

Study of the Frequency and Outcome of Acute Respiratory Tract Infection in Exclusively Breastfed Infants

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Abstract

Introduction: Exclusive breast feeding is the fundamental component of child nutrition and survival. Exclusive breast feeding provides nutritional and immunological support for infant normal growth and development. Bangladesh is traditionally a breastfed community. The risks of acute respiratory infection (ARI) is higher in partially breastfed and formula-fed infants during the first 4 months of life. **Objective:** To see frequency and outcome of ARI in exclusively breastfed (EBF) infants. **Materials and Methods:** This cross sectional study was done at Department of Pediatrics, Rajshahi Medical College Hospital, from January 2013 to June 2013, a period of six months to find out the frequency and outcome of acute respiratory tract (ARI) infection in exclusively breastfed infants. 100 cases of infants suffering from ARI were selected who were exclusively breastfed. Data were analyzed through SPSS software. **Results:** Most of the EBF babies (M48+F28=) 76% came to hospital with a history of one or two attacks of ARI. Among 100 EBF babies, 96 babies were cured without complications and 02 babies develop complications and cured. There was 02 unfortunate death. Only 42% of EBF babies presented with moderate or less severe attack, 58% had mild attack. Hospital stays in EBF babies are shorter, only 64% of EBF patients had to stay more than 03 days. **Conclusion:** Frequency and severity of ARI attack is less and mild and hospital staying is short found in EBF babies, as well as better outcome with treatment.

Keywords: Respiratory distress, severe, morbidity, mortality, exclusive breast feeding.

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Introduction:

Exclusive breastfeeding plays the chief role of child nutrition and survival. Exclusive breast feeding provides nutritional and immunological support for infant normal growth and development^{1,2,3}. Bangladesh is traditionally a breastfed community⁴. In a survey in Bangladesh in 2007, almost equal rural and urban mothers were continuing breastfeeding at one year (98.9% versus 98.7%). Average 88.8% of mothers were continuing breastfeeding at 2 years⁵. In Dhaka urban affluent, bottle feeding was observed 3.6% at birth, 57.7% at one month and 70% at four month of age⁶. A cross-sectional study was carried out in 10 unions of 5 divisions in Bangladesh during 1995. Here 5313 mothers were interviewed (57% from urban areas and 43% from rural areas). There 26.2% initiated breastfeeding immediately after birth and 22.4% within 1-5 hours and 38.6% after 5 hours or more. Among 4921 mothers having babies aged 1- 24 month, 4.7 % of rural mothers as compared to 13% of urban mothers used bottle-feeding for their babies. The prevalence of bottle feeding was 2-3 times higher among the urban mothers (Fifty third World Health Assembly, 2000)⁷. Every year some 22 million children in developing countries die before they reach their fifth birthday many during the first year of life and ARI is one of the principle causes of these deaths⁸. In most of the studies, it has been shown that lack of breast feeding is associated with increased incidence, severity, mortality and morbidity of ARI in infants. In studies in Bangladesh, infants exclusively breastfed for 4 or more months had significantly fewer respiratory infections than infants exclusively breastfed for 3 or fewer months. Infants who never

breastfed had the highest risk of hospital admission for an ARI⁹. In studies in Brazil, the Philippines, Tanzania mortality from acute lower respiratory infection (ALRI) and the relationship of lack of breastfeed was shown. The weighted average of the relative risk of pneumonia deaths due to lack of breastfeeding was 2.0¹⁰. Data showed from a population-based study from Brazil that children <12 months who were not breastfed had a relative risk of dying from ALRI of 3.6; infants who were partially breastfed had a relative risk of 1.6¹¹. The probability of having an episode of ARI was higher for formula-fed than for EBF infants during the first 4 months of life. The prevalence of respiratory tract infection was also higher for formula-fed than for breastfed infants¹². In a study in Indonesia there was significant decrease in the number of days ill from acute respiratory infection as time spent breastfeeding was increased. Breastfeeding also prevents weight loss because of ARI¹³. According to the millennium development goal, our fourth goal was “Reducing under five mortality by two-thirds” by the year 2015. ARI in infants was one of the contributors of infant mortality and morbidity. In many studies it has been shown that exclusive breast feeding is associated with reduced incidence of respiratory infection in infants. The picture of breast feeding and its association with acute respiratory infection in infants in this North-west part of Bangladesh is still undiscovered. So it is necessary to study on this ground which may help to take steps reducing the incidence of respiratory infection in infants.

Material and Methods:

This cross-sectional study was done in the department of pediatrics Rajshahi medical college and hospital, Rajshahi, during six month period from January, 2013 to June, 2013. In this study 100 cases of infants suffering from ARI who were exclusively breast fed were selected. Those infants having clinical features of acute respiratory infection aged 2 months to 1 year, and both male and female infants were included. Age <2 months and >1 year with other concomitant illnesses were excluded. Information had been collected with informed consent of the infant’s parents. Detailed information was obtained in each case according to protocol. Complete history was taken either from accompanying attendants. Thorough physical examinations and follow up were done. All the information was recorded in the fixed protocol. Collected data was classified, edited, coded and entered into the computer for statistical analysis. Data were analyzed through standard statistical methods by using SPSS software, version 12.0 (statistical package for social science SPSS Inc. Chicago, USA). Standard Error and their “p” values were obtained to see the statistical significance. P value < 0.05 was considered as significant.

