

Postnatal newborn care practices and knowledge of newborn danger signs among mothers in rural area of Lucknow, Uttar Pradesh: A cross-sectional study

Pankaj K. Pathak¹, J.V. Singh², Monika Agarwal³, Surya Kant⁴

¹Department of Community and Family Medicine, All India Institute of Medical Sciences, AIIMS, Patna, Bihar, ²Department of Community Medicine, Hind Institute of Medical Sciences, Lucknow, Uttar Pradesh, ³Department of Community Medicine and Public Health, ⁴Department of Respiratory Medicine, King George's Medical University (KGMU), Lucknow, Uttar Pradesh, India

ABSTRACT

Introduction: The postnatal period is the most critical period for mothers and her newborn especially during the hours and days after birth. Proper utilization of postnatal care services plays a vital role in dropping the maternal mortality ratio and infant mortality rate. **Methods:** The community based, cross-sectional study was carried out in the field practice area of Primary Health Centre (PHC) Sarojini Nagar, Lucknow UP. A total of 200 mothers of newborn (age 03 days to 60 days) born in the catchment area of PHC Sarojini Nagar during eight months period were included in this study. A semi-structured pre-tested questionnaire was used for interview of eligible mother. The objective of study was to assess the postnatal newborn care practices and the knowledge of newborn danger sign among mothers in rural area of Lucknow, U.P. **Results:** The results showed that 49.50% of mothers applied substances to the stump after birth. 52.5% of mothers applied Kajal on the eye of the baby after birth. More than half of the mothers breastfed the baby within 1-4 hours of birth and Exclusive breastfeeding were practiced by nearly half (47%) of the mothers. Less than one-third of mothers used ambulance service 102/108 as their means of transportation to the health facility. **Conclusion:** Unsafe and harmful traditional newborn care practices are more prevalent in the rural areas. Health education and awareness programmes are recommended to improve maternal knowledge on the various aspects of newborn care.

Keywords: Breastfeeding practices, exclusive breastfeeding, neonatal danger signs, postnatal care

Introduction

The postnatal period-described here as the first 42 days after delivery is crucial to the health and survival of a mothers and her newborn. The most endangered time for both is during the hours and days after birth. Lack of attention in this duration may result in demise or disability as well as missed opportunities to encourage healthy behaviours, affecting females, neonates, and children.^[1] Globally an estimated 2.5 million children died in

their first month of life, which is approximately 7,000 newborns every day.^[2,3] Deaths in the first month of life, which are mostly preventable, represent 47% of total deaths among children under five. Majority of these newborns died in the first week of life with approximately one million dying in their first day and another one million dying in the following six days. The result is a drop in neonatal deaths worldwide from 5.1 million in 1990 to 2.5 million in 2018.^[4]

In India nearly 46% of all maternal deaths and 40% of neonatal deaths happen during labour or the first 24 hours after birth. However, death during and after delivery is largely preventable by enabling access to skilled birth attendants and emergency

Address for correspondence: Dr. Pankaj Kumar Pathak, Department of Community and Family Medicine, All India Institute of Medical Sciences, Patna - 801 507, Bihar, India.
E-mail: pankajkumarpathak30@gmail.com

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obstetric care. In the post-new-born period, survival rates also rise sharply with early and exclusive breastfeeding and immunization against measles and other vaccine-preventable diseases.^[5]

Care around the time of delivery could prevent more than 40% of neonatal deaths. Key interventions comprise care by a skilled birth attendant, emergency obstetric care, immediate care of newborn baby (comprising breastfeeding support and clean birth practices such as cord and thermal care) and newborn resuscitation. Care for small and sick newborns could prevent 30% of neonatal deaths. Key interventions include kangaroo mother care, prevention or management of neonatal sepsis, addressing neonatal jaundice and preventing brain damage after birth-related oxygen deprivation.^[2]

