

Newborn Care Practices at Home among Mothers of Neonates Admitted with Sepsis

Bima Thapa Chhetri,¹ Sunita Shah Bhandari,² Basant Kumar Karna,² Ramanand Chaudhary,² Upendra Yadav²

¹Yeti Health Science, Kantimarg, Maharajgunj, Kathmandu, ²Department of Child Health Nursing, B. P. Koirala Institute of Health Sciences, Sunsari, Dharan Nepal.

ABSTRACT

Background: Child rearing practices and family environment determine the health of newborn. Harmful newborn care practices are the risk factors for late onset neonatal sepsis. The objective was to identify newborn practices related to breast feeding, cord care, hygiene of newborn and thermal care practice at home of admitted neonates with diagnosis Late Onset Neonatal Sepsis in pediatric unit of B.P. Koirala Institute of Health Sciences tertiary center in eastern Nepal.

Methods: Descriptive cross sectional study was carried out from December 2014 to January 2015 using consecutive sampling. Semi structured, pretested questionnaire was used to interview 40 mothers. Data were analyzed using SPSS 20, descriptive and inferential statistics were used.

Results: Initiation of breastfeeding within one hour of delivery was practiced by only 40% of mother. Among neonates, 65% were given colostrum, 25% were given pre lacteal feed, and 45% were given formula milk and animal milk. Mustard oil was used to care umbilical cord by 72.5%. Hand washing was practiced by 62.5% before touching the baby. Application of kajal (52.5%) in eyes and use of mustard oil (95%) for massaging newborn was common. For thermal care, burning charcoal (75%) was mostly used. The study revealed association between newborn care and mother education, per capita income of family and family type ($p=0.012$, $p=0.012$, $p=0.039$) respectively.

Conclusions: Majority of practices in breast feeding and thermal care were good however in cord care and newborn hygiene practices was poor which stresses the need for the promotion of health education program to mothers by health care facilities.

Keywords: LONS; newborn care; practice

INTRODUCTION

Neonatal infection is the systemic infections accompanied with bacteremia in the first month of life.¹ It is the second most cause for neonatal death worldwide.¹ Deaths during this period accounts for almost 2/3 of all deaths in the first year of life and 40% of deaths before the age of five.² Globally, one million newborn (36%) died on the day they were born, and another one million (37%) died within next six days of birth.³ Nepal has a Neonatal Mortality Rate of 21 per 1,000 live birth⁴ and neonatal infection accounts 30% of death.⁵

Traditional harmful newborn care practices is the leading reason for Late Onset Neonatal Sepsis (LONS) contributing to neonatal morbidity and mortality.¹ Prime cause of neonatal admission in pediatric ward of B.P.Koirala Institute of Health Sciences (BPKIHS) is LONS.

We did this study with the objective to identify care practices of admitted neonates at home and to find out the relationship between the socio-demographic characteristics with care practiced.

METHODS

A descriptive cross sectional study was conducted in pediatric unit of BPKIHS from December 2014 to January 2015. This institution is a tertiary level referral center hospital in eastern Nepal. Newborn care parameters were taken as dependent variable whereas socio demographic profile of family was taken as independent variable. Mothers of neonate admitted with LONS were included whereas mothers of preterm and post term were excluded from the study. Consecutive sampling technique was used and total sample size was 40, calculated on the

Correspondence: Bima Thapa Chhetri, Department of Nursing, Yeti Health Science, Kantimarg, Maharajgunj, Kathmandu, Nepal. Email: bimathapa@gmail.com, Phone: +9779843432383.

basis of monthly approximation of admitted cases of Late Onset Neonatal Sepsis (LONS).

Self-developed semi-structured interview schedule was used which consisted questions regarding demographic information and newborn care based on the selected component. Breast feeding, cord care, thermal care and hygiene of the newborn were the components chosen from the World Health Organization (WHO) guidelines for essential newborn care.⁶ As there was no standard cut off value to differentiate between good and bad practice of the participant, neonatal care was assessed by calculating mean percentage score. For this, questions regarding newborn care practice were taken. On the basis of experts and literature review correct practice was given 1 and wrong was given as 0. The score of the entire respondent was converted into mean percentage score ± 1.96 Standard Deviation (SD) at 95% Confidence Interval (CI) and lower boundary of mean percentage score was taken as cut off value. Value between minimum score and lower boundary was considered as poor practice and value between lower boundary and maximum score was considered as good practice. Tool validation was done by consulting with experts. Pretesting of the tool was done to 10% of the total research participant.

