

Role of cultural practices in neonatal sepsis

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Abstract

Background: Delivery of a child at home by a relative or a dhai and other associated health hazards are still a challenge to the medical fraternity. Traditional harmful practices are equally responsible for neonatal mortality and morbidity. The commonly practicing events such as prelacteal feeding, early bath, artificial feeding, throwing out of colostrum, branding, circumcision, cow dung application, and so on make the neonates more vulnerable.

Objective: To find the prevalence of traditional harmful routine care practices and other social customs and beliefs prevalent in the community, which are directly or indirectly associated with sepsis in newborn period.

Materials and Methods: This is a prospective cross-sectional study conducted at NICU and postpartum center of V.S.S. Medical College, Burla, Orissa, India, from September 2007 to October 2009. Mothers having term and appropriate for gestational age neonate of either sex practicing the traditional harmful practices were taken for the study. The study subjects were 167 mothers whose babies showed features of clinically suspected sepsis included as cases and 150 mothers with neonates without any features suggestive of sepsis included as controls. Information was collected using an open-ended in-depth questionnaire and an oral interview. After data collection, statistical analyses were done using χ^2 test, and $p < 0.05$ was taken as significant.

Result: The incidence of neonatal septicemia was 28.3%. Almost two-third of the babies in either group belongs to low socioeconomic status and unbooked. Unhygienic cord care (63.4%), prelacteal feeding (73.6%), and early bath (52%) of neonates were observed. The common method for feeding was through bottle (61%). Feeding intolerance and lethargy was present in all the cases of sepsis, whereas approximately three-fourth newborns with sepsis were having hypothermia and hypoglycemia. Septic screen was positive for 52.9% babies, whereas 47.2% and 66.6% babies were positive for blood culture and umbilical swab culture, respectively. Seventeen patients died because of severe sepsis and multiorgan dysfunction.

Conclusion: This study clearly shows that certain cultural practices that are harmful to the newborn are still being widely practiced in this part of the country. The importance of traditional beliefs and cultural practices cannot be ignored as they are far deeply entrenched in daily life and more difficult to change.

KEY WORDS: Branding, neonatal sepsis, prelacteal feeding, traditional harmful practices

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Introduction

Still to prevent important determinants of neonatal mortality are prematurity, low birth weight, birth asphyxia, and simple interventions that can be applied even in a poorly functioning health system should be considered at every level. Traditional harmful practices are not behind the mark, equally responsible for the death within the

first month of these delicate creatures of God. The commonly practicing events are prelacteal feeding, early bath, artificial feeding, throwing out of colostrum, branding, and so on make the neonates more vulnerable. So, this study was conducted with the specific objective of finding the prevalence of traditional harmful routine care practices prevalent in the community during the first 4 weeks of life and other social customs and believes prevalent in the community among different socioeconomic groups, which are directly or indirectly associated with sepsis in the newborn period.

Material and Methods

This was a prospective cross-sectional study conducted at NICU and postpartum center of V.S.S. Medical College Hospital, Burla, Orissa, India, from September 2007 to October 2009, after obtaining approval from institutional ethical committee. The study population included mothers having term and appropriate for gestational age (37 completed

weeks) neonate of either sex practicing the traditional harmful practices, attending the OPD and Indoor Department of Pediatrics. A written informed consent was obtained before inclusion of their babies in the study. The study subjects were 167 mothers whose babies showed features of clinically suspected sepsis included as cases and 150 mothers with neonates without any features suggestive of sepsis (both clinical and laboratory parameters) included as controls, irrespective of birth weight and place of delivery (both institutional and home).

Neonatal sepsis is defined as a clinical syndrome characterized by systemic signs of infection and accompanied by positive blood culture in the first 4 weeks of life.^[1,2] The following features were taken for diagnosis of clinical neonatal sepsis: refusal to feed/suck, hypothermia, lethargy, and decreased or absent reflexes with or without the risk factors of sepsis. After the enrolment, all the cases were subjected to detailed history taking as per the NNF format; thorough physical/neurological examination and necessary laboratory investigations including septic screen, serum electrolytes, random blood sugar (RBS), chest X-ray, and blood, urine, and stool cultures were carried out.

Information was collected using an open-ended in-depth questionnaire and an oral interview regarding home care provided during the time of delivery and first 28 days of life, feeding practices, infection control practice, and care of umbilical cord, skin, and eye. After data collection, statistical analyses were done using χ^2 test, and $p < 0.05$ was taken as significant.