The WHO endorses postnatal care within 24 hours of birth, irrespective of where the baby is born. Mothers and newborns should receive at least three additional postnatal care visits by a health provider, preferably on day 3 (48–72 hours after birth), between day 7 and day 14, and again 6 weeks after birth. Postnatal care for the baby is a key opportunity to check for danger signs, such as lacking of feeding, fast breathing (a breathing rate of more than 60 per minute), severe chest in-drawing, lethargy, fever, low body temperature, or jaundice.^[6]

According to National Family Health Survey (NFHS-4), in rural area only 58.5% mothers received postnatal care from health personnel within 2 days of delivery, while children who received a health check-up after birth are very low i.e., 23%. While in Uttar Pradesh this is 51.6% and 22.1% respectively.^[7] Utilization of postnatal care can be affected by large number of factors including socio-demographic factors, economic factors, accessibility and availability of maternal and child health services etc.^[8] Understanding the factors that influence care-seeking behaviour for postpartum services in India is vital to improve quality of care and planning appropriate interventions. Knowing the activities developed and results achieved by postnatal care programs is important for the planning and improvement of Primary health care. Identification of responsible factors and effective upgrading of the postnatal care practices will prove to be of enormous benefit in reducing neonatal mortality. Study aimed to assess the postnatal newborn care practices and the knowledge of newborn danger sign among mothers give an idea to primary care physician in improving postnatal newborn-care practices and quality of care at the primary health facility level. Our study tried to explain these factors in the rural area of Lucknow district.

Aims and Objectives

1. The principal aim and objective of study was to assess the postnatal newborn care practices.
2. To assess the knowledge of newborn danger sign among mothers in rural area of Lucknow, Uttar Pradesh

Methodology

This was a community-based Cross-Sectional Study carried out in the service area of Sarojini Nagar Primary Health Centre (PHC) of Lucknow district. During Eight months of study period, a total of 351 deliveries occurred at PHC Sarojini Nagar, out of which only 246 deliveries were from catchment area of PHC, Out of 246, 46 mothers denied to give interview so total 200 mothers were interviewed for the study. Interview was conducted with mothers of newborn age 03 days to 60 days and age of child was determined either from birth certificate or from immunization card or in case of unavailability of both, mother's word was taken as final. At each village, a central point was assumed and direction of first house was selected by rolling pencil to get random starting point for data collection.

Consecutive houses having newborn and fulfilling inclusion criteria were selected and the houses not having newborn and not fulfilling the inclusion criteria were excluded from the study. Interview was conducted with mothers to fill the interview schedule and where it was impossible to get them or there was refusal, next household was considered for the study. Cooperative mothers of newborn with permanent resident of the study area included in the study.

A semi-structured, pre-tested questionnaire was used for data collection and all participants were informed regarding the purpose of study and their consent was obtained for data collection. The Ethical clearance was gotten from the Institutional Ethical Committee of the King George's Medical University UP, Lucknow (Ref No. 78th ECM II B- Thesis/P10, Obtained on 10th June 2016) before beginning of the study. The Statistical data was recorded and analysed using by the Statistical Package for Social Sciences (SPSS, version 16) Software.

Results

This community-based study covered 200 recently delivered females. Out of total 200 mothers 94 (47%) were in the age group of 20 to 25 years. Only 6.0% of the mothers were illiterate, majority of the mothers were housewives, and 88.0% were Hindus, 58.50% belonged to Other Backward Class (OBC) and about 52.50% were from joint family. Majority of the fathers (56.50%) educated up to High school and above, while only 2.0% were illiterate, majority (26.5%) were worked as farmer/shop owner, followed by semi-skilled worker (24%) while 4.50% were unemployed.

Majority of mother 54.0% belonged to Upper lower class and 42.5 percent families belonged to lower Socio-economic class according to Kuppaswami socioeconomic classification. With regards to obstetrical score Majority (53.5%) of mothers were primi and 46.5% mothers were multigravida, while with regards to the type of delivery most of the deliveries were normal vaginal deliveries (87.5%) and majority of the deliveries were at

government health facility (52%) followed by (24.5%) at home and (23.5%) at private health facility [Table 1].

