

# A Cross-Sectional Study on Effect of Initiation of Breastfeeding Within One Hour of Birth on Early Onset Neonatal Sepsis

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## ABSTRACT

**Introduction:** Sepsis is the commonest cause of neonatal mortality; it is responsible for about 30-50% of the total neonatal deaths in developing countries. WHO recommends initiation of breastfeeding within one hour of birth. Neonatal sepsis is one of the most important morbidities seen at the community and facility levels. Aim of the study was to determine the association of initiation of breastfeeding within 1 hour of birth and early onset neonatal sepsis and to study breastfeeding initiation timing and other socio-demographic details of the study subjects.

**Material and methods:** A hospital based non-interventional cross sectional study conducted at the Institute of Child Health Niloufer Hospital for Women and Children, Hyderabad. It was designed to evaluate whether the timing of initiation of breastfeeding is associated with the risk of getting early onset neonatal sepsis. The analysis is based on the 50 singleton neonates born in January 2016 and February 2016.

**Results:** The breastfeeding was initiated within 1 hour of birth in 26 % of neonates. The breastfeeding was initiated among all the neonates except in 2% by the end of 72 hours of birth. The Neonates breastfed within one hour of birth did not develop Early Onset Neonatal Sepsis. The association between initiation of breastfeeding within 1 hour and protection against early onset neonatal sepsis was significant. The risk of getting early onset neonatal sepsis significantly increases with the increase in the delay in initiation of breastfeeding.

**Conclusion:** The initiation of breastfeeding within 1 hour as per WHO guidelines is a simple intervention that has the potential for significantly improving the neonatal outcomes. Breastfeeding promotion programs should emphasize the initiation within 1 hour.

**Keywords:** Initiation of Breastfeeding, Neonatal Sepsis

## INTRODUCTION

Sepsis is the commonest cause of neonatal mortality. It is responsible for about 30%-50% of the total neonatal deaths in developing countries.<sup>1</sup> It is estimated that up to 20% of neonates develop sepsis.<sup>2</sup> Sepsis related mortality is largely preventable. The incidence of neonatal sepsis in India as per National Neonatal Perinatal Database (NNPD, 2002 - 03) is 30 per 1000 live births. Sepsis is one of the commonest causes of neonatal mortality responsible for 19% of all neonatal deaths.<sup>3</sup> There is 22% reduction in Infant mortality by initiation of breastfeeding within one hour which is also a benchmark in WHO and UNICEF guidelines on Infant and young child feeding.<sup>3</sup> Infant deaths can be reduced by 19 % by initiating breastfeeding within one hour.<sup>4</sup> There is no extensive data about the incidence of sepsis in the absence of death if breastfeeding is initiated within one hour but majority of these deaths are a result of neonatal sepsis, which can be avoided due to early initiation of breastfeeding. It is observed that the colostrum fed babies or rather the babies who were initiated on breastfeeding within

one hour of delivery, have lesser signs of infection than those who were not.

Aim of the study was to study the effect of initiation of breastfeeding within one hour of birth on incidence of early onset neonatal sepsis.

## MATERIAL AND METHODS

This non-interventional hospital based Cross-sectional study conducted at Institute of Child Health Niloufer Hospital for Women and Children. Institutional ethics committee approval was taken for conducting the research following the ethical guidelines. Permission for the data collection was obtained from the Superintendent of the Institute of Child Health Niloufer Hospital for Women and Children. Taking 20% as the prevalence of neonatal sepsis, with 95 % confidence and a relative precision of 20% a sample size of 400 was obtained. However, the present study done on a pilot basis with a sample of 50 singleton neonates. The Neonates and their mothers were contacted and informed written consent was obtained for data collection and examination of neonate for signs and symptoms of early onset Neonatal Sepsis. Systemic bacterial infections in neonates are known by the generic term neonatal sepsis, which incorporates septicaemia, pneumonia and meningitis of newborn. Early onset neonatal sepsis is the sepsis occurring within 72 hours of birth. In severe cases, the neonate may be symptomatic at birth.