Results

The incidence of neonatal septicemia during the study period was 28.3% out of 875 newborns screened for case. Of them, babies diagnosed with early onset sepsis and late onset sepsis (LONS) were 41.17% and 58.82%, respectively. Almost two-third of the neonates in both the groups belongs to low socioeconomic status and unbooked; thus, there seems to be an association between poor living conditions with harmful cultural practices and development of neonatal illness. The basic characteristics and the relation of different

Table 1. Baseline characteristics

Characteristics	Case (n = 167), %	Control (n = 150), %
Birth weight (g), mean	2,387	2,495
Male	59	51
Socioeconomic status		
Low	64.7	69.9
Middle	23.5	21.7
High	11.7	8.4
ANC booked	38.4	42.3
ANC unbooked	59.6	57.7
TT two doses taken	89	79
Selective diet	35	46
NVD	70	64
C/S or other mode	30	39
Unattended delivery	6.6	5.5
Attended TBA	18.3	21
Hospital delivery	75	81

Table 2. Perinatal events related to neonatal septicemia (n = 317)

Features	Babies with sepsis (n = 167), n (%)	Babies without sepsis (n = 150), n (%)	p
Unhygienic cord care	106 (63.4)	13 (8.6)	<0.0001*
Prelacteal feeding	123 (73.6)	39 (26)	<0.0001*
Early bath	87 (52)	49 (32.7)	0.0006
Discarding colostrums	98 (58.6)	51 (34)	<0.0001*
Bottle feeding	102 (61)	17 (11.3)	<0.0001*
Circumcision	23 (13.7)	9 (6)	0.0250
Application of kajal	63 (37.7)	9 (6)	<0.0001*
Branding	35 (20.9)	2 (1.3)	<0.0001*

*Statistically significant ($p < 0.05$).

harmful practices in both the study and control groups with their statistical significance are mentioned in Tables 1 and 2, respectively. The common symptomatology was acute gastroenteritis and other gastrointestinal (GI) intolerance (88.2%) and umbilical sepsis (76.4%). Skin was nidus of infection in 64.7% patients. Involvement of respiratory and genitor urinary systems was observed in 52.9% and 17.6% patients with sepsis. Eye was the source of infection in 29.4% neonates. Feeding intolerance and lethargy was present in all the cases of sepsis, while hypothermia and hypoglycemia was associated with 88.2% and 76.4% newborns with sepsis, respectively. Septic screen was positive for 52.9%, whereas 47.2% and 66.6% were positive for blood culture and umbilical swab culture, respectively. In both the sites, *Escherichia coli* were the commonest organism isolated. Seventeen newborns died (four because of branding) because of severe sepsis and multiorgan dysfunction.

Discussion

Neonatal sepsis is the second highest killer among neonates next to hyaline membrane disease, accounting for 25% of all death in the newborn period.^[3] The incidence of neonatal septicemia was 28.3%, and the majority of cases was LONS (58.82%). As per the data of National Neonatal Patient Workshop, the overall incidence of neonatal septicemia and LONS among Indian newborns is 3.0% and 31.6%, respectively.^[4] Although the incidence was high, mortality was present in only 10.1% cases. Regular ANC (booked) was carried out in 38.4% cases, whereas 59.6% pregnant women lost to follow-up, which is consistent with the study conducted at Indore in 2007.^[5] Two doses of TT as a part of ANC were taken by 89% mothers. Eating of a particular food (selective diet) was practiced by 35% pregnant women, thinking that some foods (sour food) may be harmful to the baby; 91.6% mothers restrict their diet during pregnancy.^[6] Restriction of fish and meat was present in 25.9% cases and that of curd and other foods with sour taste in 33.5%, and both accounted for 15.9% in total.^[6] As per the study by Mahapatra and Baag,^[6] 75.2% and 62% people believe that maternal diet is responsible for neonatal diarrhea and fever.^[6] They stressed the fact that, for its cure, they use medicines from village Vaidya. About 91.6% people think that the above-mentioned problem can be solved by maternal diet restriction and "jhar phunk."^[6] About 6.6% deliveries in the case study were unattended and of that 75% of babies developed sepsis indicating the role of traditional birth attendants (TBAs), doctors, and their useful practices. About 18.3% deliveries were attended by TBA in case group and 21% in control group, which is lower than that of study in 2007.^[5] The prevalent belief is that the family members and dhais are still capable of dealing with the deliveries at home itself.

Most family members possess a strong believe in applying Sindoor, turmeric (haldi), gentian violet, spirit, and so forth on the umbilical stump to aid in early fall of the cord stump. In this study, 76.47% babies developed omphalitis and subsequent sepsis in comparison with control group (13.8%), which was

statistically significant ($p < 0.0001$). Unclean substances such as human spits, hen's feather, palm oil, hot water and blades, bark, and fibers were used to tie the cord, which resulted in subsequent neonatal sepsis in 21% patients.^[7] The increased risk of infection of umbilical cord in India and Pakistan is associated with usage of ghee and other substances such as surma, cow dung, and turmeric on umbilical cord.^[8]