The collected data were stored analyzed with Statistical Package for Social Sciences (SPSS) version 20, IBM, USA. Descriptive statistics was used to describe the demographic characteristics of participants. Inferential statistics Chi-square test was used to find out the association between the demographic variables and newborn care practices. The probability (p-value) of < 0.05 was considered statistically significant at 95% confidence level. Ethical clearance was taken by Institutional Review Committee of BPKIHS. Written consent was obtained from the study participant

RESULTS

There were total 40 mothers of admitted with LONS in this study. The 72.5% (29) of admitted newborn were male and 27.5% (11) were female and 70% (28) of the admitted child were of age between 7-28 days with median value (Inter Quartile Range) 12 (7-22). Majority (75%, 30) of the mother's marital age as well as first pregnancy (60%, 24) was below 20 years. Institutional delivery was most common (80%, 32). In modes of delivery majority (92.5%, 37) of the delivery was normal vaginal delivery and 7.5% was cesarean section. In religion Buddhist, Kirat and Muslim were kept as others, also in ethnicity dalit, disadvantaged non dalit caste, religious minorities and relatively advantaged janajati were kept as others.

The religion and ethnicity was classified as per Nepal Demographic and Health Survey.⁷ Per day earning of 1.25\$ was taken as the cut off point for calculating per capita income above or below the poverty line.⁸ Socio demographic data is given in Table 1.

Table 1. Socio-Demographic Characteristics of the Respondents (n=40).

Characteristic	Category	Frequency	Percent
Age of mother (years)	<20	9	22.5
	20-30	28	70
	≥ 30	3	7.5
Religion	Hindu	29	72.5
	Others	11	27.5
Ethnicity	Disadvantaged Janajatis	16	40
	Upper caste groups	11	27.5
	Others	13	32.5
Education of mother	Literate	26	65
	Illiterate	14	35
Occupation of mother	House wife	32	80
	Others	8	20
Income (per Capita)	Below Poverty Line (BPL)	17	42.5
	Above Poverty Line (APL)	23	57.5
Family type	Nuclear	9	22.5
	Joint	31	77.5
Family size	<6	26	65
	≥ 6	14	35
No of children	<2	34	85
	≥ 2	6	15

Breast Feeding Practices (Table 2), Cord Care Practices (Table 3), Thermal Care of Practices (Table 3), Newborn Hygiene Practices (Table 4).

Table 2. Breast Feeding Practiced by Respondent (n=40).

Characteristics	Category	Frequency	Percent
Breast feeding immediately after birth	Yes	16	40
	No	24	60
Colostrum feeding	Yes	26	65
	No	14	35
Prelacteal feeding	Yes	10	25
	No	30	75

If yes, what was given?	Honey	7	70	Frequency of feed at night time	≤2	4	10
	Sugar water	3	30		Whenever cries	32	90
Milk other than breast milk of mother	Yes	18	45	Burping	Yes	10	25
	No	22	55		No	30	75
If yes, what was given?	Cow's milk	5	28	The mean percentage score for breast feeding practice was 63.57±21.44. Minimum score was 29 and maximum was 56. Thus, the score (29-42) was considered poor and score (42-56) was considered good.			
	Lactogen ®	11	61	In newborn hygiene, mean percentage score was 72.05±17.39. Minimum score was 36 and maximum was 66, score (36-55) was considered poor and score (55-66) was considered good.			
	Others (Dairy milk, buffalo milk)	2	11	In thermal care, mean score was 61±16.91, 20 was minimum score 20 and 55 was maximum. The score (20-44) was considered poor and score (44-55) was considered good.			
Types of feeding	Breast feeding	30	75	As the data of cord care was non parametric median score was taken. The median score was 25 with inter quartiles			
	Bottle and spoon feeding	10	25				
Frequency of feed at day time	≤ 8 times	12	30				
	Whenever cries	28	70				
Duration per feed	10-15mins	22	55				
	Until baby sleeps	18	45				
Night feed	Yes	36	90				
	No	4	10				

Table 3. Cord Care and Thermal Care Practiced by Respondent (n=40).

