

Community-based Study on Newborn Care Practices and its Determinants in Rural Pondicherry, India

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Abstract

Background: Globally, around 86% of neonatal deaths occurred are due to infections and preterm births. To prevent newborn infection, clean delivery and newborn care practices should be adopted. Understanding of the community and traditional new-born care practices is necessary to implement the effective programme for promotion of newborns health.

Objectives: To study the new-born care practices and its determinants in a rural area of Puducherry, India.

Methodology: A cross sectional study done in Bahour commune from 1st April 2012 to 31st June 2012. Information regarding background details and new-born care practices were recorded in semi-structured questionnaire by house to house visit. Total of 136 infants born during Jan-March 2012 were enrolled. Data were presented as percentages, ratios and Chi-square test was used to find association among variables. p-value<0.05 was considered statistically significant.

Results: Among 136 newborns, 46.3% were male and 53.7% were female. Around 65% newborns were breastfed within an hour after birth and 5.9% were prelacteally fed. There was significant difference between male and female newborns in terms of wrapping after birth and day of first bath (p value 0.04 and 0.007 respectively). Out of 37 mothers who belonged to poor socio-economic status, 24.3% mothers practiced application on cord with significant association (p=0.03). Majority (70.6%) of mothers gave bath to their newborn's on third day or beyond. In the present study, mothers age at marriage and day of first bath to newborn's was significantly associated (p=0.02).

Conclusions: The overall practices like giving pre-lacteal feed; application on umbilical cord and giving bath immediately after bath of newborn are still practiced in the study area. Therefore, faulty newborn care practices need to be addressed.

Keywords: Neonatal mortality rate; Skilled birth attendance; Consanguineous marriage; Nuclear families

Background

"No investment in global health has a greater return than saving the life of a child. With sufficient resources and political resolve, we can ensure a healthy start, and a promising future, for children everywhere." Melinda Gates, Bill and Melinda Gates Foundation.

Newborn care practices shows the importance given to the wellbeing of the newborn and raising a child well [1]. Newborns are valuable treasure to the nation. Realizing the importance of child development, United Nations declared 1979 as the International Year of the Child [2] and World Health Organisation (WHO) proposed a theme on World health day during 2003 as "Healthy environment for children" and 2005 as "Make every mother and child count" to focus the attention of planners, policy makers, administrators, health and social scientists on various problems faced by children [3].

Neonatal mortality has been declining worldwide. Neonatal Mortality Rate (NMR) is reduced by 28% in last two decades from an estimated 32 deaths per 1000 live births (year 1990) to 21 deaths (year 2011) [4]. Globally, around 86% of neonatal deaths are due to pneumonia, diarrhoea, and preterm births. To prevent newborn and maternal infection, clean delivery practices and appropriate treatment should be adopted. Birth asphyxia causes 23% of newborn deaths and can largely be prevented by improved care during labour and delivery [4].

Social determinants for child mortality include early marriage and childbirth at a very young age, less spacing between births and low literacy level among women, in particular those belonging to the urban poor and rural settings. Under National Rural Health Mission (NRHM), there are a number of focused interventions for improving

care of the new-born, which include focus on improving access to Skilled Birth Attendance (SBA) and Emergency Obstetric Care for all women in rural areas. On the demand side, Janani Suraksha Yojana and Janani Shishu Suraksha Karyakram have managed in overcoming many traditional barriers to institutional deliveries [5].

Several programmes have been implemented by Government of India along with WHO and UNICEF to improve the health status of newborns. Many customs are prevalent in India which affects health status of the new-borns. Understanding of the community and traditional newborn care practices is necessary to implement the effective programme for promotion of newborns health. For the effective child health care delivery, information regarding newborn care is important. This study was done to describe selected newborn care practices in rural area of Puducherry.

Aims and Objectives

1. To study the newborn care practices in a rural area of Puducherry.

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2. To find out the determinants of newborn care practices.

Materials and Method

This was a Community based cross sectional study done in the rural area of Pondicherry. As per convenience, child born to mothers during Jan-March 2012 were enrolled for the study through Anganwadi registers from Bahour Commune during April-June 2012.

Total 136 newborns were included in the study. Information regarding background details and newborn care practices were recorded in semi-structured questionnaire.