**Inclusion Criteria:** Neonates without any antenatal complications, those delivered in the Institute of Child Health Niloufer Hospital for Women and Children and up to 3 days old were included in the study.

**Exclusion Criteria:** Babies born elsewhere, Babies not being able to breastfeed within an hour due to maternal complication like PPH, eclampsia, fever are not taken, Babies not being able to breastfeed within an hour due to neonatal complication like birth asphyxia, Hemorrhagic disease of newborn are not taken, and HIV positive mothers are not taken in this study.

**Study tools:** A standard pre tested questionnaire developed from the W.H.O evidence-based safe childbirth Checklist was used.<sup>5</sup> Systematic random sampling was followed including every fifth neonate from the fifty bedded postnatal ward. Neonates were examined for the presence of following eight signs of sepsis, the

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presence of any one them indicates the neonatal sepsis as early as within 1 hour of birth<sup>5</sup>, Tachypnoea (more than 60 breaths per minute), Bradypnoea (less than 30 breaths per minute), Chest indrawing, Grunting, Convulsions, No movement on stimulation, Hypothermia (body temperature less than 36 degree centigrade). The other two features studied were the presence of umbilical redness extending to the skin and/or with draining pus. Data on Socio-demographic details and mothers knowledge about initiation of breastfeeding within one hour of child birth was also collected.

**STATISTICAL ANALYSIS**

Data collection and analysis was done using Epi Info version 7.1.5.2. Descriptive statistics were used to interpret results.

**RESULTS**

Table-1 Educational Status of Mother and Knowledge of initiation of Breastfeeding within 1 hour of birth and absolute breastfeeding for 6 months

30 (60%) of the mothers lack knowledge about initiation of breastfeeding within one hour of birth and absolute breastfeeding for 6 months, while 20 mothers (40%) had the knowledge. Majority of the primi para mothers were not aware about the breastfeeding initiation within one hour and absolute breastfeeding for six months (Table-2)

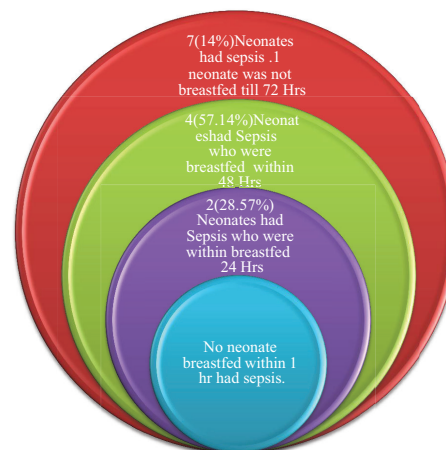
Early onset Neonatal Sepsis was found in 7 (14%) Neonates of upto 3 days old. Among them 4 (57.14%) were initiated breastfeeding later than 24 Hours but within 48 Hours, another one Neonate who developed sepsis was initiated breastfeeding later than 48 hours and within 72 Hours, and 2 (28.57%) had Breastfeeding initiated later than one hour of birth but within 24 hours. No neonate who were initiated breastfeeding within one hour of birth and kept on absolute breastfeeding developed Early Onset Neonatal Sepsis (Figure-1).

The incidence of Early Onset Neonatal Sepsis increases with the increase in delay in initiation of breastfeeding (Correlation coefficient (r) = 0.97).

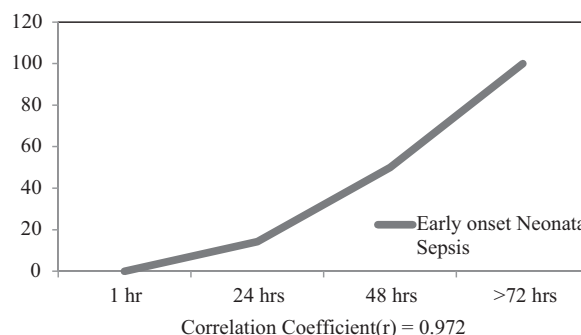
The absence of Early Onset Neonatal Sepsis among the Neonates Breastfed within 1 hour is not by chance.