About 73.6% babies were offered prelacteal feeding in case group, whereas only 26% were given victim of the same in the control group ($p < 0.0001$). The prelacteal mostly includes honey, Janam ghutti, glucose water, and misri water, and 88.2% babies developed GI intolerance and GI infection. Three babies developed necrotizing enterocolitis. Herbal juice, honey, and water were given as prelacteal in southern Orissa, India, to the newborn in 6.47%, 20%, and 12.35% of cases.^[6] Approximately 38.82% mothers fed their babies jaggery, water, weak tea, honey, cow's milk, and so on before the initiation of breast feeding.^[5] The delay in initiation of breast feeding is because of TBAs and family members' beliefs. The grandparents believe that milk will not come out unless the baby cries.^[5] Dhaliwal *et al.*^[9] has mentioned the role of prelacteal feeding in LONS.^[9] The high value in our study was because of the belief of the common people that it will help in digestion and prevent the baby from feeling hungry till milk comes out on third or fourth day. Of 167 newborns, 58.6% were deprived of getting colostrum as the initial feed and developed infections of some organ in subsequent follow-up, whereas, in control group, only 34% did not feed colostrum ($p < 0.0001$). Discarding colostrum was practiced by 83% of the mothers.^[10] Mahapatra and Baag^[6] concluded that colostrum was discarded as ritual in some tribal parts of Madhya Pradesh and Himachal Pradesh.^[6] Feeding by bottle was given to 61% neonates in our study, which was high in comparison with the national figure,^[7] and of them, 47% babies developed diarrhea and illness requiring hospitalization. The diarrhea may be because of unhygienic nipple and contaminated milk.

About 52% of the babies were given bath immediately after delivery, and of them, 57% babies in the study group developed hypothermia and subsequently respiratory tract infection (RTI), whereas, as per MNH Report of August 2007, 61.5% babies were given lukewarm water bath immediately after birth and 44.7% developed hypothermia and RTI in first 3 days of life.^[5] People in South Orissa believe that the baby need as many bath daily as per the number of white spots on the hard palate, that is, Ebstein pearls, so as to prevent the baby from suffering from fever, which they call as "Pila Buda."^[6] Bergström *et al.*,^[11] in their study, clearly demonstrated that bathing of newborns immediately after birth is a common practice in developing countries with significant increase in risk of hypothermia and infection. Only 32.7% babies developed sepsis in the control group ($p = 0.006$).

Circumcision was responsible for infection in 13.7% of cases in sepsis group, and seven were reported to have urinary tract infection (UTI) in comparison with the control group, where only 6% were operated as a part of ritual ($p = 0.0250$). The circumcision rate in the United States is 60%,

the total rate of complication was 1.9%, and 0.42% developed systemic infection.^[12] The majority of the study population in this area were Hindu; 37.7% babies were applying kajal in their eyes in the sepsis group ($p < 0.0001$). The study in Gwalior, India, describes the tradition of kajal application, which is prevalent in 98.83% of people but the correlation of the same with ophthalmic infection was not evaluated.^[7] Branding was practiced in 35 babies; 19 (54.2%) developed infection of skin and soft tissue, compared with 1.3% cases in the control group ($p < 0.0001$). Mahapatra^[13] noted that branding practice in 7.9% study population and 4.4% acquired sepsis. Mehta *et al.*^[14] reported an incidence of septicemia in babies subjected to branding in 4.8% of cases. The high figure in our study is probably because of the belief that it will cure and protect the baby from prominent abdominal superficial veins, which is called "alti" in colloquial languages.

GI tract (88.23%) was the most common organ involved followed by umbilicus (76.47%) and skin (64.7%). The maximum number of cases developed GI tract infection probably because of prelacteal feeding, bottle feeding, use of pacifiers, and throwing out of colostrums and delayed breast feeding. The skin and umbilicus was nidus, and source of infection for the sepsis probably was because of unhygienic umbilical cord care, application of different unclean substances, and branding. Three patients (17.64%) developed Necrotising enterocolitis (NEC). The cause may be the use of prelacteal and bottle feeding. Genitourinary system was involved in 17.64% of cases, may be because of circumcision, use of old cloths as diapers, and other factors.

To our knowledge, assessment of prevalence of traditional harmful routine care practices prevalent in Indian communities has not been closely investigated by experts so far. We received study subjects from an underserved population; thus, there was a better opportunity to sensitize the participants about the traditional harmful cultural practices. The study has some limitations as well. A large community-based study would yield actual prevalence, and the findings of this study cannot be extrapolated to the populations of whole India because of demographic structure and sociocultural milieu.

Conclusion

This study clearly shows that certain cultural practices that are harmful to the newborn are still being widely practiced in this part of the country. The importance of traditional beliefs and cultural practices cannot be ignored as they are far deeply entrenched in daily life and more difficult to change. They influence health and disease in ways that are not completely scientifically manifest and measurable. This study shows the dismal awareness of healthful practices among the general population jeopardizing the health of newborn children. Proper health education of the parents, grandparents, and

caregivers in the rural areas can change the mentality and beliefs to a certain extent, thus decreasing the neonatal morbidity and mortality arising out of this. Health education of the parents, family members, and caregivers by effective methods and thorough knowledge regarding the complication arising out of this, for example, neonatal sepsis conveyed by training program to the health-care providers in the rural areas can solve some problems by decreasing the burden of neonatal mortality rate.

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