The investigator interviewed the mother/husband in local language using a pre-designed proforma. Each infant-mother was interviewed for about 40 minutes. Mothers were informed through phone prior to visit and then house to house visit was done.

Statistical Analysis

The data was entered and analysed using Microsoft Excel and were presented as percentages and ratios. Chi-square test and Fisher's exact p test were used to find association between the variables. p-value<0.05 was considered as statistically significant.

Results

Total 136 newborn's mothers participated in the study. Among 136 newborn's, 63(46.3%) were male and 73 (53.7%) were female.

Table 1 shows the socio-demographic profile of the study newborns in rural Puducherry. Majority of the newborns (94.9%) belonged to Hindu families. According to modified B.G. Prasad's Classification for socio-economic status [6], 51 (37.5%) newborns belonged to lower-middle class followed by 37 (27.2%) newborns in poor class. Total 97 (71.3%) mothers were educated up to 12th standard and 18 (13.2%)

Characteristics	N (%)
Religion	
Hindu	129 (94.9)
Christian	6 (4.4)
Muslim	1 (0.7)
Socio-economic status	
Upper high	3 (2.2)
High	18 (13.2)
Upper middle	27 (19.9)
Lower middle	51 (37.5)
Poor	37 (27.2)
Education level of mother	
Illiterate	21 (15.5)
Upto 12 th std	97 (71.3)
Graduate and above	18 (13.2)
Education level of father	
Illiterate	8 (5.9)
Upto 12 th Std	92 (67.6)
Graduate and above	36 (26.5)
Occupation of mother	
Housewife	114 (83.8)
Business/Service	15 (11)
Labourer/Fisherwoman/Farmer	7 (5.1)
Occupation of father	
Labourer/Fisherman/Farmer	82 (60.3)
Business/Service	53 (39)
Unemployed	1 (0.7)

Table 1: Socio-demographic profile of study infants (N=136).

Characteristics	N (%)
H/O consanguineous marriage	
Yes	16 (11.8)
No	120 (88.2)
Mothers age at marriage (in years)	
<18	8 (5.9)
18 to 22	88 (64.7)
23 to 27	30 (22)
≥ 28	10 (7.4)
Type of family	
Nuclear	73 (53.7)
Joint	63 (46.3)
Number of living children	
≤ 2	114 (83.8)
>2	22 (16.2)

Table 2: Family background of new-borns (N=136).

Characteristics	Male (n=63)	Female (n=73)	Total
Order of birth			
1	28 (44.4)	30 (51.7)	58 (42.6)
2	24 (38.1)	31 (56.4)	55 (40.4)
≥ 3	11(17.5)	12 (52.2)	23 (17)
Birth interval* (N=78)			
≤ 24 months	5 (14.3)	7 (16.3)	12 (15.4)
25-36 months	27 (77.1)	32 (74.4)	59 (75.6)
> 36 months	3 (8.6)	4 (9.3)	7 (9)
Place of delivery			
Home	1 (1.6)	0	1(0.7)
Institutional	62 (98.4)	73 (100)	135 (99.3)
Birth attendant			
Doctor/ nurse/ANM	62 (98.4)	73 (100)	135 (99.3)
Trained dai	1 (1.6)	0	1 (0.7)
Mode of delivery			
Normal	50 (79.4)	57 (78.1)	107 (78.7)
Caesarean section	12 (19)	15 (20.5)	27 (19.8)
Assisted	1 (1.6)	1 (1.4)	2 (1.5)
Birth weight (in grams)			
1500-2499	0	3 (4.1)	3 (2.2)
≥ 2500	63 (100)	70 (95.9)	133 (97.8)

(Figures in parenthesis indicate percentages)

*For mothers having children 2 or more than 2

Table 3: Birth history of new-borns (N=136).

were graduate. Out of 136 mothers, 114 (83.8%) were housewives.

Family background of the study newborns is shown in Table 2. It was observed that parents of 16 (11.8%) newborns had history of consanguineous marriage. The mean age for marriage of mothers of study newborn was 21.9 ± 3.1 years. Out of 136 newborns, 73 (53.7%) belonged to nuclear families. Only 22 (16.2%) mothers had more than two living children.

