

## Respiratory Tract Infection in non-Breastfed Infants

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### ABSTRACT

**Objective:** To determine the frequency of non-breastfed infants presenting to the pediatric department with respiratory tract infection.

**Methodology:** This cross-sectional study was carried out at Department of Pediatrics, Sheikh Zayed bin Sultan Nahyan Hospital CMH Muzaffarabad, during a period of six months from May 2020 to October 2020. All patients between 1 month to 12 months visiting OPD or admitting in pediatric ward with respiratory tract infection and either gender were included. Information regarding baseline demographic characteristics was recorded. The mothers were interviewed about feeding pattern of the infants. All information was recorded on the prescribed proforma.

**Results:** A total of two hundred and forty-five children were studied, and their average age was 7.4±2.8 months. Males were 54.3% and females were 45.7%. Out of all 29.8% (n=73/245) of infants found who had never been breastfed. No significant difference was found according to the effect modifiers (P>0.05).

**Conclusion:** A remarkable proportion of infants (29.8%) who presented with respiratory tract infection had never been breastfed. Counseling programs should be done for mothers to modify their perceptions regarding breastfeeding and its benefits. It is suggested that the public health authorities should launch awareness programs for the public about benefits of breastfeeding and its role in the prevention of infections in infants.

**Keywords:** Breast feeding, Non-breastfed, Respiratory Tract Infection

### INTRODUCTION

Breastfeeding is still the most effective way to protect infants from several diseases, and its protective effect grows with time. Commercially available infant formulas are designed to duplicate breast milk's particular balance of carbohydrates, protein, fats and minerals, which is regarded as the gold standard of newborn nutrition. Breast milk, on the other hand, contains a number of non-synthesizable components, such as maternally produced antibodies that defend against sickness and infection.<sup>1</sup> Maternal perceptions and awareness, as well as personal and professional support, are all factors that influence a mother's decision to breastfeed. Breastfeeding is more likely to be chosen by women from higher socioeconomic status with high levels of parental education. Alternative sources include the sociocultural background, views of family and friends, particularly the infant's fathers, and health-care providers' supports and involvement.<sup>2</sup> Regarding the health advantages, only 43% of newborns globally are exclusively breastfed within the first six months.<sup>3</sup> Breastfeeding has been shown in several trials to protect some infants up to the age of 6 months from various gastrointestinal and respiratory acute infections. Infants who are not breastfed, on the other hand, are more susceptible to these diseases.<sup>4-7</sup> For 6861 infants aged 3 to 18 months and 5666 children aged 4 years, Frank NM et al<sup>8</sup> looked at exclusive and non-exclusive breastfeeding in connection to the 3-month probabilities of the infections of the respiratory or gastrointestinal. Breastfeeding was observed to be inversely linked with the probabilities of otitis media, fever with respiratory infections, and gastrointestinal infection at the age of 3 to 6 months, while

the negative relationship with respiratory infections was only evident for females during the winter. They also discovered that the length of exclusive breastfeeding was negatively related to the risk of otitis media up to 48 months after nursing had ended.<sup>8</sup> Sadeeqa S et al examined the incidence of otitis media, gastroenteritis and lower respiratory tract infections in breast-fed and formula-fed infants aged 6 to 24 months in the Lahore population and their findings revealed that 71.80 percent of infants who were exclusively fed formula had lower respiratory tract infections.<sup>9</sup> Although there is a body of literature available on the protective effects of breastfeeding and its relationship with gastrointestinal and respiratory tract infections among infants, yet limited data have been found on the subject in the local population. Results of this study can be used as a paving way for modification of perceptions of mothers regarding breastfeeding and support of breastfeeding through health education and awareness programs.

### MATERIAL AND METHODS

This cross-sectional study was carried out at the Department of Pediatrics, Sheikh Zayed bin Sultan Nahyan Hospital CMH Muzaffarabad, during a period of six months from May 2020 to October 2020. All patients between 1 month to 12 months visiting OPD or admitting in paediatric ward with respiratory tract infection and either of gender were included. All infants who are on mixed feed (both breast and formula feed), infants whose hospital record is not available, infants born prematurely (<37 weeks of gestation), infants with very low birth weight (<1500 g) and maternal psychiatric illness history were excluded. A well

informed, written consent was obtained from mothers of all the infants to be enrolled. Information regarding baseline demographic characteristics was recorded. The mothers were interviewed about feeding pattern of the infants. All information was recorded on the prescribed proforma. Data were entered and analyzed using SPSS software version 22.

**RESULTS**

A total of two hundred and forty-five children (age 1 to 12 months, irrespective of gender) presenting with clinical features of respiratory tract infection were studied. and their average age was 7.4±2.8 months. Males were 54.3% and females were 45.7%. The type of infection, the maternal socioeconomic, education and residential status shown in table.1

Out of all, the 29.8% (n=73/245) of infants were never breastfed. Fig:1

Table 1: Demographic characteristics of the study subjects n=200

Variables		Statistics
Age		7.4±2.8 months
Gender	Males	133(54.3%)
	Females	112(45.7%)
Type of RTI	Upper	203(82.9%)
	No	42(17.1%)
Residential status	Urban	50(38.8%)
	Rural	150(61.2%)
Socioeconomic status	Poor	100(40.8%)
	Middle	94(38.4%)
	Upper	51(20.8%)
Educational status	Primary	95(24.1%)
	Middle to metric	140(57.1%)
	Intermediate to graduate	46(18.8%)

