

Factors affecting place of delivery in Dhading district

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Background: Nepal is one of countries having highest maternal mortality ratio of 539 per 100,000 live births, with 9.9% health institutional deliveries and where 67% maternal deaths occur at home. The present study aimed to determine the factors affecting place of delivery in Dhading district for the quantification of the factors to help in planning and implementation of safe motherhood programme in Dhading district.

Material and Methods: The study was conducted in community and health institutions based cross-sectional comparative design. For this purpose all the 400 mothers of 4 village development committees of Salyantar, Dhuwakot, Tripureshwor and Darkha of Dhading district who delivered babies in the period of January 15, 2007 to January 14, 2008 were selected in the study by using female community health volunteers, Focus Group Discussion. The village development committees were selected by cluster sampling design.

Result: The study indicated that the odds of home deliveries among the illiterate mothers was 3.22 times higher compared to literate mothers (1.43-7.48 at 95% confidence limit; $p=0.002$). Similarly the study has shown that the odds of home deliveries among multiparous mothers was 2.54 times higher than the primiparous mothers (1.27-5.13 at 95% confidence limit; $p=0.002$). Similarly the study has shown that the odds of home delivery in Tamang was 3.74 times higher than in ethnic group other than Tamang (1.37-5.19 at 95% confidence limit; $p=0.004$). These findings suggest that the maternal education, ethnicity, and parity have statistically significant effects to home and health institutional deliveries.

Conclusion: From these findings it is recommended that the Safer Motherhood Programme of Dhading district should give priority to the Tamang Community and focus needs to be given to the education to the girls and Family Planning Programme needs to be strengthened.

Key words: Safe motherhood, delivery, home, health institution, factors, Dhading.

Introduction

Nepal is one of countries having highest maternal mortality ratio of 539 per 100,000 live births, with 9.9% health institutional deliveries. Every year globally an estimated 4 millions babies die before they reach the age of one month. Nearly the same numbers die in late pregnancy or are still born and these deaths are rarely recorded. Out of total infant mortality 2/3rd die in 1st month, 2/3rd in first week and 2/3rd in first 24 hours of birth.

The national safe motherhood programme recommends that mothers should have post natal checkups within two days of delivery but less than 20% of mothers receive these services. Nearly 90% of women deliver at home. In only 9% of home births is clean delivery kits used. A health worker assists only 13% of deliveries. In Nepal women die 16.6% within 24 weeks of pregnancy, 11.4% after 24 weeks of pregnancy, and 9.9% at the time of delivery and 62% after the birth of baby. Women die 67% at home, 11.4% on the way to health services, 14.4% in the hospitals, and 4.5%

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in the private clinics. Nepal has the third highest neonatal mortality rate in the world that is 39 per 1000 live births. The total neonatal mortality is estimated as 30,000/years.

Nepal government has set the following targets regarding the safe motherhood program: to contribute to the reduction of the maternal mortality ratio from the estimated ratio of 539 per 100,000 live births to 250 by the end of SLTHP (2017), to contribute to the reduction of the neonatal mortality rate from 39 per 1000 live births to 15 by 2017 and to contribute to increasing delivery by health workers to 95% by 2017.

The general objective of safe motherhood programme of Nepal Government is to reduce mortality and morbidity among women and newborn during pregnancy, childbirth and the postnatal period through the adoption of a combination of health and non-health related measures.

After delivery, one hour is the most crucial time which is evident from the fact that 62% maternal mortality occurs after the birth of baby. Data shows that the maternal and neonatal mortality is a great problem because of home delivery.

The study of the factors affecting decision of home delivery would help the way of interventions to reduce the home delivery and increase the health institution delivery.

The huge gap between the above explained government's target and the present situation highlights the statements of the problem and the rational of the study.

The quantification of the factors affecting place of delivery in Dhading district would help in planning and implementation of safe motherhood programme in Dhading district. This study was conducted to determine the factors affecting home and health institution delivery in Dhading district by measuring the effects of mother's education, parity, ethnicity and economic status on place of delivery.

Materials and methods

Study Population

All the mothers of 4 village development committees namely Salyantar, Dhuwakot, Tripureshwor and Darkha of Dhading district who delivered babies from January 15, 2007 to January 14, 2008 irrespective of parity. There are 100, 63, 83 and 154 samples from Darkha, Tripureshwor, Dhuwakot and Salyantar respectively. These village development committees have HP, SHP, HP and PHC respectively. The village development committees were selected by cluster sampling method.

