

Newborn Care Practices in Rural Communities of Nawalparasi District, Nepal

¹Hari Prasad Kaphle, ¹Dipendra Kumar Yadav, ²Nirmala Neupane, ³Bimala Sharma,
¹Dilip Kumar Yadav, ⁴Samjhana Kumari Poudel

¹School of Health and Allied Sciences, Pokhara University, Lekhnath-12, Kaski, Nepal

²Masood College of Nursing, Rajiv Gandhi University of Health Sciences, Bangalore-564001, Karnataka, India

³Gandaki Medical College, Lekhnath, Kaski, Nepal

⁴Chitwan School of Medicine, Bharatpur, Chitwan, Nepal.

ABSTRACT

Most of the new born deaths in the developing countries occur due to lack of access to care, as majority of the deliveries occur at home. Even deliveries conducted in health facilities are prone to suffering from traditional care practice after discharge from health facilities. Most of these deaths could be avoided with changes in antenatal, delivery and newborn care practices. This study was conducted to explore the newborn care practices related to cord care, thermal care and breast feeding in rural setting and to identify socio-demographic, antenatal and delivery care factors associated with these practices. A cross sectional study in rural setting of Nawalparasi district included 296 women who had delivered live baby at home or discharged within 24 hours of delivery from hospital proceeding four months of data collection. Chi square test was applied to compare socio-demographic, antenatal and delivery care factors associated with cord care, thermal care and breast feeding practices. Of the total 296 mother interviewed, only 65.54% have completed ANC visit at least 4 times and 29.05% have received counselling on newborn care during pregnancy. More than half deliveries (53.38%) were home deliveries and Clean Home Delivery Kit was used only one third (39.91%) of these deliveries. Of the three selected newborn care practices, clean cord keeping practice was found in only one fourth (25.70%) of deliveries. However early initiation of breast feeding and delayed bathing practice was found in about half of the deliveries (51.35% and 58.45% respectively). There is strong need to implement the community-based interventions to improve the new born care practices in community level and to reduce the high-risk newborn care practices like unsafe cord care, delayed breast feeding, early bathing, prelacteal feeding and discarding colostrum need through the community level health workers and volunteers.

Key words: Newborn care, Safe cord care, Early breast feeding, Thermal care, Delayed bathing.

Corresponding address: Hari Prasad Kaphle, School of Health and Allied Sciences, Lekhnath-12, Kaski, Nepal.
E-mail: harikafle07@gmail.com

INTRODUCTION

A silent epidemic occurring in developing countries that no one is assuming as an epidemic is the high neonatal mortality. Of the approximately four million global neonatal deaths that occur annually, 98% occur in developing countries, where most newborns die at home while they are cared by mothers, relatives and traditional birth attendants. Even deliveries conducted in health facilities by the trained birth attendances are prone to suffering from harmful traditional care practices after discharge from health facilities.¹

Globally under five mortality rates have declined significantly over past four decades, but high neonatal mortality rate has remained relatively unchanged.²⁻⁴ About 2/3rd of all infant deaths and 38% of all under five deaths occur during neonatal period. Two third of these neonatal deaths occur during first week of life and 2/3rd of these deaths occur within first 24 hours of born. The primary causes of neonatal deaths are believed to be the complication of prematurity (28%), sepsis and pneumonia (26%), birth aspxia and injuries (23%), tetanus (7%) and diarrhea (3%), with low birth weight contributing to a large number of deaths.^{1,3,5}

In Nepal, there has been a massive reduction in child mortality rates last few years. The under five-mortality rate has declined from 118 per 1,000 live births to 61 per 1,000 live births from 1996 to 2006. The infant mortality rate has also declined from 79 per 1,000 live births to 48 per 1,000 live births in same period. Similarly in 2006-2010 period under five mortality rate has declined from 79 per 1000 live births to 54 per 1000 live births and infant mortality has also declined from 48 per 1000 live births to 46 per thousand live births. Overall, reduction these indicators confirm improvements in the status of child health. However, the Neonatal Mortality Rate (NMR) has scanty declining rate. In 1996, NMR was 39 per 1,000 live births and in 2006 it was 33 per 1,000 live births and still 33 per 1000 live births in 2011.⁶⁻⁸ Data suggest that the major causes of neonatal death in Nepal are infection, birth asphyxia, preterm birth and hypothermia.