Care Components	Care Characteristics	Category	Frequency	Percent
Cord care	Cord care at home	Yes	25	62.5
		No	15	37.5
	Anything applied to the cord	Yes	29	72.5
		No	11	27.5
	If yes, what was applied?	Mustard oil	18	62
		Powder	7	24
		Ointment	4	14
	Anything applied to cord stump	Yes	15	40
		No	25	60
	If yes, what was applied?	Mustard oil	12	81
Others (powder, ointment)		3	19	
Use of delivery kit in home delivery (Home delivery-8)	Yes	2	25	
	No	6	75	
If no, what was used?	New blade	6	100	
Thermal Care	Burning charcoal to keep baby warm	Yes	29	75
		No	11	25
	Placing baby under sunlight	Yes	32	80
		No	8	20
	Using warm cloth for baby	Yes	40	100
	Placing baby mother side	Yes	5	12.5
		No	35	87.5
	Heater used	Yes	2	5
		No	38	95

range of 25-75. Minimum score of the respondent was 0 and maximum score was 75. Q1 was taken as cut off value so the score (0-25) was considered as poor and (25-75) as good practice.

Table 5 shows that the association of socio demographic variable with newborn care practices at 5% significant (p<00.5).

Table 4. Newborn Hygiene Practiced by Respondent (n=40).

Characteristics	Variable	Frequency	Percent
Wash hand before touching baby	Yes	25	62.5
	No	15	37.5
First Baby bath	Within 24 hrs	5	12.5
	After 24 hrs	35	87.5
Eye clean	Yes	15	37.5
	No	25	62.5
If yes, what was used for cleaning?	Luke warm water	8	53.3
	Oil	7	46.7
Kajal applied	Yes	21	52.5
	No	19	47.5
Massage newborn	Yes	38	95
	No	2	5
If yes, what was used for massaging?	Mustard oil	38	100
Nose clean	Yes	19	60
	No	21	40
If yes, what was used for cleaning?	Oil	7	37
	Luke warm water	9	47
Ear clean	Others (ear bud, cotton)	3	16
	Yes	15	37.5
If yes, what was used for cleaning?	No	25	62.5
	Oil	8	53
If yes, what was used for cleaning?	Luke warm water	4	27
	Cotton ear bud	3	20

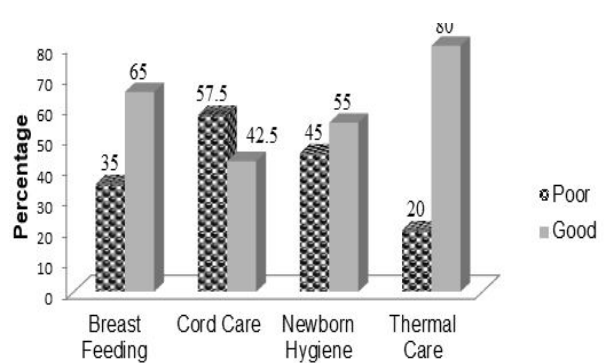


Figure 1. Components of Newborn Care Practice (n=40).

Table no 5. Association of Socio-Demographic Variable with Newborn Care Practices.

Characteristics	Category	Newborn care practice		p value
		Poor	Good	
Age of mothers in years**	<20	6 (42.8%)	8 (57.2%)	0.666
	≥20	13 (50%)	13 (50%)	
Religion**	Hindus	13 (44.8%)	16 (55.2%)	0.583
	Others	6 (54.5%)	5 (45.5%)	
Ethnicity*	Disadvantage Janajati	7 (41.1%)	10 (58.9%)	0.052
	Upper caste	3 (27.2%)	8 (72.8%)	
Education**	Others	9 (75%)	3 (25%)	0.026
	Literate	9 (34.6%)	17 (65.4%)	
Occupation**	Illiterate	10 (71.4%)	4 (28.6%)	0.698
	Housewife	16 (50%)	16 (50%)	
Income (per capita)**	Others	3 (37.5%)	5 (62.5%)	0.012
	BPL	12 (70.5%)	5 (29.5%)	
Family type**	APL	7 (30.4%)	16 (69.6%)	0.039
	Nuclear	7 (77.7%)	2 (22.3%)	
	Joint	12 (38.7%)	19 (61.3%)	