Study Design

The study was community and health institutions based

cross-sectional comparative study.

Sample size

By using the formula: $n = 4pq/L^2$, $P=80$, $q=20$, $L=10$. The total sample size was 100.

For comparative study

CI	power	U: E	HD in E	OR	Sample size (By EPI Info)
95%	80%	1:1	90%	2.5	E=181, U=181, Total=362

Data Collection Method

Interviews, Observation, FGD were the data collection methods. The eligible mothers were requested for consents after explaining the objectives of the study. Consent from mothers who delivered at home was also taken. Careful attention was paid for not distorting the respondent's comfort while interviewing. BCG registers, TT registers were used. FCHV, TBA, mother's groups were used for triangulation. The Epi Info and SPSS programs packages were used for data analysis.

Results

This chapter presents the findings of factors affecting home and health institution delivery in four VDCs-Darkha, Salyantar, Tripureshwor and Dhuwakot of Dhading district where the women delivered within the period of one year January 15, 2007 to January 14, 2008 A.D. Amenity-score status as a proxy for socio-economic status was constructed using 5 variables: type of latrine, fuel used for cooking, drinking water status and having radio and television.

General Characteristics of the study population

There were 372 (93.0%) in agriculture, 23 (5.8%) in business, 4 (1%) in service by occupation. There was variation in the ethnic groups headed by Dalit (damai, kami, sarki, sunar) 53 (13.3%), Brhamin and Kshetri 130 (32.5%), Kumal 53 (13.3%), Tamang 118 (29.5%) and others (Newar, Magar, Lama, Ghale, Muslim.) 46 (11.5%).

There were 295 (73.8%) Hindu followed by 93 (23.3%) Buddhist, 8 (2.0%) Christian and 4 (1%) Muslim among the respondents.

The majority 329 (82.3%) of the respondents were from low economic class followed by 71 (17.8%) from medium economic class. Among the respondents 355 (88.8%) were home group and the rest 45 (11.2%) were health institution group. The majority 232 (58%) of the respondents were literate followed by 168 (42%) were illiterate

Among all the illiterate mothers the majority 159 (94.6%) gave their birth at home and 9 (5.4%) delivered at health

institution where as the number of 196 (84.5%) and 36 (15.5%) literate mothers delivered at home and health institution respectively.

So far as economic status and place of delivery is concerned, the delivery among the respondents of low economic status was 293 (89.1%) at home and 36 (10.9%) at health institution and the mothers of medium economic status delivered their babies 62 (87.3%) at home and 9 (12.7%) at health institution.

Ethnicity wise the percentage of home delivery in Dalits, Brhamin/Kshetri, kumal, Tamang and others are 79.2, 90.0, 84.9, 95.8 and 82.6 respectively and that of health institution delivery was 20.8, 10.0, 15.1, 4.2 and 17.4 respectively.

According to parity, primiparous mothers of 137 (83.0%) and 28 (17.0%) delivered their babies at home and health institution respectively while multiparous mothers of 218 (92.8%) and 17 (7.2%) delivered their babies at home and health institution respectively.

Table 1. General characteristics of the respondents by home and health institution delivery

Variables	Home delivery	HI delivery	Total (n=400)
Education			
Illiterate	159 (94.6)	9 (5.4)	168(100.0)
Literate	196 (84.5)	36 (15.5)	232 (100.0)
Distance to HI			
Up to 30 minutes	156 (86.2)	25 (13.8)	181 (100.0)
More than 30 minutes	199 (90.9)	20 (9.1)	219 (100.0)
Economic status			
Low	293 (89.1)	36 (10.9)	329 (100.0)
Medium	62 (87.3)	9 (12.7)	71 (100.0)
Ethnicity			
Dalits	42 (79.2)	11 (20.8)	53 (100.0)
Brahmin/Kshetri	117 (90.0)	13 (10.0)	130 (100.0)
Kumal	45 (84.9)	8 (15.1)	53 (100.0)
Tamang	113 (95.8)	5 (4.2)	118 (100.0)
Others (Newar, Magar, Lama, Ghale..)	38 (82.6)	8 (17.4)	46 (100.0)
Parity			
Primiparous	137 (83.0)	28 (17.0)	165 (100.0)
Multiparous	218 (92.8)	17 (7.2)	235 (100.0)

Note- Values in the parenthesis indicate percent, unless otherwise stated

4.2 Mother's education and place of delivery

When home and health institution groups combined (n=400), the total number of illiterate were 168 (42.0%) and the literate were 232 (58.0%). The number of home and health institution deliveries among illiterate was 159 (94.6%) and 9(5.4%) respectively.