Although 58% of mothers received antenatal care from Safe Birth Attendances (SBAs) for their most recent birth, only 36% of babies are delivered by these SBAs and 28% are delivered at a health facility indicating that Nepal has a long

way to go to meet the Millennium Development Goals target of 60% births attended by a skilled provider. However, it is encouraging to note that the proportion of babies attended by skilled provider over the last five years has nearly doubled, from 19% in 2006 to 36%, while the proportion of babies delivered in a health facility has increased from 18% in 2006 to 28%.⁷⁻⁹ Early childbearing, poor maternal nutrition, micro nutrient deficiencies, inadequate access and utilization of quality care during pregnancy, delivery and in the post partum period, are the fundamental factors for low status of women and newborns in Nepal.¹⁰

According to World Health Organization (WHO) implementation strategies, there is now consensus on a set of proven interventions that can save newborn lives. However, it will not be possible to introduce and sustain the whole package on a large scale at one time. Since newborn health status, infrastructure and available resources vary among and within countries, scenario based approaches will be required for program planning. In low resource settings, strategies can be phased so that more feasible interventions are introduced first, such as tetanus immunization, drying and warming and immediate breastfeeding and more complex interventions like resuscitation by bag and mask are taken up incrementally as the scenario improves. The WHO has given guidelines for essential newborn care which include the hygiene during delivery, keeping the newborn warm, early initiation of breast-feeding, exclusive breast-feeding, care of the eyes, care during illness, immunization and care of low birth-weight newborns. Therefore, it is necessary for the mother and her family to understand these aspects of childbirth and newborn care and be prepared to react for the potential dangers signs.^{11,12}

The objective of this study was to examine the selected newborn care practices related to cord care, breast feeding and thermal care in rural setting of Nepal and to observe relationship between socio-demographic, antenatal and delivery care factors with these new born practices.

MATERIALS AND METHODS

This is a community based descriptive cross-sectional study of quantitative method. It was conducted in rural setting of Nawalparasi district of Nepal. The sample size was determined by using proportion of home deliveries (73.83%) according to the annual report 2009/10 of Department of Health Services (DoHS), Nepal. Altogether 296 mothers having less four months child were interviewed between January to June 2011 with well trained six enumerators having qualification of auxiliary nurse midwife working as volunteers in various primary health care institutions. Data were collected from PHC outreach and immunization clinics

of eight randomly selected village development committees on socio-demographic, antenatal, delivery and newborn care practices. Three dependent variables (safe cord care, early breast feeding and delayed bathing) and ten socio-demographic, antenatal and delivery care factors (age of mother, birth order, ethnicity, mother's education, family income, antenatal visit, antenatal counseling on newborn care, place of delivery and person assisted during delivery) were determined as independent variables to examine the association between these variables. Safe cord care for this study includes cutting umbilical cord with clean instrument, tying with clean thread and applying nothing in cord stump. Early initiation of breast feeding includes initiation of breast feeding within one hour of birth. Similarly delayed bathing for this study includes bathing newborn baby after 24 hours of birth. Data were analyzed by using SPSS 17.0 and chi square tests were performed to compare the levels of each of the three care practices with in the socio-demographic, antenatal and delivery care categories with 95% confidence level for statistical analysis and interpretation.

RESULTS

Levels of socio-demographic characteristics of the study population are presented in table 1. Majority of the study population were of age group 20-35 years (79.66%) and Hindus (93.58%) with ethnic group Disadvantaged Janajati (50.70%). Very few respondents were (13.51%) illiterate. More than half newborn were male with birth order two or more.