Results:

Table-I: Demographic Profile of delivery (n=60).

Demographic Profile	EBF (N=100)

Sex	Male	48
	Female	52
Economic status	Higher	28
	Middle	44
	Lower	26
Educational status (Mother)	Illiterate	12
	Primary	24
	SSC	36
	HSC	28
Educational status (Father)	Illiterate	20
	Primary	12
	SSC	20
	HSC	48

Among 100 EBF babies 47 are male and 53 are female; most of the babies are coming from middle class families; educational status of their parents is mostly SSC to HSC.

In the PBF group among 100 patients 44 are male and 56 are female; most of the babies come from middle class families. Educational status of their parents is mostly primary.

Table-II: Frequency of ARI attacks in EBF

	Number of attacks			
	01	02	03	04
EBF	48%	28%	24%	00%

In this table it is observed that most of the EBF babies (48+28=) 76% were coming to hospital with a history of one or two attacks of ARI.

Table-III: Severity of attack in EBF

	Mild		Severe	
	Number	Percentage	Number	Percentage
EBF	58	58%	42	42%

Severe attack is less frequent; out of 100 patients only 42% EBF baby presented with severe attack, Nonetheless, maximum 58% EBF baby present with mild attack.

Table-IV: Comparison of duration of hospital staying in EBF

	Hospital staying up to 3 days	Hospital staying >3 days
EBF	36%	64%

Out of 100 patients 36% patients stayed up to 3 days in hospital and 64% EBF patients had to stay more than 03 days. Hospital stays of EBF babies suffering from ARI are shorter.

Table-V: Hospital-stay in severe attack patients of EBF.

	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇
EBF (N=42)	00	00	18	15	5	2	2

Out of 100 patients only 42 patients had suffered from severe attack and hospital staying is less. Up to day 3 only 18 patients but 33 patients up to day 4 stayed in hospital.

Table-VI: Outcome of EBF baby suffering from ARI

EBF	Complication	Death	Cure
Mild=58	00	00	58
Severe=42	02	02	38
Total=100	02	02	96

Among the 100 EBF patients 58 were in mild attack and all were cured without complication. From the rest of the 42 severe attack patients, 38 were cured, 02 died and 02 become complicated. In total 96% patients were cured, 02% died and 02% became complicated.

Discussion:

Acute respiratory infection in infants is one of the major contributors of infant mortality and morbidity. In many studies, it has been shown that exclusive breast feeding is associated with reduced incidence of acute respiratory infection in infants. The present study aims to identify the effects of exclusive breastfeeding on frequency and outcome of acute respiratory infection in infants in the pediatric units of Rajshahi Medical College Hospital (RMCH). This study was carried out in the department of Pediatrics, Rajshahi Medical College Hospital, during the period of January 2013 to June 2013. In this study we observed that most of the EBF babies (48+28=)76% were coming to hospital with a history of one or two attacks of ARI (Table-II). In a study in Sri Lanka, in 1999 had showed that infants exclusively breastfed for 4 or more months had significantly fewer respiratory infections than infants EBF for 3 or fewer months. Infants who were never breastfed had the highest risk of hospital admission for an ARI¹⁴. Similar study done in Mexico in 1997 has shown that the probability of having an episode of ARI was higher for formula-fed than for EBF infants during the first 4 months of life. The risks for partially breastfed infants fell between those of formula-fed and EBF infants, suggesting a dose-response effect of breastfeeding on risk of respiratory infection. The prevalence of respiratory infection was also found higher for formula-fed than for breastfed infants¹⁵. Table-III shows that only 42% EBF babies presented with severe attack, Nonetheless, a maximum 58% EBF baby present with mild attack. Any infection were less severe in EBF babies than who were partially breastfed or not breastfed at all. w.w.w.dailymail.co.uk showed that EBF babies

had suffered from less severe form of ARI than partial breastfed or not breastfed at all. Table-IV, V shows that 64% EBF patients had to stay more than 03 days. Hospital stays in EBF babies suffering from ARI are shorter even in severe attacks. Infants who never received breast milk were more likely to have longer episodes of ARI than those of breastfed. A study shows evidence of a protective effect of breast feeding against ARI. EBF has reduced the percentage of days of illness and duration of individual episodes in breast fed infants¹⁵. Another similar study was done in Bangladesh in 1997 and showed that infants exclusively breastfed for 4 or more months had significantly fewer respiratory infections than infants EBF for 3 or fewer months. Infants who were never breastfed had the highest risk of hospital admission for an ARI⁹. In this study, cure, complication and death rate is studied. It is observed that among 100 EBF babies, 96 babies were cured without complication. Only 02 babies develop complications and 02 unfortunate deaths were found (Table-VI). EBF groups are associated with more cure rate and less complication rate. In another study in Dhaka, Bangladesh in 2001 shown that infants who were partially breastfed or not breastfed had a risk of ARI death 2.40 times greater than exclusively breastfed infants¹⁶. In Rwanda reported that no breastfed children were twice more likely to die from pneumonia than were breastfed children¹⁷.

Conclusion:

Although the outcome of ARI is multi factorial (Breast feeding, malnutrition, LBW, chronic disease), it is certain that breastfeeding has an important role in incidence, severity, morbidity, mortality and outcome of ARI in infants. So, it is imperative to practice EBF widely with an aim to prevent ARI.

Conflict of Interest: None.

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