

Impact of Cessation of Neonatal Breastfeeding on the Clinical Signs of Pneumonia and Hypoxemia in Young Infants with Diarrhoea

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Background

- **Worldwide 8.8 million under-five children died in 2008¹**
- **Pneumonia and diarrhoea accounted for 33% of these deaths¹**
- **Higher deaths in pneumonic children who also have hypoxaemia**
- **Exclusive breast feeding up to at least 6 months is important for adequate immunity against pneumonia**
- **No published data on the impact of cessation of breast feeding on hypoxemia in early infancy**

Objective

- Evaluate the incidence and duration of hypoxemia, and clinical features of pneumonia in young infants with diarrhoea who were non-breast-fed at neonatal period and compare them with those in breast-fed infants

Methods

- Study site: Special Care Ward (SCW), Dhaka Hospital of icddr,b
- Study duration: September 2007 - December 2007
- Study population: Infants 0-6 months with diarrhoea and pneumonia (n=107)
- Comparison:
 - Infants not breast fed in neonatal period (n=34)
 - Infants breastfed up to study period (n=73)

Methods

- Parent/ guardian's consent
- Patients were treated according to the Hospital's clinical management guidelines
- Data collection/ management
 - Collection of relevant information in pre-designed Case Report Forms (CRFs)
 - CRFs were manually verified for completeness and errors
 - Data were entered onto PC and analysed using SPSS for Windows and Epi software

Statistical Methods

- Fisher's exact test for comparing proportions
- Student's t-test for comparing means
- Mann-Whitney test for comparing medians
- A probability of less than 0.05 considered statistically significant
- Odds Ratio (OR) and their 95% CIs to assess strength of associations
- Univariate and logistic regressions to evaluate the impact of cessation breast feeding in neonatal period

RESULTS

Clinical characteristics of the study infants

Characteristic	Non-breast-fed (n = 34)	Breast-fed (n = 73)	p
Age (months) (mean \pm SD)	3.4 \pm 1.7	2.9 \pm 1.5	0.124
Duration of cough (h) prior to admission [Median (IQR)]	72.0 (36.0, 96.0)	72.0 (27.0, 144.0)	0.615
Respiratory rate (mean \pm SD)	66 \pm 26	59 \pm 14	0.194
Duration (h) of hypoxaemia (SPO2 < 90%) from admission [Median (IQR)]	12.0 (0.0, 21.75)	0.0 (0.0, 12.0)	0.021
Death (%)	4 (12)	4 (6)	0.261

Logistic regression analysis

Variables	Non-breast-fed (n = 34)	Breast-fed (n = 73)	OR (95% CI)	p
Cough, n (%)	32 (94)	60 (82)	9.09 (1.34-61.71)	0.024
Hypoxaemia, n (%)	25 (74)	36 (49)	3.32 (1.23-8.93)	0.017
Severe under nutrition, n (%)	25 (74)	35/71 (49)	3.42 (1.29-9.12)	0.014

After adjusting for co-variates, such as fever, inability to drink, lower chest wall in-drawing, head nodding, grunting respiration and cyanosis

Discussion

- TGF- β 1 in breast milk is related to production of elastin
- Elastin required for structural & functional development of the lungs
- Non-breast-fed infants in our study likely had under developed and less functioning lungs
- Pneumonia deteriorates lung function further
- V-Q mismatch resulting hypoxemia
- Obstructive sleep apnoea-related hypoxemia might also have an impact

Conclusion

- Our data suggest that non-breastfeeding in neonatal period may substantially increase
 - The incidence of hypoxemia
 - Duration of hypoxemia
 - The incidence of cough and
 - The incidence of severe malnutrition

Recommendation

- Promotion of Exclusive Breast Feeding (EBF) not only for better growth and immunity but also to lessen morbidities from pneumonia in infancy
- Further research with large sample size to confirm our observations and to assess impact on deaths from pneumonia

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Thank You