Parity of mother**	Primi	11 (44%)	14 (56%)	0.567
	Multi	8 (53.3%)	7 (46.7%)	

*Continuity correction, **Pearson Chi-square test

DISCUSSION

Reduction in the mortality and morbidity of the neonate is the major challenge for Nepal government. For this, it has developed the National Neonatal Health Strategy 2004 with support from the Saving Newborn lives Initiatives, Save the Children Federation.⁹ But for the implementation of an effective program necessitates an understanding of community and household traditional newborn care practices to enable the development of a program that promotes culturally sensitive and acceptable change in practice.³

Initiation of breast feeding within one hour of delivery was practiced for only 40% of the neonates remaining were fed after this time. This finding of the study is supported by the study conducted by Sreeramareddy et al.¹⁰ but is contradicted to the study done by Tura et al.¹¹ and Mullary et al.¹² Colostrum feeding was practiced by more than half of the mother. This finding is similar to the study done in Pakistan.¹³ However, the result was different to the study done at Uttar Pradesh, India¹⁴ and urban Nepal where the mother had discarded the colostrum.¹⁰ Prolactal feed was not given to majority of newborn. This finding is similar to the previous study done in rural and urban areas of Nepal.^{10,15} Honey was the commonest type of prolactal fed used which was given by putting it on a fingertip, which is similar to the result of study done in Pakistan.¹³ Exclusive breast feeding was done only for 45% of the neonates, whereas remaining were fed with complementary feeding, formula milk (Lactogen ®) was mostly used this finding contradict the finding of study done at urban women of Nepal where breast feeding was only traditional newborn care practice which seems to be healthy and encouraging.¹⁰

The finding of this study suggested, in home delivery new unused blade was to cut cord rather than delivery kit, the finding supported by the previous study.^{11,16} New thread was used in all home deliveries, this practice was different from the study by Kaphle et al.¹⁶ Previous study has recommended for dry cord care to reduce cord infections and overall neonatal mortality rate¹⁷ unfortunately luke warm water was mostly used for cleaning the umbilical cord and stump in present study. In spite of efficacy and free supply of Chlorhexidine to umbilical cord,¹⁷ unsterile substance like oil, talcum powder,

ointment was applied to the cord and cord stump out of which, mustard oil was most commonly used. This is similar to the reports from study from Nepal¹⁰ and Pakistan.¹³ Our study also revealed an interesting finding of oil and talcum powder being even used in institutional deliveries this can be due to cultural beliefs in relation to neonatal care practice.

Hand washing was practiced by 62.5% (25) mother before touching their baby, however only 13.3% of caretaker had practiced this in study done in southern Nepal.¹⁸ Nationally only 9.3% of the babies were bathed after 24 hours of birth 2006 and 26.1% in 2011.^{4,5} However, current study shows 87.5% of newborn taking bath after 24 hours of life. We found that half of the mother had practiced of cleaning eye with luke warm water and remaining had done by instilling drops of mustard oil in eye while massaging the newborn. This finding is different to study in Pakistan, where mothers were not aware of eye care practices in case of institutional deliveries where as in home deliveries in most of the cases eyes were simply cleaned with wet cotton swab.¹³ Application of kajal was common in this study which is similar to study done in Pakistan.¹³ A study from India reported that the prevalence of kajal application to the newborns' eyes was much higher in slums as compared to urban areas. Kajal is applied to the baby's eyes as it is believed to make the eyes beautiful, improve vision and ward off evil.¹⁹

Massaging newborn with mustard oil is universal (95%) in the study, the finding is similar to the study in southern Nepal.¹⁸ Promotion of strength, maintenance of health and provision of warmth were the common reason for oil application.²⁰ Full body massage with oil may, however, be harmful to the new born, depending on the oil used and how it is applied. Mustard oil had the most deleterious effects on epidermal barrier leading to neonatal septicemia whereas sunflower seed oil enhance barrier function in neonates.²¹ Massage therapies is considered safe practice and there are no significant harmful effects, if performed appropriately as suggested by study done by Kulkurni et al.²²

