

## Original Research Article

# Study on outcome of guided newborn care in postnatal ward and common practices of newborn care among mothers followed in outpatient department at Hi-Tech medical college and hospital, Bhubaneswar

Maneesha Sabat, Suryakanta Swain\*, Hemant Agrawal, Aishwarya Panda,  
Sthita Prajnya Beura, Rakesh Panda

Department of Pediatrics, Hi-Tech Medical College and Hospital, Bhubaneswar, Odisha, India

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### \*Correspondence:

Dr. Suryakanta Swain,

E-mail: dr\_skswain@hotmail.com

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## ABSTRACT

**Background:** Neonatal period is the most vulnerable phase in a child's life. The aim and goal of newborn care is not only to reduce neonatal mortality but more importantly to ensure their survival to the fullest. The neonatal mortality rate of India is 22 per 1000 live births. The neonatal period is only for 28 days yet it accounts for significant deaths under 5 years of age. Newborn morbidity and mortality contribute significantly to the infant mortality and under-five mortality rates in developing countries. About two-thirds of all infant deaths and 38% of all under-five deaths occur during the neonatal period, resulting in about 4 million neonatal deaths globally per year. Infant and under-five mortality ratio in developing countries have declined significantly in the past couple of decades, yet neonatal mortality rates have remained relatively static. The objective of this study was to understand the outcome of guided newborn care along with the patterns and determinants of essential newborn care and practices.

**Methods:** A prospective cohort study was done among newborns in the postnatal ward and the outpatient (OPD) based newborns at HMCH Bhubaneswar from July 2020 to June 2021. The mothers in the postnatal ward were taught cord care, skin care, optimal thermal care and neonatal feeding practices. The regular follow-up was done maximum up to 7 days. Newborn who came to OPD were evaluated on perspective of essential newborn care and practices, followed by their mothers at home. A questionnaire was formulated for the OPD based patients to be answered before and after guidance.

**Results:** 100 early neonates were taken (N=50 from postnatal ward and N=50 from OPD). Out of 50 neonates in the postnatal ward, 4 (8%) had abdominal colic, 10 (20%) had skin rashes, 2 (4%) had fever, 5 (10%) had feeding issues and 9 (18%) had neonatal hyperbilirubinemia respectively. In OPD neonates 3 (6%) were diagnosed with early onset neonatal sepsis (EONS), 7 (14%) had refusal to feed, 12 (24%) had skin rashes, 5 (10%) had abdominal colic, 14 (28%) were applying coconut oil and 7 (14%) developed hyperbilirubinemia. Whereas in OPD 5 (10%) neonates needed admission NICU and rest were managed symptomatically.

**Conclusions:** Newborn care education and guidance helped in reduction of EONS, in gaining appropriate weight, in delivering optimal thermal care, practicing healthy skin care and implementing proper feeding techniques. All mothers need proper counselling and guidance in essential newborn care.

**Keywords:** Guidance, Care, Neonate, Feeding, EONS, Danger signs

## INTRODUCTION

Despite substantial improvements, the neonatal mortality rate of India is 22 per 1000 live births. The neonatal period is only for 28 days yet it accounts for significant deaths under 5 years of age. Newborn morbidity and mortality contributes significantly to the infant mortality and under-five mortality rates in developing countries. About two-thirds of all infants deaths and 38% of all under-five deaths occur during the neonatal period, resulting in about 4 million neonatal deaths globally per year.<sup>1</sup> Infant and under-five mortality ratio in developing countries have declined significantly in the past couple of decades, yet neonatal mortality rates have remained relatively static.

Essential newborn care (ENC) practices that protect against newborn morbidity and mortality include clean cord care (cutting and tying of the umbilical cord with a sterilized instrument and thread), thermal care (drying and wrapping the newborn immediately after delivery and delaying the newborn's first bath for at least six hours or several days to reduce hypothermia risk), and initiation of breastfeeding within the first hour of birth.<sup>2</sup> Some harmful practices practiced in communities that are delivered at home. After cutting of the umbilical cord, the baby is put to the side of the mother, not uncommonly with no cloth covering.