Programmatic characteristics are presented in table 2. About two-third (65.54%) women received antenatal service four times or above. Less than one-third (29.05%) women received counseling on essential newborn care practices during pregnancy. More than half (53.3%) women were delivered in home to give birth their recent baby and most of these deliveries were conducted by family member and neighbor or the traditional birth attendances. Clean home delivery kit was used only in one-third (32.91%) home deliveries.

Levels of the selected newborn care practices are presented in table 3. Clean sterile instrument was used in less than half (48.31%) deliveries to cut the umbilical cord. New unused razor blade was used in half (50.67%) of the deliveries. Surprisingly, in three cases, knife and grass cutter was used to cut the umbilical cord. Although clean cord tie were practiced in more than half deliveries (58.78%) but clean cord keeping practice was practiced one in every four deliveries. In about 3/4th deliveries various materials including ash, oil, oil and turmeric and medical drugs and powder was applied in cord stump. The levels of breast feeding practices were

cooperatively better than safe cord care practices. Only in about half deliveries (51.35%) breast feeding was started within one hour of birth. Colostrums feeding were practiced in majority of cases but prelactal feeding was practiced in about 1/3rd deliveries. In thermal care, the proportion of immediate drying and wrapping of newborn babies was found to be similar. Delayed bathing (i.e. bathing after 24 hours of birth) was also not much more different from early drying & wrapping of newborn baby.

Comparison of clean cord care, early breast feeding and delayed bathing practices with socio-demographic factors are presented in table 4. Maternal age was found to be not associated with all three care practices while ethnicity and maternal education was found to be associated with all three care practices.

Table 1: Socio demographic characteristics of study populations (n=296)

Characteristics	Frequency	Percentage
Maternal Age		
<20 years	49	16.66
20-35 years	235	79.39
35 or above	12	04.05
Birth Order of the newborn		
First	135	45.61
Second and Above	161	54.39
Sex of the baby		
Male	161	54.39
Female	135	45.61
Caste/ ethnicity		
Dalit	50	16.9
Disadvantaged Janajati	150	50.7
Advantaged Janajati	34	11.5
Upper caste group	62	20.9
Religion		
Hindus	277	93.58
Buddhist	10	03.38
Christian	9	03.04
Maternal Education		
Illiterate	40	13.51
Primary	69	23.31
Secondary	152	51.35
Above secondary	35	11.82
Monthly Income (Nepalese currency)		
Below 2250	84	28.39
2250-4499	24	08.11
4500 or above	188	63.50

Table 2: Programmatic characteristics of study populations (n=296)

Characteristics	Frequency	Percentage
Antenatal Checkup		
None	50	16.89
At least one	15	05.06
2-3	37	12.50
4 or above	194	65.54
Counseling on newborn care		
Yes	86	29.05
No	212	70.95
Place of delivery		
Home	158	53.38
Health institutions	138	46.62
Birth attendant		
Family/neighbors	87	29.39
TBAs	69	23.31
Health Workers	140	47.28

Table 3: Selected newborn care practices of study populations

Characteristics	Frequency	Percentage
Safe cord care practice		
Sterile instrument for cord cutting	143	48.31
Clean cord tie	174	58.78
Safe cord keeping without applying anything	76	25.70
Breast feeding practice		
Early initiation within one hour	152	51.35
Prelactal feeding	92	31.08
Colostrum feeding	268	90.54
Exclusive feeding unto 1 months of age	288	77.0
Thermal care practice		
Immediate drying of newborn	171	57.77
Immediate wrapping newborn	170	57.43
Separate Clean clothes for drying and wrapping	152	51.35
Delayed bathing of newborn	173	58.45

Comparison of clean cord care, early breast feeding and delayed bathing practices with antenatal and delivery care factors are presented in table 5. All the programmatic factors are found to be highly associated with all three care practices.