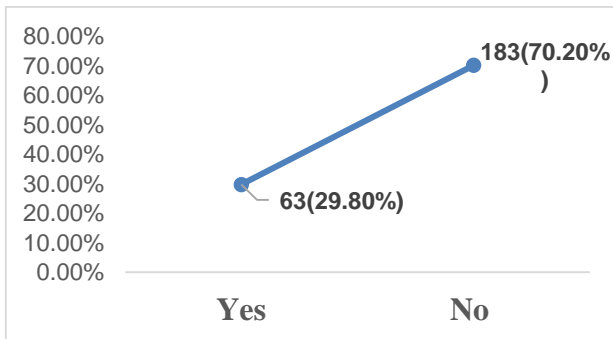


Fig 1: Frequency of non-breastfed infants n=200

Table 2: frequency of non-breastfed infants according to effect modifiers n=200

Variables		Non-breastfed infants		p-value
		Yes	No	
Age	2-6 months	27	80	0.169
	7-12 months	46	92	
Gender	Males	32	101	0.101
	Females	41	71	
Types of RTI	Upper	60	143	0.857
	Lower	13	29	
SES	Primary	33	67	0.660
	Middle to metric	26	68	
	Intermediate to graduate	14	37	

The frequency of exclusively non breastfed infants was further stratified with respect to age, gender of children, type of RTI, and socioeconomic status. No significant difference was found according to the effect modifiers (P> 0.05). Table.2

**DISCUSSION**

Breastfeeding provides immediate health advantages to the newborn, with some of these benefits lasting beyond weaning. The effects on the development of the gastrointestinal and immune systems, and infection prevention, are the most well-studied benefits. In this study, the frequency of non-breastfed infants was determined through history. In our study sample, 29.8% of infants found who had never been breastfed and these findings were non-significant according to age, gender, type of RTI and SES. Several studies have reported that breastfeeding reduces the infant's risk of respiratory illness. Newborns who were exclusively breastfed for six months had a lower risk of respiratory tract infections than infants who were solely breastfed for less than four months, according to a study from the United Kingdom.<sup>10</sup> Breastfeeding lowered the incidence of respiratory infections in three- to six-month-old infants by around 20% in another study done in the United States and Europe.<sup>11</sup> It has been estimated that after optimizing breastfeeding in the United States to current recommendations almost 21,000 hospitalizations and 40 deaths were prevented for lower respiratory tract infections in the first year of life.<sup>12</sup> Our results are similar to other studies reported in the literature. Quigley MA et al analyzed the data on 15 809 term, singleton infants from the UK Millennium Cohort Study. Outcomes were infection in infancy (chest, diarrheal and ear). Their results showed that of the 15 809 infants in the study, 34.0% were never breastfed, a figure close to our study results (29.8%). They further reported that Newborns who have not been breastfed were much more prone to have a much more socioeconomically disadvantaged profile (like, neither parent had a professional occupation, and the mother had no formal education). We came across similar findings. A higher proportion of non-breastfed infants was found in mothers who belonged to low socioeconomic status and with lesser years of formal school education. Quigley MA et al further elaborated that here is an increased risk of infection in infants in infants who were never breastfed or who had a duration of exclusive breastfeeding of Wang J et al sought to measure breastfeeding's preventive effect on RTIs throughout the first two years of life. Only children born between 1996 and 1997 and aged 1–1.99 years at the time of the first survey in 1998 were included. Parents filled out a standardized questionnaire that included questions about nursing and respiratory symptoms. Their results showed that 1659 (41%) had never been breastfed and those infants were more likely to have RTIs. In developed countries, prolonged breastfeeding has been suggested to protect against RTI throughout the first two years of life.<sup>5</sup> In a recent case control study, Pandolfi E et al enrolled a total of 496 infants: 238 cases (infants with respiratory tract infection) and 258 healthy controls and investigated the potential role of breastfeeding in protecting children feeding children of age 6 to 24 months in the population of Lahore. Their results demonstrated that among infants who were on

exclusive formula feed 71.80% suffered from lower respiratory tract infections.<sup>9</sup> Frank NM et al<sup>8</sup> compared the breastfeeding (exclusive versus non-exclusive) with respect to the 90 days odds of the respiratory infection among 6861 children with age range of 3 to 18 months and 5666 children with age of 4 years and they observed the breastfeeding inversely associated with the probabilities of respiratory infections with fever at 3–6 months of age, while the inverse correlation with respiratory infections was only detected for girls during in the wintertime.<sup>8</sup> As per current study results and review of literature in the subject is that prolonged duration of breastfeeding helps in preventing respiratory tract infection in infants. Several studies advocate exclusive breastfeeding for at least initial four months of life and its continuation with other feeds for another 6 months to year along with other foods. This study has certain limitations. Firstly, due to its cross-sectional design, we could not determine any cause-and-effect relationship and secondly, we only enrolled infants with respiratory tract infection. We did not take into account other infection like otitis media and gastrointestinal infections. We suggest future studies in this regard. Another limitation was that we could not compare risk of RTI between non breastfed and breastfed infants as our population comprised infants, all of whom had RTIs.

## CONCLUSION

A remarkable proportion of infants (29.8%) who presented with respiratory tract infection had never been breastfed. Maternal counseling programs should be done to modify their perceptions regarding breastfeeding and its benefits. It is also suggested to public health authorities to launch awareness programs for the general population about benefits of breastfeeding and its role in the prevention of infections in infants.

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