The result shows that the literate mothers had significantly

higher prevalence of health institution deliveries as compared with the illiterate mothers (15.5% Vs 5.4%, p=0.002). Similarly the study indicates that the Odds of home deliveries among the illiterate mothers is 3.22 times higher compared to literate mothers, OR=3.22 (1.43-7.48) at 95% C.I. (Table 2).

Table 2. Relation of mother's education and place of delivery

Note- Values in the parenthesis under home and HI delivery indicate percent.

$\chi^2_{0.05; 1df} = 10.074$; p value = 0.002; significant

Estimation of crude risk with different strata of education

OR (95% CI)

- Illiterate 3.37 (0.79-13.5), p=0.047
- 1-10 Class 1.04 (0.28-3.51), P=0.943
- SLC+ 1.0 (Reference)

4.3 Relation of parity and place of delivery

Among both home and health institution groups (n=400), 137 (83.0%) primiparous and 218 (92.8%) multiparous mothers delivered at home where as 28 (17.0%) primiparous and 17 (7.2%) multiparous mothers delivered at health institutions.

The result shows that the prevalence of health institution delivery is significantly higher in primipara than multipara (17.0% versus 7.2%, p=0.002). Similarly the study has shown that the Odds of home deliveries among multiparous mothers is 2.54 times higher than the primiparous mothers. OR=2.54 (1.27-5.13) at 95% confidence limit (Table 3).

Table 3. Relation of parity and place of delivery.

Parity	Home delivery	HI delivery	Total	OR (95% CI)	ANC Adjusted OR (95% CI)
Multipara	218(92.8)	17(7.2)	235(58.8)	2.62 (1.33-5.22)	2.54 (1.27-5.13)
Primipara	137(83.0)	28(17.0)	165(41.2)		
Total	355 (88.8)	45 (11.2)	40 (100.0)		

Note- Values in the parenthesis under home and HI delivery and indicate percent.

4.4 Ethnicity and place of delivery

Among the total numbers of respondents 42 (79.2%) so

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called Dalits, 117(90.0%) Brhamin/Kshetri, 54 (84.9%) Kumal, 113(95.8%) Tamang and total 38 (82.6%) others which includes Newar, Ghale, Magar, Muslim delivered their baby at home where as Dalits 11(20.8%), Brhamin/Kshetri 13(10.0%), Kumal 8 (15.1%), Tamang 5 (4.2%) and others 8(17.4%) delivered their babies at health institution. The results show that there is significant difference in different ethnic groups (Table 4a).

Table 4 a. Relation of ethnicity and place of delivery

Ethnicity	Home delivery	HI delivery	Total
Dalits(Dami, Kami,Sarki,Sunar)	42(79.2)	11(20.8)	53(13.3)
Brahmin/Kshetri	117(90.0)	13(10.0)	130(32.5)
Kumal	54(84.9)	8(15.1)	53(13.3)
Tamang	113(95.8)	5(4.2)	118(29.5)
Other	38(82.6)	8(17.4)	46(11.5)
Total	355(88.8)	45(13.2)	400(100.0)

Note- Values in the parenthesis indicate percent, unless otherwise stated.

$\chi^2_{0.05; 1df} = 13.333$; p value = 0.010; significant

By the comparison of Tamang (4.2%) and rest of others (14.2%) health institution delivery, the prevalence of health institution delivery in ethnic groups other than Tamang is significantly higher than Tamang (p=0.004). Similarly the study has shown that the Odds of home delivery in Tamang is 3.74 times higher than in ethnic group other than Tamang. OR=3.74 (1.37-5.19) at 95% confidence limit (Table 4b).

Table 4b. Relation of ethnicity and place of delivery

Ethnicity	Home delivery	HI delivery	Total	Odd's Ratio
Tamang	113(95.8)	5(4.2%)	118(29.5%)	3.74 (1.44-
Others	242(85.8%)	40(14.2%)	282(70.5%)	9.72) at 95% C.I
Total	355(88.8)	45(13.2)	400(100.0)	

Note- Values in the parenthesis under home and HI delivery indicate percent.