It was observed that, out of 136 newborns, one male child was delivered at home by a trained dai while remaining 135(99.3%) were delivered at institution by doctor/nurse/ANM. Only three (2.2%) female newborns were found to have low birth weight (<2500 gm). There was no significant difference found between male and female newborns in terms of history of birth in this present study (Table 3).

It was observed that, out of 136 newborns, 128 (94.1%) were wrapped immediately after birth. Total 19 (14%) children had a history of application over umbilical cord by sweet flag (vasambu)

(52.6%), oil (42.1%) or ghee (5.3%). In the present study, bathing of 96 (70.6%) newborns was delayed till third day or more. However, seven (5.1%) newborns were bathed on the first day of birth itself. There was significant difference between male and female newborns in terms of wrapping after birth and day of first bath (p value 0.04 and 0.007 respectively). However, no significant difference was observed between male and female newborns as far as cloth used for wrapping, application on umbilical cord stump and type of cord application is concerned (Table 4).

Table 5 shows the association of socio-demographic variables of the study children with newborn care practices in the present study. Among the illiterate mothers, 19 (90.5%) mothers wrapped their newborn after birth, 5 (23.8%) mother's practiced application on umbilical stump, and 52 (71.2%) mothers gave bath to their newborns on third day or beyond. There were no significant association between newborn care practices and mothers' education.

Out of 37 mothers who belonged to poor socio-economic status, 9 (24.3%) mothers practiced application on cord. Significant association was observed between application on umbilical stump and socio-economic status of mothers (p=0.03). Majority (70.6%) of mothers gave bath to their newborns' on third day or beyond. Seventy four (77.1%) mothers aged ≤ 22 years gave bath to their newborns' on third day or beyond. In the present study, mothers age at marriage and day of first bath to newborns' was significantly associated (p=0.02). However, no significant association was observed between newborn care practices and mothers occupation, type of family and birth order of newborn in the present study (Table 5).

Discussion

The present study aimed at assessing the newborn care practices in a rural area of Puducherry. This study described the essential newborn care given during birth examined their association with socio-demographic variables.

According to Census 2011 [7] 80% males and 79% females are literate. In the present study, majority (67.6%) of the mothers were educated upto 12th standard and 26.5% mothers were graduate; this shows that female literacy rate is high in the study area. Out of total women, 83.8% were housewives and only 11% were doing service/

business. It stresses the fact that women at a larger scale are still working within the household.

The institutional delivery rate is extremely low at national level. Unless the pace of change accelerates, it will take until 2025 for half of all rural births to be institutional and mid-century before 75% coverage is reached [8]. There was a slow increase in institutional delivery rate in India, without the sign of acceleration in achieving the national goal of 80% coverage in 2015 [8]. In present study, 99.3% deliveries were conducted in institutions and only one (0.7%) woman delivered at home by a trained dai due to delay in accessing the nearby health facility. Similar finding was reported in District Level Household Survey-3 (DLHS-3) conducted in Pondicherry with institutional delivery rate of 99.4% and in Tamil Nadu with 94% [8].

In contrast, according to DLHS-3 [8], the institutional delivery rate in India was 47% and as per National Family Household Survey-3 (NFHS-3) for rural areas in India, the rate was 31.1% [9]. Studies conducted in other states also showed lower level of institutional delivery compared to our study [10-12]. This suggests, there was an effective health education given to women regarding the place of delivery during antenatal visits, availability of facilities and good transport in present study area.

According to the present study, mode of delivery was observed to be normal vaginal delivery (78.7%). The percentage of mothers who had caesarean section was 19.8% which was higher as compared to the NFHS-3 report for India (7%) [9]. Similar observations were noted in studies conducted in Gujarat (15.3%) and Haryana (16%) [10,11]. The reason for increased caesarean section in the study area was due to increased awareness and readiness towards complications related to delivery among the mothers and their families.

As per Integrated Management of Neonatal and Childhood Illness Guidelines, the newborn should be quickly dried and wrapped in the warm and clean cloth immediately after delivery to prevent heat loss from the body [13]. In the present study, it was observed that, 94.1% newborns were wrapped immediately after birth. Similar observations were reported from Chandigarh [14], Bangalore [15] as well as from South Nepal [16] with of 93.8%, 90.1% and 82.8% new-borns respectively being wrapped immediately after birth.