The study showed that the majority of mothers gave first bath of the baby on the fourth day (39.5%) of birth followed by fifth day (27.5). On observation about the wrapping of the baby more than half of the mothers did it adequately and majority of the mothers (72%) cleaned the cord stump of the baby. Application of substances to the stump after birth was reported by 49.50% of mothers and most commonly mentioned substances were oil/ghee 85 (85.8%), and powder 14 (14.2%). Most of the mothers (52.5%) applied Kajal/Surama on the eye of the baby after birth. 86% of the mothers washed their hands with soap and water and (2.5%) did not wash their hands before touching the baby. On observation there was umbilical discharge seen in (1.5%) and fluid/sticky substance coming out of eye in (4%) of newborn [Table 2].

According to this study more than half of the mothers (52.5%) breastfed the baby within 1-4 hours of birth, 9.5% after 24 hours of birth and only 4.5% breastfed the baby within one hour of birth. Of the total, only one-sixth (16%) of the mothers gave honey/ghutti to the baby immediately after birth. 8% of the mothers who had not given the colostrum to their baby because they thought that colostrum is unsafe for baby 31% and 69% of the mothers not given colostrum due to social custom. Exclusive breastfeeding were practiced by nearly half (47%) of the mothers and 69% of the mothers breastfed the baby on demand and the majority of mothers told that frequency of urination of baby were 6 to 8 times in a day. 97% newborns were received age appropriate vaccines [Table 3].

From all study participant majority of the study participant had knowledge of at least one of any of the newborn danger signs. Of these 196 (98%), 156 (78%), 74 (37%), 62 (31%) said fever, fast breathing, chest indrawing and baby not taking feed respectively. The remaining said hypothermia 24 (12%), lethargy/unconsciousness 8 (4%) and convulsion 5 (2.5%) as a danger sign. Out of the total 35 (17.5%) had a history of serious illness. In nearly half of the cases mother consulted to ASHA followed by ANM and Doctors during the illness of baby. The place of treatment during illness was at government health facility 18 (51.4%), home (34.3%) and private health facility (14.3%), respectively, and less than one-third of mothers used ambulance service 102/108 as their means of transportation to the health facility [Table 4]. No significant association were found between home visit by ASHA with socio-demographic characteristic of mother, birth weight of newborn, place and mode of deliveries, birth order and sex of newborns [Table 5].

Discussion

This study showed that, 88% mothers were Hindu, 47.5% belonged to joint family and most of the mothers (98%) were homemakers. Similar assessments were assessed by different study in our country by some authors.^[9-11] This study assessed that 45% mothers were educated up to middle school, 54% families

Table 1: Socio demographic characteristics of postnatal mothers

Characteristics	n=200	
	n	%
Mother's age (in years)		
20-24	94	47
25-<35	91	45.5
≥ 35	15	7.5
Educational status of mothers		
Illiterate	12	6
Primary school	58	29
Middle	90	45
High school	31	15.5
Intermediate and above	9	4.5
Occupation of mothers		
House wife	196	98
Un-skilled worker	4	02
Type of Family		
Nuclear	105	52.5
Joint	95	47.5
Religion		
Hindu	176	88
Muslim	24	12
Caste		
General	30	15
OBC	117	58.5
SC/ST	53	26.5
Educational status of Father		
Illiterate	4	2
Primary school	10	5
Middle	73	36.5
High school and above	113	56.5
Occupation of fathers		
Unemployed	9	4.5
Un-skilled worker	47	23.5
Semi-skilled worker	48	24
Skilled worker	43	21.5
Farmer/shop owner/clerical	53	26.5
*Socio economic status		
Class III (Middle)	7	3.5
Class IV (Upper lower class)	108	54
Class V (Lower class)	85	42.5
Birth order		
1 st	107	53.5
2 nd	51	25.5
3 rd and above	42	21
Mode of delivery		
Normal vaginal delivery	175	87.5
Caesarean section	25	12.5
Place of delivery		
Home	49	24.5
Govt health facility	104	52
Private health facility	47	23.5