This happens majorly due to the attendants focusing on delivery of the placenta which is reinforced by the belief that the placenta is the 'house' or 'blanket' of the baby and that any 'harm' caused to the placenta will transfer to the newborn. Applying butter or ointment to the cord to speed up drying is common practice. Initiation of breastfeeding is often delayed and women commonly report discarding colostrum before initiating breastfeeding. Sub-optimal breastfeeding practices continue, due to perceived inadequate maternal nutrition and breast milk often leading to the provision of herbal drinks. Poor thermal care is also demonstrated through lack of continued skin-to-skin contact, exposure of newborn to smoke, frequent bathing and that is often with cold water baths for low-birth weight or small babies, and poor hygienic practices are reported, particularly hand washing prior to contact with the newborn.<sup>2</sup>

It is estimated globally that over two-thirds of newborns could be saved through existing maternal and child health programmes that relate to cord care to decrease sepsis, temperature control and initiation of early breastfeeding. Supportive supervision is the cornerstone of promoting a successful newborn care practice. This is also a solution to accomplish the goal of 'ending preventable newborn deaths' of the 2030 Agenda for Sustainable Development. This was a study done by Copas et al on 'Women's groups practicing participatory learning and action to improve maternal and newborn health in low-resource settings' showed community mobilization is also recognized as an effective strategy to improve newborn health.<sup>3</sup> A meta-analysis of seven trials on community mobilization

through women's groups showed that the intervention was associated with a 37% reduction in maternal mortality (odds ratio 0.63, 95% CI, 0.32-0.94), a 23% reduction in neonatal mortality (0.77, 0.65-0.90) and a 9% non-significant reduction in stillbirths (odds ratio 0.91, 0.79-1.03). The analysis concluded that with the participation of at least a third of pregnant women and adequate population coverage, women's groups practicing participatory learning and action are a cost-effective strategy to improve maternal and neonatal survival in low-resource settings.<sup>3</sup> The NMR was significantly lower in the intervention clusters among those who were born at home though the effect of the interventions was seen only among home births, it led to a reduction in post neonatal mortality rate both among home births (adjusted hazard ratio 0.73; 0.63 to 0.84) and facility births (0.81; 0.69 to 0.96).<sup>4</sup>

### *Thermal care practices*

Immediately drying the newborn, as recommended by the WHO, has a number of benefits. It prevents heat loss that occurs when amniotic fluid evaporates from an infant's skin. Babies born prematurely or underweight are particularly vulnerable to heat loss due to large surface area of their skin relative to their weight. Hypothermia, even in warm climates, is a risk factor for newborn morbidity and mortality.<sup>5</sup> In addition, cold stress is a risk factor for hypoglycemia as it renders the infant sleepy or irritable and unable to feed well which further causes hypothermia. The act of drying may also help to counteract birth asphyxia, via stimulation for infants experiencing difficulty in breathing. Wrapping is also a relevant intervention for thermal care which should be reinforced in routine manner. Early bathing also increases an infant's risk for hypothermia. The vernix coating, the protective film that develops on the skin of the fetus that protects against infections and provides thermal protection. Early rooming-in and skin-to-skin within 1 hour of life after birth provides optimal thermal care, encourages breastfeeding, enhances bonding and good for mother's wellbeing as it helps control intrapartum bleeding.<sup>5,9-11</sup>

### *Hygienic cord care*

Hygienic cord care, which includes cutting cord with a new or sterilized instrument (or a clean delivery kit) as well as appropriate cord care is a standard measure of newborn care.<sup>6</sup> It prevents risk of sepsis that is a major cause of newborn mortality. Premature or low birth weight babies are at an increased risk of all causes of mortality. Traditional practices of cutting with unclean objects are still all under 5 deaths. Dry cord care is recommended, however in high mortality settings, chlorhexidine is recommended.<sup>6,9-11</sup>

### *Breastfeeding*

Initiation of breastfeeding within 1 hour after birth and

exclusive breastfeeding for 6 months. Breastfeeding should be continued with safe complementary foods after 6 months. There is reduced risk of death, particularly from infectious disease due to protective factors in colostrum and breast milk and protection from ingestion of contaminants found in water, other fluids, and food with exclusive breast feeding.

There is reduced risk of morbidity, including gastrointestinal infections and respiratory infections. It saves time and money. Late initiation of breast feeding is associated with an increased risk of neonatal mortality of 33%, which can be prevented by early and exclusive breastfeeding.<sup>7,8</sup> Breastfeeding reduces disease risk in mother like high blood pressure, arthritis, high blood fats, heart disease, type 2 diabetes and lower risk for depression. In India, the main source of information for mothers still remain family and friends and a structured counseling service on child feeding is lacking. Information, education and communication are three basic strategies which bring about a favorable change. Inadequate support to mothers can lead to early cessation of breast feeding.<sup>9-11</sup>

### ***Aim and objectives***

The aim of the study was (a) to understand the outcome of guided newborn care along with the pattern and determinants of essential newborn care and practices; and (b) to counsel and guide every mother for essential newborn care and healthy practices to help in reducing neonatal mortality rate.