**DISCUSSION**

Majority of Neonates 38 (74%) in the study were of age of 2 days old, and 12 neonates (24%) were 3 days old. Majority of the mothers (70%) were of the age group 20-24 years, there were two cases (4%) of teenage pregnancies. Males constituted 36(72%) of the study participants, while females were 14 (28%). Among the study participants, 49 (98%) Neonates were Breastfed, only 13(26%) were initiated on breastfeeding within



**Figure-1:** Early onset Neonatal Sepsis Among the study Participants



**Figure-2:** Incidence of Early onset Neonatal Sepsis and Time of Initiation of Breastfeeding.

Education Status (KuppuSwamy Scale)	Number of mothers having Knowledge of Breastfeeding Initiation within 1 hour and absolute breastfeeding for 6 months	Number of mothers not having Knowledge of Breastfeeding Initiation within 1 hour and absolute breastfeeding for 6 months.	Total
1 - Illiterate	3	8	11
3 – Middle School	4	8	12
4 – High School	6	12	18
5 – Intermediate/Post high School Diploma	4	2	6
6-Graduate/Postgraduate	2	0	2
7 - Professional	1	0	1
Total	20	30	50

**Table-1:** Educational Status of Mother and Knowledge of initiation of Breastfeeding within 1 hour of birth and absolute breastfeeding for 6 months

Timing of Breastfeeding Initiation	Early Onset Neonatal Sepsis Not Present	Early Onset Neonatal Sepsis Present	Total
Within 1 hour	13	0	13
Later than 1 hour	30	7	37
Total	43	7	50

Lancaster’s Mid – P value = 0.05

**Table-2:** Association of Early onset Neonatal Sepsis and Breastfeeding within 1 hour

one hour of birth, while 30(60%) were initiated breastfeeding later than 1 hour but within 24 hours and 6(12%) neonates were initiated breastfeeding later than 24 hours but within 48 hours. The present study shows the initiation of breastfeeding within one hour of birth has a positive effect on protection against early onset neonatal sepsis ( $p$ -value 0.05). Study by Edmond KM et al showed 22% reduction in Infant mortality by initiation of breastfeeding within one hour.<sup>3</sup> The study by Mullany et al showed that the infant deaths can be reduced by 19% by initiation of breastfeeding within one hour of birth.<sup>4</sup> The study by Mullany et al showed Risk of early onset neonatal sepsis was 71% lower among babies breastfed within 1 hour.<sup>6</sup> Another study by Mullany et al showed there was no statistically significant evidence to suggest that early breastfeeding initiation is protective against early onset neonatal sepsis.<sup>7</sup> In a study conducted by Mullany et al it was seen that the adjusted prevalence rate of hypothermia was 16% lower among babies for whom breastfeeding was initiated within 24 hours of birth.<sup>8</sup> The study by Van Den Bosch et al reported a significant association between early initiation and a reduction in low body temperature<sup>9</sup> The study by Bamji et al reported a significant association between early initiation and a reduction in neonatal mortality.<sup>16</sup> The study by Garcia et al reported Early breastfeeding initiation was associated with a lower risk of mortality: RR=0.56 (0.32, 0.97).<sup>17</sup>

## CONCLUSION

This study emphasizes on the importance of early initiation of breastfeeding within 1 hour of birth and throws light on the role of breastfeeding in decreasing infant mortality as septicaemia is leading cause of infant mortality.

### Study limitations

Small Sample Size.

No long-term follow-up of healthy new-borns after 72 hours to see whether they developed infection later and financial limitations to call them for follow-up.

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