Table 4: Comparison of newborn care practices with socio demographic factors

Characteristics	N	Cord care practice			Initiation of breast feeding			Bathing practice		
		Safe %	Unsafe %	P-value	Early %	Late %	P-value	Before 24 hrs %	After 24 hrs %	P-value
Maternal age										
<20 years	49	36.7	63.3	0.071	44.9	55.1	0.089	61.2	38.8	0.453
20-35 years	235	24.3	75.7		54.0	46.0		59.1	40.9	
35 or above	12	8.3	91.7		25.0	75.0		41.7	58.3	
Birth order										
First	135	32.6	67.4	0.013	51.4	48.6	0.391	33.3	66.7	0.012
Second & above	161	19.9	80.1		49.1	50.9		47.8	52.2	
Sex of newborn										
Male	161	21.1	78.9	0.050	49.7	50.3	0.532	41.6	58.4	0.879
Female	135	31.1	68.9		53.3	46.7		40.7	59.3	
Caste/Ethnicity										
Dalit	50	22.0	78.0	0.001	42.0	58.0	0.004	56.0	44.0	0.001
Disadvantaged Janajati	150	15.3	84.7		48.0	52.0		50.7	49.3	
Advantaged Janajati	34	58.8	41.2		79.4	20.6		58.8	41.2	
Upper caste group	62	35.5	64.5		51.6	48.4		80.6	119.4	
Maternal education										
Illiterate	40	15.0	85.0	0.057	27.5	72.5	0.001	27.5	72.5	0.000
Primary	69	30.4	69.6		42.0	58.0		49.3	50.7	
Secondary	152	23.0	77.0		58.6	41.4		65.1	34.9	
Above secondary	35	40.0	60.0		65.7	34.3		85.7	14.3	
Family income/mths										
Below NRs 2250	84	41.7	58.3	0.001	47.6	52.4	0.202	58.3	41.7	0.076
NRs 2250-4499	24	29.2	70.8		37.5	62.5		37.5	62.5	
NRs 4500 and above	188	18.1	81.9		54.8	45.2		61.7	38.3	

Table 5: Comparison of antenatal and delivery care factors and newborn care practices

Characteristics	N	Cord care practice			Initiation of breast feeding			Bathing practice		
		Safe %	Unsafe %	P-value	Early %	Late %	P-value	Before 24 hrs %	After 24 hrs %	P-value
Antenatal Checkup										
None	50	16.0	84.0	0.014	8.0	92.0	0.001	18.0	82.0	0.001
At least one	15	46.7	53.3		33.3	66.7		33.3	66.7	
2-3	37	40.5	59.5		73.0	27.0		56.8	43.2	
>3	194	23.7	76.3		59.8	40.2		71.6	28.4	
Counseling on newborn care										
Yes	86	45.3	54.7	0.001	66.3	33.7	0.001	74.4	25.6	0.001
No	212	17.6	82.4		45.2	54.8		52.4	47.6	
Place of delivery										
Home	158	18.4	81.6	0.002	25.3	74.7	0.001	34.8	65.2	0.001
Health care institution	138	34.1	65.9		81.2	18.8		82.2	17.8	
Birth attendance										
Family/neighbor	87	19.9	80.1	0.001	13.8	86.2	0.001	21.8	78.2	0.001
Untrained TBA	46	4.3	95.7		17.4	82.6		23.9	76.1	
Trained TBA	23	43.5	56.5		73.9	26.1		91.3	8.7	
Health Workers	140	33.6	66.4		82.1	17.9		87.9	12.1	

DISCUSSION:

This study has described three essential newborn care practices in rural setting where most of the deliveries occur at home and examined their association with socio-demographic and programmatic factors.

Clean cord care: Clean cord care is important in preventing early neonatal infections. In this study, most of the women reported clean cord cutting (98.9%, sterile instrument and new blade or boiled blade) but the clean cord tie was practiced only just above half (58.78%) of these deliveries and the safe cord keeping was only one-fourth (25.7%). Low level of clean cord tie was due the less use of clean home delivery kit in home deliveries (32.91% out of 158 home deliveries) and low level of safe cord keeping practice was due to application of various substances such as mustard oil, a mixture of mustard

oil and turmeric, ash, sindoor and powders and the ointments. Application of various substances in the cord stumps was also found to be common in institutional deliveries after discharge from the health facilities. Cord cutting, tying and safe cord keeping practice have been identified as risk factors for neonatal infection¹³⁻¹⁸ and the studies suggests low coverage in South Asia.¹⁹⁻²¹ The study presented here suggests the need increase the community awareness through the community level health workers and birth attendants to keep cord stump clean and dry without applying anything even the discharge from hospitals and birth centers. Study conducted on home delivery and newborn care practice in Western Nepal also supports the low use of clean home delivery kit.²²