## **METHODS**

### ***Place of study***

The study was carried out at Hi-Tech Medical College and Hospital, Bhubaneswar.

### ***Duration of study***

The study period was from July 2020 to June 2021.

### ***Study type***

The study type was prospective cohort study.

### ***Inclusion criteria***

Patients with following criteria were included- (a) all neonates who were weighing  $\geq 1.8$  kg; (b) neonates capable of feeding enterally; (c) hemodynamically stable neonates; and (d) neonates who had no history of maternal infection in last 14 days.

### ***Exclusion criteria***

Mothers with preterm babies, congenital malformations that affects feeding and infants who were not accompanied by mothers were excluded from the studies.

## ***Statistical analysis***

Results of my study will be analyzed using Chi square test in SPSS software. 100 neonates were taken of early neonatal age group (0-7 days). Out of 100, (N=50) from postnatal ward and (N=50) from OPD based patients were enrolled after obtaining informed parental consents. Mothers in the postnatal ward were taught about essential newborn care and healthy practices every day and the newborns were observed and assessed during rounds. The newborns seen in OPD were evaluated regarding the newborn care and practices done by their mother at home and then diagnosed and managed accordingly. Chi square statistics were performed to compare the levels of each of the dependent variables. Statistical significance was taken when  $p \leq 0.05$ .

## **RESULTS**

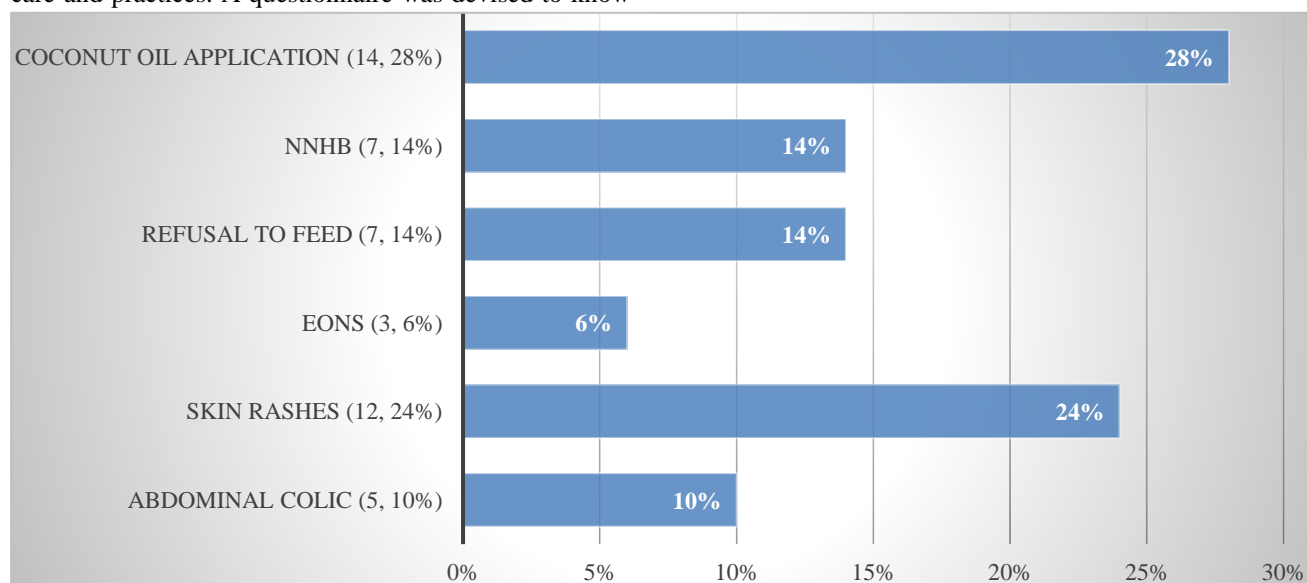
100 early neonates were taken (N=50 from postnatal ward and N=50 from OPD). Out of 50 neonates in the postnatal ward, 4 (8%) had abdominal colic, 10 (20%) had skin rashes, 2 (4%) had fever, 5 (10%) had feeding issues and 9 (18%) had neonatal hyperbilirubinemia respectively. In OPD neonates 3 (6%) were diagnosed with early neonatal sepsis (EONS), 7 (14%) had refusal to feed, 12 (24%) had skin rashes, 5 (10%) had abdominal colic, 14 (28%) were applying coconut oil and 7 (14%) developed neonatal hyperbilirubinemia. After proper guidance in postnatal ward all the issues were resolved within 7 days of life and mothers were confident in newborn care before discharge. Whereas in OPD 5 (10%) neonates needed admission in NICU and rest were managed symptomatically.