Indicators	Male (n=63)	Female (n=73)	Total	p value
Wrapping immediately after birth				0.04
Yes	62 (98.4)	66 (90.4)	128 (94.1)	
No	1 (1.6)	7 (9.6)	8 (5.9)	
Cloth used for wrapping (n=128)				0.13
New/ washed	53 (85.5)	55 (83.3)	108 (84.4)	
Not properly washed	9 (14.5)	11 (16.7)	20 (15.6)	
Application on umbilical cord				0.16
Yes	6 (9.5)	13 (17.8)	19 (14)	
No	57 (90.5)	60 (82.2)	117 (86)	
Type of cord application (n=19)				0.26
Sweet flag (Vasambu)	2 (33.3)	8 (61.5)	10 (52.6)	
Oil	4 (66.7)	4 (30.8)	8 (42.1)	
Ghee	0	1 (7.7)	1 (5.3)	
Day of first bath				0.007
1 st day	2 (3.2)	5 (6.8)	7 (5.1)	
2 nd day	23 (36.5)	10 (13.7)	33 (24.3)	
$\geq 3^{\text{rd}}$ day	38 (60.3)	58 (79.5)	96 (70.6)	

(Figures in parenthesis indicate percentages)

Table 4: Care given to newborns after birth (N=136).

New-born care practices	Mothers' education			Mothers' Occupation			Socio-economic status		
	Illiterate (n=21)	Literate (n=115)	p value	Housewife (n=114)	Working (n=22)	p value	Poor (n=37)	Middle/High (n=99)	p value
Wrapping after birth									
Yes	19 (90.5)	109 (94.8)	0.44	107 (93.9)	21 (95.5)	0.77	35 (94.6)	93 (93.9)	0.88
No	2 (9.5)	6 (5.2)		7 (6.1)	1 (4.5)		2 (5.4)	6 (6.1)	
Application on umbilical stump									
Yes	5 (23.8)	14 (12.2)	0.15	16 (14)	3 (13.6)	0.96	9 (24.3)	10 (10.1)	0.03
No	16 (76.2)	101 (87.8)		98 (86)	19 (83.4)		28 (75.7)	89 (89.9)	
First bath given on									
1 st Day	1 (4.8)	6 (5.2)	0.82	5 (4.4)	2 (9.1)	0.65	0	7 (7.1)	0.13
2 nd Day	4 (19)	29 (25.2)		28 (24.6)	5 (22.7)		7 (18.9)	26 (26.3)	
≥ 3 rd Day	16 (76.2)	80 (69.6)		81 (71)	15 (68.2)		30 (81.1)	66 (66.6)	
New-born care practices	Type of family			Birth order			Mothers age at marriage		
	Nuclear (n=73)	Joint (n=63)	p value	1 (n=58)	≥ 2 (n=78)	p value	≤ 22 (n=96)	>22 (n=40)	p value
Wrapping after birth									
Yes	70 (95.9)	58 (92)	0.34	56 (96.6)	72 (92.3)	0.29	91 (94.8)	37 (92.5)	0.60
No	3 (4.1)	5 (8)		2 (3.4)	6 (7.7)		5 (5.2)	7 (7.5)	
Application on umbilical stump									
Yes	12 (16.4)	7 (11.1)	0.37	6 (10.3)	13 (16.7)	0.29	16 (16.7)	3 (7.5)	0.16
No	61 (83.6)	56 (88.9)		52 (89.7)	65 (83.3)		80 (83.3)	37 (92.5)	
Day of first bath									
1 st Day	5 (6.9)	2 (3.2)	0.53	1 (1.7)	6 (7.7)	0.29	3 (3.1)	4 (10)	0.02
2 nd Day	16 (21.9)	17 (27)		15 (25.9)	18 (23.1)		19 (19.8)	14 (35)	
≥ 3 rd Day	52 (71.2)	44 (69.8)		42 (72.4)	54 (69.2)		74 (77.1)	22 (55)	

Table 5: Association of socio-demographic variables and newborn care practices (N=136).