Cleaning neonate nose and ear was also common. Mostly luke warm water was used to clean neonate's nose whereas oil was used for cleaning ear as well as nose. The result is similar to the study done in Nepal where in focus group discussion women said that application of oil in the eyes will help the baby to make tears, in nose keeps from drying out, making breathing easier also Muslim community suggested that putting some small drops of oil in the nose prevent cough and ears gets the dirt out.²⁰ The entire respondent had practiced

of cleaning genitalia with plain water after defecation as recommended in other study.²³ The study had shown, no evidence of use of ointment after cleaning the nappy area however use of ointment free form preservative, antiseptic, fragrance or coloring has found to be effective for preventing nappy rash.²³ All mother had sun dried the used cloths and napkins of newborn but regarding washing, napkins were washed with soap water only after defecation but not after urination, this can act as source for multiplication of microorganism.

Maximum mother(80%)had practiced of placing newborn under sunlight during day time which can increase risk for skin cancer in future.²⁴ Burning charcoal to keep the neonates warm was most commonly practiced which has increases the risk for pneumonia.²⁵ However good practice of using cap, socks to keep their baby warm was also practice, this result is supported by the study done by Samba D et al at Tanzania where the baby was wrapped with cloths and head was covered with cap with the belief to protect child from hurting through witchcraft.²⁶

Education of the mother, family income, family type and ethnicity is directly associated with these newborn care practices this finding is supported by the study in Pakistan where mother education and family income was significantly associated with newborn care component.¹³

This study revealed that mother had practiced poor newborn care practices like delayed breast feeding (after one hour of life), formula feeding, applying mustard oil to cord and cord stump, applying oil in the eye, nose and ears of newborn, burning charcoal to keep newborn warm and using un washed napkins after urination which is supported by the literature reviewed.

The study is subjected to some limitations, including the subjective bias as the study is based on reporting of past newborn care practice rather than in actual observations and small sample size. The current study is helpful to identify harmful newborn care practices at home.

CONCLUSIONS

Majority of good practices in breast feeding and thermal care practices however in cord care and newborn hygiene poor practices were followed by the mother. Education of the mother, family income, family type and ethnicity were the important factors associated with poor newborn care practices.

REFERENCES

1. Paul K V, Bagga A. Ghai, Essential Pediatrics. 8th Edition. Newborn Infants, Infections in the neonate. New Delhi. CBS Publishers and distributors Pvt Ltd. 2013: 162-65
2. State of the world's newborn: Nepal, Saving newborn lives. Save the Children. July 2002 pp16-17. [\[FullText\]](#)
3. Level and trends child mortality, Report 2014. UNICEF pp12 [\[FullText\]](#)
4. Ministry of Health (Nepal): 2016 Nepal Demographic and Health Survey. Kathmandu, Nepal: Ministry of Health, New Era, Macro International; November 2017. [\[FullText\]](#)
5. Ministry of Health (Nepal): 2006 Nepal Demographic and Health Survey. Kathmandu, Nepal: Ministry of Health, New Era, Macro International; 2007. [\[FullText\]](#)
6. Essential Newborn Care: A Report of a Technical Working Group. Geneva: World Health Organization. 1996. [\[Link\]](#)
7. Caste, ethnic and regional identity in Nepal, further analysis of the 2006 Nepal Demographic and Health survey. [\[FullText\]](#)
8. Poverty: The official numbers-the United Nations. Chapter II. [\[FullText\]](#)
9. Paudel D, Shrestha IB, Siebeck M, Rehfuess EA. Neonatal Health in Nepal, Analysis of Absolute and Relative Inequalities and Impact of Current Efforts to Reduce Neonatal Mortality. BMC Public Health. 2013;13:1239. [\[DOI\]](#)
10. Sreeramareddy CT, Joshi HS, Sreekumaran BV, Giri S, Chuni N. Home Delivery and Newborn Care Practices Among Urban Women in Western Nepal: A Questionnaire Survey. BMC Pregnancy and Childbirth. 2006; 6(27). [\[DOI\]](#)
11. Tura G, Fantahun M, worku A. Neonatal Care Practice and Factors Affecting in Southwest Ethiopia: A Mixed Methods Study. BMC International Health and Human Rights. 2015; 15(18):1-10. [\[DOI\]](#)
12. Mullany LC, Katz J, Yue M.L, Khatri SK ,Steven C, Clerg CL et al, Breast-Feeding Patterns, Time to Initiation, and Mortality Risk among Newborns in Southern Nepal, Nepal Nutrition Intervention Project–Sarlahi, Kathmandu, Nepal. J Nutr. 2008 March; 138(3): 599–603. [\[DOI\]](#)
13. Gul S, Khali R, Yousafzai MT, Shoutkat F. Newborn Care Knowledge and Practices Among Mothers Attending Pediatric Outpatient Clinic of a Hospital in Karachi, Pakistan. Int J Health Sci (Qassim). 2014 Apr; 8(2): 167-75. [\[PubMed\]](#)
14. Ahmad S, Goel K, Agarwal G, Goel P, Kumar V, Prakash A. Assessment of the Newborn care Practices in Home Deliveries among Urban Slums of Meerut, UP India. J Commu-