In the postnatal ward 95% of newborns were initiated with early breastfeeding and 89% were EBF (exclusive breastfeeding). Duration of SSC (skin-to-skin contact) showed a strong relationship with early breastfeeding initiation. SSC of at least 90 min was associated with 368.81 (95% CI 88.76 to 1532.38,  $p < 0.001$ ) times higher early breastfeeding. EBF was significantly associated with SSC duration of 30-59 min (OR 3.54, 95% CI 1.88 to 6.66,  $p < 0.001$ ), 60-89 min (OR 5.61, 95% CI 2.51 to 12.58,  $p < 0.001$ ) and at least 90 min (OR 3.78, 95% CI 2.12 to 6.74,  $p < 0.001$ ) regardless of delivery mode.

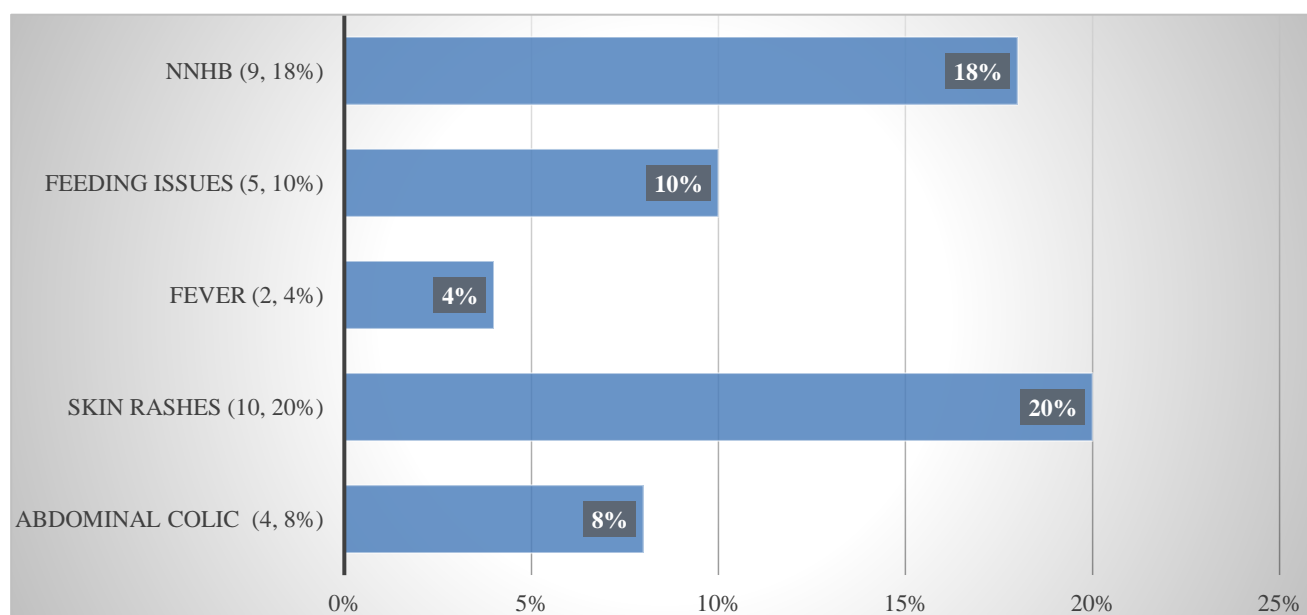
In post-natal ward neonates, all the issues resolved within 7 days with proper guidance, counseling, feeding techniques and phototherapy for NNHB. Mothers were confident in newborn care prior to discharge such as how to correctly hold the baby while breastfeeding, to know the signs of good attachment while feeding, recognize any issues while feeding, to know cues of hunger, what is the adequate amount of stool and urine that is passed, how proper wrapping of the baby is done, knowledge about the immunization to be given, knowledge about the fact how the baby loses about 10% of weight till 10 to 14 days after birth and not to be worried, what are the danger signs to be aware of and taking appropriate measures to handle it, educated to do dry cord care. Whereas, in OPD based

neonates- 5 (10%) required admission in NICU and rest were managed symptomatically. Those infants were given proper care and medically managed. After the recovery phase, parents were educated about the essential newborn care and practices. A questionnaire was devised to know

the outcome of guidance given. The infants started gaining appropriate weight since then the infants were duly immunized and regularly checked during those visits for their wellbeing.