Early Initiation of breast feeding: Early initiation of breast feeding is vital for neonatal health and Survival. Nationally, in 1996 only 18.2% of the women breastfed their babies within an hour of birth which increased to 35.4% in 2006 and 44.5 % in 2011.⁶⁻⁸ In this study early initiation of breast feeding as soon as possible within one hour of delivery was found in 51.35% deliveries. However finding from present study compare poorly with recent studies from the neighboring countries (Pakistan and Bangladesh as 91%, 73% and >70% respectively).^{21,23,24} Despite the remarkable increase in the proportion of women breastfeeding their babies during the first hour of birth over the twenty year period, the coverage is still not satisfactory. Prelectal feeding and colostrum feeding practice found in this study is not much more different from earlier studies conducted in Nepal.²² Maternal Education, antenatal checks up, antenatal counseling on newborn care, place of delivery and person assisted during delivery found to be associated with early initiation of breast feeding. The relationship between the maternal education and improved newborn care has been demonstrated by earlier studies.^{25,26}

Delayed Bathing: Bathing newborn baby after 24 hours of birth is regarded as delayed bathing. Bathing babies early can increase the risk of hypothermia and if the baby is of low birth weight the risk is even greater. Hypothermia is one of the major causes of mortality among newborns. In Nepal, bathing a baby soon after birth is widely prevalent because the baby’s body is coated with vernix, which is considered dirty. Therefore, bathing a baby soon is a custom followed to purify the baby. Usually, babies are bathed with lukewarm water after cord cutting and cleaning the spot within half to one hour of duration. Breastfeeding is also not initiated until the baby is bathed.¹⁰ Nationally only 9.3% of the babies were bathed after 24 hours of birth 2006 and 26.1% in 2011.^{7,8} In this study bathing newborn baby at least after 24 hours of born was found 58.45% which is more than double of finding of NDHS 2011⁸ however it is not still satisfactory. Maternal education and all the programmatic factors were found to be highly associated with delayed bathing practice. So the study suggests need to increase the coverage of maternal and newborn care services.

CONCLUSION

High-risk home delivery and newborn care practices are still common in rural population of Nepal. In-depth qualitative studies are needed to explore the reasons for poor newborn care practices. Community-based interventions are required to improve the new born care practices in community level.

The high-risk traditional newborn care practices like unsafe cord care, delayed breast feeding, early bathing, pre-lacteal feeding and discarding colostrum need to be addressed by community-based health education and awareness programmes.

ACKNOWLEDGEMENT

We express our sincere thanks to Prof. Nabin Kumar Shrestha and Prof. Dr. Keshav Parajuli for the valuable guidance and support. We are also grateful to Prof. Dr. Bishnuraj Tiwari and Associate Prof. Dr. Nirmala Jamarkattel for providing the grant and academic support. The authors also thank all the mothers who participated in the study.

