7)	
Previous place of delivery (n=54)	Home	24 (68.6)	11 (44.0)	<0.001*
	Institution	5 (26.3)	14 (73.7)	

*Pearson Chi Square; **Fisher's Exact Test

of the newborn and provide health education to the mother.”

Factors Related to Home Delivery

According to the participants of FGD, economic constraints, sudden onset of labour, continuous availability of family members at home were the major reasons to deliver at home. One of the participants of FGD among decision makers said “A lot of money is required if we go to hospital to deliver a

baby. We have to buy medicines, food for mother and also there will be no one to take care of other children at home if we all go for hospital delivery”.

Another participant added “Sometimes the duration is so short that they deliver at home. If time is available, we call for transportation and take them to hospital.”

A Key informant FCHV stated “In our wards, those who have low socioeconomic status and those who are Dalits prefer home

delivery.”

Factors Related to Institutional Delivery

The qualitative findings also supplemented the quantitative one in that the participants explored that the hospital has a lot of facilities, emergencies are attended quickly and hospital is good for both mother and baby. *One of the FGD members among decision makers said, “Hospital is good because many facilities are available there. Both mother and baby will be alive if any complications occur. If such conditions occur at home it will be very dangerous.”*

A key informant FCHV said “In hospital, there are a lot of facilities available and the emergencies are attended quickly by the staff.”

DISCUSSION

In this study, 41.9% underwent home delivery, which is less than the finding reported by Annual Report of Nepal.⁶ As people are becoming more aware regarding their health and the outcome of pregnancies, institutional delivery is on increase. Since the inception of free delivery service policy in Nepal, institutional delivery has increased.¹⁰ The majority of the decisions about the place of delivery were made by both mother and her spouse followed by the mother herself. Some decisions were made by the husbands; several women also said that they made the decision themselves and in some cases joint decisions were also made.¹¹

More than half of the home deliveries were attended by TBAs followed by medical personnel and neighbours. In 7.7%, no one attended the delivery. This showed that the personnel enrolled in home delivery are not skilled to conduct delivery which corroborate the findings from other studies.¹²⁻¹⁵ Similar information was obtained from the participants of FGDs. The lack of skilled personnel cannot identify the life threatening condition or if they identify it, immediate management cannot be done effectively.

The findings of this study revealed that

institutional deliveries were seen more in teenage mothers than other age group. Studies showed that institutional deliveries were more observed in the younger ages compared to others.^{15,16} Upper castes were more likely to deliver in institutions than other caste groups reported in other studies.¹⁴ FGDs results also showed that one of the reasons for lack of referral to institutions for delivery was lower economic condition. Religion and place of delivery were not significantly associated; this is not in the same line with the finding where home delivery was more among the Hindus.¹⁷ The type of family was not significantly associated with the place of delivery, which is in accordance with a study done in Nepal.¹⁴ Contradictory findings were presented, which showed that nuclear families preferred the deliveries to happen in health centers.¹⁸

Home delivery was more common among illiterate mothers, as shown in other studies.^{19,20} Similarly, mothers with secondary education and above were 4.3 times more likely to deliver at health facilities as compared to those who were not able to read and write.²¹ Education might increase in female autonomy so that mothers get confidence and capabilities to make decision regarding their own health as well as their baby. Also, women with higher level of education demanded a higher quality of care. There is a higher proportion of institutional delivery among the mothers enrolled in occupations other than housewife, which is consistent with the study done in Kathmandu.¹² This could be due to the contact of the mothers with various persons engaged in other occupations, like business, services and getting information regarding the utilization of health facility for delivery.

Mothers having illiterate spouses were more likely to deliver at home; this is consistent with the study done in Nepal.¹⁴ Those mothers who were living above the poverty line had institutional delivery similar to another study concluding that home delivery needs lower costs.^{12,14,22} The present study showed that a higher proportion of the mothers whose spouses were engaged in occupations other

than daily paid jobs delivered in institutions. Similarly, home delivery was more seen in the mothers whose husband's occupation was not office worker.¹⁴ These findings might be due to the significant association between poverty and occupation. Nearly half of the spouses had daily paid jobs which might lead them to live below the poverty line; this ultimately made the mothers give birth to their baby at home.

Institutional delivery was significantly more observed in primiparous mothers, which is consistent with other studies.^{12,14,15,19} The reason could be better understanding about the advantages of maternal health care in young mothers. In addition, the lower parity mother might have less experience at childbirth that may develop fear about the difficulties during labour. Multiparous mothers who had done their previous deliveries at home were more likely to deliver at home in their recent pregnancy; this was in the same line with the results of another study¹⁹. Similarly, a study done in Kenya revealed that the mothers were 3.9 times likely to deliver in the same place they delivered in their previous delivery.²³

The mothers who visited for ANC for less than four times tended to deliver at home, similar to other studies.^{15,24} The study revealed that awareness of ANC significantly influenced the place of delivery.²⁵ It might be due to the information received during antenatal visit about pregnancy related complications and advantages of giving birth at health facilities. This study showed no association between planned pregnancy and place of delivery, which is contradictory to other studies.^{26,27} Mothers might not feel the importance of health of the baby if their pregnancy is unwanted, so they do not seek for the utilization of health facility.

The strength of the study was that it included all the mothers residing in the Jhorahat VDC. The data were collected from only one VDC of Morang District which limits the generalizability. The reliability of the questionnaire used in the quantitative phase was low. This could be due to poor content validity

evaluation. Therefore, it is recommended to assess this issue in future research.

CONCLUSION

This study highlights some of the factors affecting the place of delivery. Maternal health services, such as prenatal care, skilled assistance during delivery and post-natal care, along with adequately equipped health institutions, play a major role in the reduction of maternal mortality and morbidity. Educating mothers and increasing the awareness of their spouses and the community regarding the benefits of institutional delivery and skilled attendance at delivery are the important areas of intervention to encourage institutional delivery. Similarly, strengthening the number of antenatal visits and encouraging institutional delivery during each visit will also help to improve the institutional delivery. Also, empowering women in financial sectors and employing them in small scale businesses can also help to overcome the economic barriers of institutional delivery.

In the long run, increasing knowledge on maternal health care through community communication, active community participation, strengthening FCHVs and intensive health education through the use of mass media will be important. The findings of this study might help public health educators, women's health activist and policy makers to better understand the factors affecting the place of delivery. Further studies can be conducted in the rural and urban areas of Nepal to analyze different pictures of the factors affecting the place of delivery.

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