**Figure 1: The neonates seen in OPD were assessed and diagnosed with the following medical condition.**



**Figure 2: The neonates in postnatal ward were observed and assessed with following medical condition.**

**Table 1: Newborn care practices structured questionnaire for OPD based patients.**

Questionnaire		Pre-guidance (%)	Post-guidance (%)
Early initiation of breastfeeding	Yes	46	95
	No/DK	54	5
Delayed bathing ≥6 hrs	Yes	28	64
	No/DK	72	28
Skin-to-skin care	Yes	58	68
	No/DK	42	32
Nothing applied to cord or dry cord care	Yes	66	71

Continued.

Questionnaire		Pre-guidance (%)	Post-guidance (%)
Proper swaddling	No/DK	34	29
	Yes	22	63
	No/DK	78	37
Clean instrument used to cut the cord	Yes	62	72
	No/DK	38	28
	Yes	66	73
Clean instrument used to tie up the cord	No/DK	34	27

Note: DK- don't know, missing value is less than 4%.

## DISCUSSION

After regular and persistent guidance during the duration of 7 days stay in the hospital and follow up later, the mother became more confident in the approach to practice essential newborn care practices. The newborns who came to us on an OPD basis were bit neglected, mothers were less confident and confused to handle many situations due to too many suggestions from family members and outsiders too. Later the OPD based newborns were taught proper essential newborn practices and followed up till they were confident which later reduced their frequency of hospital visits. According to Saaka et al their study showed comparison between women who delivered at home and women who delivered their baby in a healthy facility were 5.6 times more likely of having safe cord care for their babies (AOR=5.60, CI: 1.19-23.30),  $p=0.03$ .<sup>9</sup>

The proportion of newborns who received two or more essential newborn care practices (skin-to-skin contact, early breastfeeding, and dry cord care) improved from 19.9% (95% CI: 4.9, 39.7) to 94.7% (95% CI: 87.7, 100.0). In the adjusted model that accounted for clustering at health facilities, the odds of receiving two or more essential newborn practices was 64.5 (95% CI: 15.8, 262.6,  $p$  value<0.001) postintervention compared to preintervention. Predischage education offered to mothers on breastfeeding 16.5% (95% CI: 11.8, 21.1) vs 44.2% (95% CI: 38.2, 50.3) and newborn illness danger signs 9.1% (95% CI: 5.4, 12.7) vs 5.0% (95% CI: 2.4, 7.7) remained suboptimal.<sup>11</sup>

Education of newborn care and practices helped mothers in taking appropriate: cord care, skin care, optimal thermal care, reducing rates of EONS, gaining appropriate weight, attaining proper feeding practices. Local perspectives which compromise maternal and newborn care include the beliefs that any harm to the placenta may put the baby at risk; cold water promotes growth of the baby; ointment on the cord stump prevents pain and wind entering the baby; colostrum is dirty and harmful and that subsequent milk flows better; and that breast milk does not flow well in the first day or two after birth.

Perspectives, which can have a positive impact, are the importance given to frequent and regular breastfeeding and maintaining warmth, and the recognition of the association between low birth weight and malnutrition, illness, and workload during pregnancy as well as preterm

birth. In order to change current practices that are not in accordance with accepted standards of care, behavior change interventions that address local knowledge and perspectives related to delivery and newborn care are needed.

Unhealthy practices should be discouraged like application of kajal/surma, putting oil in the ears, applying anything on the cord. Mother should be counselled about various dangerous signs such as refusal to feed, lethargy, abnormal limb movements, fast breathing, yellowish discoloration of palms and soles, bluish discoloration of skin, fever, hypothermia, severe chest indrawing.

## Limitations

Due to the COVID-19 situation about 3%-4% infants couldn't be followed up properly as parents were reluctant to expose their little ones. Infants were not put into different groups according to different body weights as there was limited time period and limited resources.

## CONCLUSION

Education of newborn care and practices helped mothers in taking appropriate: Cord care, skin care, optimal thermal care, reducing rates of EONS, gaining appropriate weight, attaining proper feeding practices. Local perspectives which compromise maternal and newborn care include the beliefs that any harm to the placenta may put the baby at risk; cold water promotes growth of the baby; ointment on the cord stump prevents pain and wind entering the baby; colostrum is dirty and harmful and that subsequent milk flows better; and that breast milk does not flow well in the first day or two after birth.

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dangerous signs such as refusal to feed, lethargy, abnormal limb movements, fast breathing, yellowish discoloration of palms and soles, bluish discoloration of skin, fever, hypothermia, severe chest indrawing. All mothers need proper and regular guidance and counselling in imparting essential newborn care and practices.

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*Ethical approval: The study was approved by the Institutional Ethics Committee*

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