*B G Prasad's socio-economic classification

belonged to upper lower Socio-economic class and 42.5% families belonged to lower Socio-economic class. Some authors in their study found that almost half of the families (51.9%) belong to lower socio-economic class.^[12]

Table 2: Selected newborn care practices of mother during the postnatal period

Characteristic	n=200	
	n	%
Baby was given first bath on		
Day 3	10	5
Day 4	79	39.5
Day 5	55	27.5
≥ Day 6	42	21
Wrapping of the baby (observation)		
Adequate	104	52
Inadequate	96	48
Clean the stump of the baby		
Yes	144	72
No	56	28
Apply anything over cord after birth		
Yes	99	49.5
No	101	50.5
What did apply		
Oil/ghee	85	85.8
Powder	14	14.2
Umbilical discharge (observation)		
Yes	3	1.5
No	197	98.5
Apply anything in the eye after birth		
Yes	105	52.5
No	95	47.5
What did apply		
Kajal	105	100
Hand washing of mothers before touching the baby		
Only water	23	11.5
Soap and water	172	86
Don't wash	5	2.5
Fluid/sticky substance coming out of eye (observation)		
Yes	8	4
No	192	96

In this study, 75.5% mothers were delivered in health facility while 24.5% mothers were delivered at home. 12.5% mothers were delivered by caesarean section. This is quite comparable with NFHS 4 fact sheet reported that percentage of institutional deliveries was 75.1% in rural area,^[7] 66.8% in Uttar Pradesh, 84.5% in Lucknow district.^[11] and 16.7% mothers were delivered by caesarean section.^[13] This assessment was quite comparable with some other studies.^[11,14,15] This findings also supported by the Study conducted in Nepal by Chhetri S *et al.*^[16] where around three-quarters of the mothers delivered by vaginal delivery, while about 22% of the mothers had caesarean section.

This current presented that the 67% of mothers gave first bath of the baby on the 4th day or after the fourth day of birth. On observation about the wrapping of the baby more than half of the mothers did it adequately and majority of the mothers (72%) cleaned the cord stump of the baby. Finding were comparable to study conducted by Sinha L N, *et al.*^[17] i.e., they found delayed bath after 48 hours were given to babies by 64% mothers and baby was wrapped in multi layers by (96%) mothers. In this study

Table 3: Breast feeding practices during the post natal period

Breast feeding practices during the post natal period		
Initiation of breast feeding		
<1 h	9	4.5
1-4 h	105	52.5
4-24 h	67	33.5
>24 h	19	9.5
Give anything other than breast milk immediately after birth		
Not given	157	78.5
Honey/Ghutti/Jaggery	32	16
Water	8	4
Given Colostrum		
Yes	184	92
No	16	8
If No, than reason for it		
It is unsafe	5	31
Due to social custom	11	69
Exclusive breast feeding		
Yes	94	47
No	106	53
Frequency of breastfeeding		
On demand	138	69
Every 2 h	3	1.5
6 to 8 times	54	27
Others	5	2.5
Frequency of urination of baby		
2 times	6	3
4 times	44	22
6 to 8 times	138	69
Others	12	6
Age appropriate Immunization status		
Fully immunized	194	97
Don't know	6	3

application of substances to the stump after birth was reported by 49.50% of mothers and most commonly (85.8%) substances were oil/ghee. 52.5% mothers applied Kajal/Surama on the eye of the baby after birth. Observations of this study corresponds with the study of Samina A *et al.*^[15] Grover P *et al.*, Gandhi J S *et al.*^[18,19] and various studies done by different authors.^[20-22]