$\chi^2_{0.05; 1df} = 8.244$; p value = 0.004; significant

Estimation of crude risk with different strata of ethnicity OR (95% CI)

- Dalits(Dami, Kami,Sarki,Sunar) 1.00 (Reference value)
- Brahmin/Kshetri 2.36 (0.90-6.15),P=0.05
- Kumal 1.77 (0.59-5.36),p=0.258
- Tamang 5.90 (1.76-20.97),p=0.000
- Others (Newar, Magar, Ghale..) 1.20 (0.41-3.84),p=0.671

4.6 Economic status and place of delivery When both the mother groups of economic status combined, 13.3%(n=45)

delivered at health institution but the deliveries at health institution is 10.9% and 12.7% among the mothers belonging to low and medium economic status respectively but the difference is not significant, p=0.675. Similarly the study has shown that the Odds of home delivery in mothers of low economic status is 1.18 times higher than in mothers of medium economic status, OR=1.18 (0.50-2.71) at 95% confidence limit (Table 6).

Table 6. Relation of economic status and place of delivery

Economic status	Home delivery	HI delivery	Total	Odd's Ratio
Low	293(89.1)	36(10.9)	329(82.3)	OR=1.18 (0.50-2.71) at 95% C.I.
Medium	62(87.3)	9(12.7)	71(17.7)	
Total	355(88.8)	45(13.2)	400(100.0)	

Note- Values in the parenthesis under home and HI delivery indicate percent.

$\chi^2_{0.05; 1df} = 0.176$; p value = 0.675; not significant

Discussion

Present study revealed that the literate mothers had significantly higher prevalence of health institution deliveries 36 (15.5%) as compared with the illiterate mothers 9 (5.4%) and p=0.002. The risk of home deliveries in illiterate mothers is 3.22 times (OR=3.22, 95% C.I. =1.43-7.48) higher than literate mothers. In a study done by Arti Patel et al in India and in a study done by Sudha Sharma et al in Nepal women preferred home delivery because they were ignorant and illiterate. Bolam et al. (1988) have reported that lower maternal education is associated with home delivery. The similar result was found in the study conducted in maternity hospital Thapathali, Nepal. Against the result of this study a research conducted in Australia, home birth mothers were more educated. This could be because of advances in science and technology account for many changes in our quality of life. Yet, at the beginning of the 21st century more and more women from developed world are beginning to give birth in the old fashioned way in their own home. In rural Nigeria, maternal education is found to be more consistently associated with the use of home delivery. So it seems that illiteracy plays a role in preferring home delivery in developing countries where as literacy plays a role in preferring home delivery in developed countries.

The result shows that the prevalence of health institution delivery is significantly higher in primipara 28 (17.0%) than multipara 17(7.2%), p=0.002. Similarly the study has shown that the Odds of home deliveries among multiparous mothers is 2.54 times higher than the primiparous mothers OR=2.54

(1.27-5.13) at 95% confidence limit. Literature shows that multiparity was associated with home delivery. Similar study in Kenya shows that multiparity was associated with home delivery.

By the comparison of Tamang (4.2%) and rest of others (14.2%) health institution delivery, the prevalence of home delivery in Tamang is significantly higher than others ($p=0.004$). Similarly the study has shown that the risk of home delivery in Tamang ethnic group is 3.74 times ($OR=3.74$, 95% C.I.=1.44-9.72) higher than in mothers of other ethnic groups

When both the mother groups of economic status combined, 13.3 % (n=45) delivered at health institution but the deliveries at health institution is 36 (10.9%) and 9 (12.7%) among the mothers belonging to low and medium economic status respectively but the difference is not significant, $p=0.675$. Similarly the risk of home delivery was found to be minimal, 1.18 times ($OR=1.18$, 95% C.I.=0.50-2.71) higher in mothers of low economic status than in mothers of medium economic status. In different studies, it is found that the lower the economic status the more likely she is to deliver at home. In another study, it is found that prohibitive cost of health services may be the other contributory factor for preferring home delivery. The non significant result could be due to most respondents were of low economic status.

Limitation of the study

1. There is possibility of selection bias.
2. Only few confounders are controlled.

Conclusions

- The odds of home delivery was statistically significantly higher in illiterate mothers than literate mothers.
- The odds of home delivery was statistically significantly higher in multipara than primipara.
- The odds of home delivery was statistically significantly higher in Tamang than other ethnic groups.

Recommendations

- The Safe Motherhood Programme of Dhading district should give priority to Tamang community.
- Focus needs to be given to the education to the girls and mothers.
- Reproductive health education needs to be given to the girls and mothers.
- Family planning programme needs to be strengthened.

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