Newborn Care Practices in Rural Communities of Nawalparasi District, Nepal

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ABSTRACT
Most of the newborn 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 (51.33% and 58.45% respectively). There is strong need to implement the community-based interventions to improve the newborn 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.

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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.\(^\text{1}\)

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

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 scantly 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.\(^\text{6,7}\) 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%. Early childbearing, poor maternal nutrition, micronutrient 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.

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.

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 prelctal 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/neighbours          | 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    | 0.011   | 44.9   | 55.1   | 0.018   | 61.2        | 38.8          | 0.452   |
| 20-35 years     | 238| 24.1   | 75.9    |          | 54.0   | 46.0   |          | 56.3        | 43.7          |         |
| >35 years       | 25 | 3.2    | 96.8    |          | 25.9   | 74.1   |          | 61.3        | 38.7          |         |
| Birth order     |    |         |         |         |         |         |         |             |               |         |
| First            | 125| 32.6   | 67.4    | 0.013   | 33.4   | 66.6   | 0.351   | 73.7        | 26.3          | 0.012   |
| Second & above   | 101| 50.0   | 50.0    |          | 47.5   | 52.5   |          | 55.0        | 45.0          |         |
| Sex of newborn   |    |         |         |         |         |         |         |             |               |         |
| Male             | 161| 25.3   | 74.7    | 0.030   | 40.7   | 59.3   | 0.032   | 61.0        | 39.0          | 0.087   |
| Female           | 155| 31.2   | 68.8    |          | 33.3   | 66.7   |          | 40.7        | 59.3          |         |
| Caste/Religion   |    |         |         |         |         |         |         |             |               |         |
| Dalit            | 50 | 22.0   | 78.0    | 0.005   | 42.0   | 58.0   | 0.004   | 56.0        | 44.0          | 0.000   |
| Bhram (Advantaged) | 150| 55.3   | 44.7    |          | 48.0   | 52.0   |          | 56.7        | 43.3          |         |
| Advantaged Janajati | 34 | 58.8  | 41.2    |          | 79.4   | 20.6   |          | 58.8        | 41.2          |         |
| Other caste group | 22 | 45.5   | 54.5    |          | 31.8   | 68.2   |          | 50.0        | 50.0          |         |
| Maternal education |    |         |         |         |         |         |         |             |               |         |
| Illiterate       | 43 | 13.0   | 87.0    | 0.037   | 27.3   | 72.7   | 0.001   | 27.5        | 72.5          | 0.000   |
| Primary          | 69  | 30.4   | 69.6    |          | 42.0   | 58.0   |          | 49.3        | 50.7          |         |
| Secondary        | 132| 23.7   | 76.3    |          | 38.6   | 61.4   |          | 68.1        | 31.9          |         |
| Above secondary  | 35  | 40.0   | 59.0    |          | 68.7   | 31.3   |          | 46.7        | 53.3          |         |
| Family income/mths |    |         |         |         |         |         |         |             |               |         |
| Below NRs 2250   | 84 | 41.7   | 58.3    | 0.001   | 47.4   | 52.6   | 0.202   | 58.3        | 41.7          | 0.076   |
| NRs 2250-4999    | 24 | 20.8   | 79.2    |          | 27.0   | 73.0   |          | 47.6        | 52.4          |         |
| NRs 4999 and above | 168| 18.1   | 81.9    |          | 54.8   | 45.2   |          | 61.7        | 38.3          |         |

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 but the clean cord tie was practiced (41.2%) but the clean cord tie was practiced.

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. Prelactal feeding and colostrum feeding practice found in this study is not much different from earlier studies conducted in Nepal.22 Maternal Education, antenatal checkups, 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. 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 In this study bathing newborn baby at least after 24 hours of was found 58.45% which is more than double of finding of NDHS 2011 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.

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