This study showed that More than half of the mothers (52.5%) breastfed the baby within 1-4 hours of birth, 9.5% after 24 hours of birth and only 4.5% breastfed the baby within one hour of delivery. Of the total, only one-sixth (16%) of the mothers gave Honey/Ghutti to the baby immediately after birth. 8% of the mothers who had not given the colostrum to their baby because they thought that colostrum is unsafe for baby (31%) and 69% of the mothers not given colostrum due to social custom. Exclusive breastfeeding were practiced by nearly half (47%) of the mothers and 69% of the mothers breastfed the baby on demand and the majority of mothers told that frequency of urination of baby were 6 to 8 times in a day. The Study conducted by Verma A. *et al.*^[23] showed that only 29.2% mothers breastfed the baby within an hour of birth, 67.2% given some kind of pre-lacteal feed to the baby and the most common

Table 4: Mother's knowledge about danger signs and sought treatment during neonatal period

Characteristic	n=200	
	n	%
Knowledge about danger sign of the newborn*		
Fever	196	98
Fast breathing (greater than or equal to 60 breaths/min)	156	78
Chest indrawing	74	37
Flaring of nostrils	0	0
Grunting	0	0
Not taking feed	62	31
Bleeding or oozing stump	0	0
Convulsion	5	2.5
Hypothermia	24	12
Pustules (10 or more) or one large focus of infection	0	0
Lethargy/unconscious	8	4
Jaundice	0	0
Baby have any serious illness till date after birth		
Yes	35	17.5
No	165	82.5
Person consulted during the illness (n=35)		
ASHA	17	48.6
Doctor	8	22.9
AWW	10	28.5
Place of treatment		
Home	12	34.3
Government health facility	18	51.4
Private health facility	5	14.3
Which transport service used (n=23)		
Ambulance service 102/108	7	30.4
Private vehicle	16	69.6

*Multiple responses

pre-lacteal feeds given to the infant were water (36.6%), followed by honey (34.3%). Cultural belief was one of most dominant factor for the practice of giving pre-lacteal feed to the infant, 65.6% of mothers gave the colostrum to their baby while The practice of exclusive breast feeding were low among them, i.e., 24.8%. The study conducted by Reddy N. *et al.*^[24] presented that Colostrum was given in (89.6%) infants whereas (12.7%) infants received prelacteal feeds, the most common prelacteal feeds used comprised of honey or vasambu. This is quite comparable with NFHS 4 fact sheet reported that percentage of Exclusive breastfeeding in Uttar Pradesh was 43.1%.^[7] Grover P *et al.*^[18] in their study showed that about 44% of the mothers initiated breastfeeding within 1-4 hours, Prelacteal feeds were given in 52% of the neonates; most common being animal milk (46%) and ghutti (32%). Only 54% of the neonates were exclusively breast fed. These observations is quite comparable of studies done in different part of India.^[11,19,20,25-27] However, in a study done in Asmara, the percentage of mothers who mentioned that breastfeeding needs to be initiated within 1 hour was 88.4%.^[28]

In this study the majority of newborns (97%) were fully immunized. Only 3% mothers don't know about immunization status of newborns. Madhu *et al.*^[14] in their study showed that total of 93% of the children received all vaccinations needed according

to the national immunization schedule. Similar observations were also reported by some authors in their study.^[15,18]

In this study (86%) of the mothers washed their hands with soap and water, (11.5%) washed only with water and (2.5%) do not wash their hands before touching the baby. Study conducted by Datta *et al.*^[29] presented that majority of mothers (73.18%) washed their hands properly with soap and water after defecation and 30% before feeding the child. These findings were also supported by some other studies.^[30,31]