Application on umbilical cord of newborn is a custom followed in many parts of India and majority of them use cow dung as the application which is a common cause of neonatal tetanus and neonatal death. Our study reported that 14% children had a history of application over umbilical cord stump, either by sweet flag (52.6%), oil (42.1%) or ghee (5.3%). Other studies also reported similar practices of application on umbilical cord, the percentages ranged from 10% to 50% [12,17-20]. Common applicant used were turmeric powder, oil and ghee with the percentage of 83%, 15.8% and 12% respectively [12,17,19].

In the present study, significant association was observed between socio- economic status and application on umbilical cord. Mothers who belonged to poor class practiced application on umbilical cord stump as compared to middle/high class mothers.

According to WHO and UNICEF report on newborn care, bathing should be avoided immediately after birth in order to prevent hypothermia and for a normal newborn bathing should be started on second day [13]. There is a common belief of people that the mother and her newborn are polluted due to the delivery process, so bath should be given immediately after birth [21]. In the present study, bathing of (70.6%) infants was delayed till third day or more. However, 5.1% infants were bathed on the first day of birth itself. In contrary, studied conducted in Bangladesh, Uttar Pradesh, Haryana, Chandigarh and West Bengal reported that 76.1%, 67%, 56.5%, 40% and 17.6% infants respectively were given first bath immediately after birth [19,22,23].

Pre-lacteal feeding is almost universal in India. Present study observed that percentage of newborns who were given pre-lacteal feed was only 5.9%. Among them 62.5% were given animal's milk as pre-lacteal feed and 37.5% new-borns were given honey water. Studies from South Nepal [16] and Pakistan [17] reported that the percentage of newborns that were given pre-lacteal feeds was 44%, 55.6% and 87.6% respectively, which were higher compared to the present study. Studies from other parts of India also reported the practice of giving prelacteal feeds [15,20,24,25].

Colostrum is a thick, yellow secretion from the breast during

initial two to three days after delivery. It provides a concentrated source of energy for the newborn which is easily digestible and also offers protection against childhood illnesses. In the present study, 2.2% newborns did not receive colostrum even after two days of birth. Similar observations were reported from two studies conducted in Bangalore [15,20]. However, studies from other regions of India and other countries also showed even higher percentage of mothers discarding colostrum for first two days [12,15,24,26].

According to Infant and Young Child Feeding Practices (2006) guidelines in India, it is recommended that initiation of breastfeeding should begin immediately after birth. In the present study initiation of breastfeeding within one hour after birth was 64.7% and within 24 hours was almost 97%. Initiating breastfeeding within one hour was similar to DLHS-3 [8] findings for Pondicherry rural area (67.2%) and other studies conducted in Uttar Pradesh and rural wardha [12,25]. However, our observations are more than the national and Tamil Nadu figures as per DLHS-3 [8] and NFHS-3 [9]. Mothers belonging to high socio-economic class families had better knowledge related to initiation of breastfeeding. Findings in regard to initiation of breastfeeding in the present study was higher than studies reported from other states of the country and this could be attributed to high level of female literacy, effective antenatal advices to mothers and frequent postnatal visits by healthcare providers leading to increased knowledge regarding early initiation of breastfeeding and the importance of colostrum.

IMNCI recommends on-demand breastfeeding or feeding 8 times or beyond to the newborn [13]. In the present study it was observed that, majority of the mothers breastfed their newborns on demand (80.1%), similar to the observations made by Joseph et al. [15] in Bangalore (87%).

Conclusions

On the whole, the results of our study indicated that most of the mothers were having good child care practices. Practices like giving pre-lacteal feeds, application of substances on the cord, giving bath to the baby immediately after birth are less prevalent in our study. Even

though the overall practices like giving pre-lacteal feed; application on umbilical cord and giving bath immediately after bath of newborn are still practiced in the study area. The present scenario can be improved through enhancing Information Education and Counselling activities, training of health workers and mothers focusing on newborn health care practices.

Strengths

This was a community based, house to house survey done to know the traditional newborn care practices prevailing in the community. Therefore, faulty newborn care practices are addressed to improve the health status of the newborn. To reduce recall bias due to time delay, the information regarding birth was obtained from discharge slip and other details were cross checked with their husband.

Limitations

This study focused mainly few determinants that determine newborn care practices. Further study need to be done to provoke the reason for the faulty practices prevailed in the community.

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