- nity Med Health Educ. 2012; 2 (8): 2-4. [\[FullText\]](#)
15. Devkota MD, Bhatta MR, Newborn Care Practices of Mothers in a Rural Community in Baitadi, Nepal. *Health Prospect*. 2011; 10:5-9. [\[DOI\]](#)
 16. Kaphle HP, Yadav DK, Neupane N, Sharma B, Yadav DK, Poudel SK. Newborn Care Practice in Rural Communities of Nawalparasi District, Nepal. *International Journal of Health and Allied Sciences*. 2013; 3(1):35-9. [\[FullText\]](#)
 17. Mullany CL, Darmstadt LG, Khatri K S, Katz J, Leclercq C S, Shrestha S et al. Topical Applications of Chlorhexidine to the Umbilical Cord for Prevention of Omphalitis and Neonatal Mortality in Southern Nepal: A Community-Based, Cluster-Randomised trial. *Lancet*. 2006 Mar 18; 367(9514): 910–18. [\[DOI\]](#)
 18. Karas DJ, Mullany LC, Katz J, Khatri SK, Leclercq SC, Darmstadt GL et al. Home care practices of newborn in Rural Southern Nepal during the first 2 weeks of life. *J Trop Pediatr*. 2012 June; 58(3):200-07. [\[DOI\]](#)
 19. Puri S, Bhatia V, Sharma M, Swami H, Magnat C. Comparison of Prevalent newborn Practices, In Urban and Slum Population of Chandigarh. UT, India. *The International Journal of Pediatric and Neonatology*. 2007; 9(1) [\[Full-Text\]](#)
 20. Mullany LC, Darmstadt GL, Khatri SK, Tielsch JM. Traditional Massage of Newborns in Nepal: Implications for Trials of Improved Practice. *J Trop Pediatr*. 2005 April; 51(2): 82-6. [\[DOI\]](#)
 21. Darmstadt GL, Mao-Qiang M, Chi E, Saha SK, Ziboh VA, Black RE et al. Impact of Topical Oils on the Skin Barrier: Possible Implications for Neonatal Health in Developing Countries. *Acta Paediatr*. 2002; 91(5):546–54. [\[DOI\]](#)
 22. Kulkarni A, Kaushik JS, Gupta Piyush, Sharma H, Agrawal RK. Massage and Touch Therapy in Neonates: The current Evidence. *Indian Pediatr*. 2010. 47 (9):771-76. [\[FullText\]](#)
 23. Jackson A. Time to Review Newborn Skincare. *Infant Journal*. 2008 4(5):168-71. [\[FullText\]](#)
 24. Harrison S, Buttner P, Nowak M. Maternal Beliefs about the Reputed Therapeutic uses of Sun Exposure in Infancy and the Postpartum Period. *Australian Midwifery*. 2005. 18(2): 22-28. [\[FullText\]](#)
 25. Mahalanabis D, Gupta S, Paul D, Gupta A, Lahiri M and Khaled M A. Risk factors for Pneumonia in Infants and Young Children and the Role of Solid Fuel for Cooking: a Case-Control Study. *Epidemiol Infect*. 2002 August. 129(1):65-71. [\[DOI\]](#)
 26. Samba D, Schellenberg J, Hildon ZJL, Mashasi I, Penfold S, Tanne M et al. Thermal Care for Newborn Babies in Rural Southern Tanzania a Missed Method Study of Barriers, Facilitators and Potential for Behavior Change. *BMC Pregnancy Childbirth*. 2014; 14:267. [\[DOI\]](#)