This study also showed that majority of the mothers had knowledge of at least one of any of the newborn danger signs. Of these 196 (98%), 156 (78%), 74 (37%), 62 (31%) said fever, fast breathing, chest indrawing and unable to feed respectively. According to study done by Mulugeta W/Selassie *et al.*^[32] presented that the only (17.1%) of respondents were knowledgeable about Newborn danger sign. The most common danger sign documented by mothers were (43.2%) Poor sucking/Unable to feed, (16.2%) fever, (15.9%) Frequent Vomiting and (15.6%) fast breathing. Samina A *et al.*^[15] in their study showed that knowledge of danger sign was seen in 62.16% mothers. Similar finding were also reported in earlier studies.^[33,34] Fever and difficulty in breathing as newborn danger sign were identified in 58.8% and 50.8% of mothers respectively in the study of Beraki, G.G *et al.*^[28]

This study indicated that in nearly half of the cases mother consulted to ASHA followed by ANM and Doctors during the illness of baby. Study conducted by Bulto *et al.*^[34] showed that only 60.5% of mothers whom their baby developed danger-sign sought health care from health facility immediately. In this study less than one-third of mothers used ambulance service 102/108 as their means of transportation to the health facilities, these observations were also supported by some other studies.^[35,36] In this study, no significant association were found between home visit by ASHA with socio-demographic characteristic of mother, birth weight of newborn, place and mode of deliveries, birth order and sex of newborns. Pandey D *et al.*^[8] in their study observed that, no significant association was found with variables like age of mother, order of delivery and occupation of husband as similar study also done by Sharma *et al.* and Ranganath *et al.*^[37,38]

Conclusion and Recommendations

This study showed that mothers had average knowledge on postnatal newborn care practices. No significant association were found between home visit by ASHA with socio-demographic characteristic of mother, birth weight of newborn, place of deliveries, birth order and sex of newborns. Health education and awareness programmes are required to improve knowledge on the various aspects of newborn care practices like exclusive breast feeding, frequency of breast feeding, proper wrapping of baby, cord care and eye care etc., It is also necessary to eradicate potentially harmful postnatal care practices in the area by health education and awareness programmes.

Table 5: Association of socio-demographic characteristic of mother, birth weight of baby, place and mode of deliveries, birth order and sex of newborns with home visit by ASHA

Characteristics	No. of mother	Home visit by ASHA				χ^2	P
		Any Visit done		Visit not done			
		n	%	n	%		
Religion							
Hindu	176	163	92.6	13	7.4	0.34	0.56
Muslim	24	23	95.8	01	4.2		
Caste							
General	30	29	96.6	1	3.3	0.58	0.45
Others	170	158	92.9	12	7.1		
Education							
Up to Middle school	148	138	93.2	10	6.8	0.027	0.87
Above to middle school	40	37	92.5	3	7.5		
Age of mother							
Up to 24	94	87	92.6	7	7.4	0.26	0.61
≥ 24 Years	106	100	94.3	6	5.7		
Birth weight							
Normal	181	171	94.5	10	5.5	0.002	0.96
Low birth weight	19	18	94.7	1	5.3		
Gestational age at birth							
Term	189	177	93.7	12	6.3	0.13	0.72
Preterm	11	10	90.9	1	9.1		
Place of deliveries							
Home	49	46	93.9	3	6.1	0.001	0.96
Health facility	151	142	95.2	9	4.8		
Mode of deliveries							
Normal	175	165	94.3	10	5.7	1.42	0.23
Caesarean	25	22	88	3	12		
Birth order of newborns							
Primigravida	107	99	92.5	8	7.5	0.36	0.55
Multigravida	93	88	94.6	5	5.4		
Sex of newborns							
Male	96	89	92.7	7	7.3	0.19	0.66
Female	106	98	92.5	6	7.5		

In this study less than one-third of mothers used ambulance service 102/108 as their means of transportation to the health facilities so there is need to increasing or justifying the use of 102/108 services. The Government should also take necessary actions in terms of increasing awareness of mothers through IEC activities about the postnatal care.

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Conflicts of interest

There are no conflicts of interest.

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