REFERENCES

1. World Health Organization. Perinatal mortality: a listing of available information. FRH/MSM.96.7. WHO, Geneva; 1996.
2. SNL. States of Worlds New born care. Washington DC. Save the children federation USA; 2001.
3. Tinker A, Hoop Bender P, Azfar S, Bustreo F, Bell R. A continuum of care to save new born lives. *Lancet*. 2005; 365:822-65.
4. Lawn JE, Cousens S, Zupan J. Four million neonatal deaths: Where? When? Why?. *Lancet*. 2005; 365(9462):891-900.
5. Bryce J, Boschi P, Shibuya K, Black RE. WHO estimates of the causes of deaths in children. *Lancet*. 2005; 365 (9465):1147-52.
6. Ministry of Health [Nepal], New ERA & Macro International Inc. Nepal Family Health Survey 1996. Kathmandu, Nepal: Ministry of Health and Population, New ERA and Macro International Inc.1997.
7. Ministry of Health and Population, Nepal, New ERA & Macro International Inc. Nepal Demographic and Health Survey 2006. Kathmandu, Nepal: Ministry of Health and Population, New ERA and Macro International Inc. 2007.
8. Ministry of Health and Population, Nepal, New ERA, Macro International Inc and USAID. Nepal Demographic and Health Survey 2011, preliminary report. Kathmandu, Nepal: Ministry of Health and Population, New ERA, Macro International Inc. and U.S. Agency for International Development. August 2011.
9. Department of Health Services. Annual Report 2009/10. Department of Health Services. Ministry of Health and Population, Nepal. 2010.
10. Gurung G. Practices on immediate care of newborn in the communities of Kailali district. *Nepal Med Coll J*. March; 2008; 10(1):41-4.
11. Save Newborn Lives. States of Worlds New born care. Washington DC. Save the children federation USA; 2001.
12. WHO. Essential New born care: A report of technical Working group, Geneva; 1996.
13. Moss W, Darmstadt G, Marsh D, Black R, Santosham M. Research priorities for the reduction of perinatal and neonatal morbidity and mortality in developing country communities. *J Perinatol*. 2002; 22:484-95.
14. Darmstadt GL, Bhutta ZA, Cousens S, Adam T, Walker N, de Bernis L. Evidence-based, cost-effective interventions: how many newborn babies can we save? *Lancet*. 2005; 365(9463):977-88.
15. WHO. Care of the umbilical cord: a review of the evidence. Geneva: World Health Organization; 1998.
16. Bhutta Z, Darmstadt G, Ransom E. Using evidence to save newborn lives. Policy brief. Washington, DC: Population Reference Bureau; 2003.
17. Bhutta Z. Effective interventions to reduce neonatal mortality and morbidity from perinatal infection. In Costello A, Manandhar D, eds. *Improving newborn infant health in developing countries*. London: Imperial College Press; 2000; 289-308.
18. Baqui AH, Williams EK, Darmstadt GL, Kumar V, Kiran TU, Panwar D, Sharma RK, Ahmed S, Sreevasta V, Ahuja R, Santosham M, Black RE. Newborn care in rural Uttar Pradesh. *Indian J Pediatr*. 2007 Mar; 74(3):241-7. PubMed PMID: 17401262.
19. Manandhar D, Osrin D, Shrestha B, Mesko N, Morrison J, Tumbahangphe K. Effect of participatory intervention with women's groups on birth outcomes in Nepal: cluster-randomised controlled trial. *Lancet*. 2004; 364(9438):970-979.
20. Nandan D, Mishra S. Delivery Practices in West Uttar Pradesh. *Indian J Public Health*. 1996; 40(1):20-21.
21. Osrin D, Tumbahangphe K, Shrestha D, Mesko N, Shrestha B, Manandhar M. Cross sectional, community based study of care of newborn infants in Nepal. *BMJ*. 2002; 325(1063).
22. Chandrasekhar TS, Joshi H, Sreekumaran B, Giri S, Chuni N. Home delivery and newborn care practices among urban women in western Nepal: a questionnaire survey. *Women Health Popul*. 2006 Aug; 24(7):386-402.
23. Fikree F, Ali T, Durocher J, Rahbar M. Newborn care practices in low socioeconomic status settlements of Karachi, Pakistan. *Social Sci Med*. 2005; 60:911-921.
24. Holman D, Grimes M. Colostrum Feeding Behavior and Initiation of Breastfeeding in Rural Bangladesh. *J Biosoc Sci*. 2001; 33:139-154.
25. Caldwell J, McDonald P. Influence of maternal education on infant and child mortality: levels and causes. *Health Policy Educ*. 1982; 2:251-267.
26. Mosley W, Chen L. An analytical framework for the study of child survival in developing countries. *Population and Development Review* 1984; Suppl. (10):25-45.