

STUDY OF ACUTE RESPIRATORY INFECTIONS IN BREAST FEEDING BABIES UP TO TWO YEARS

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Received : 05/07/2025
 Received in revised form : 21/08/2025
 Accepted : 10/09/2025

Keywords:

Premature birth, breast feeding, birth weight, nutrition, employment.

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DOI: 10.47009/jamp.2025.7.5.76

Source of Support: Nil,
 Conflict of Interest: None declared

Int J Acad Med Pharm
 2025; 7 (5); 385-387



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ABSTRACT

Background: An acute respiratory infection is a major cause for morbidity and mortality in children under five years and could be due to malnutrition or infection or an unhygienic atmosphere. **Materials and Methods:** 80 (eighty) babies between 6 months to 2 years of age with ARI were studied and compared with the same number of controlled groups. Routine blood examinations, including CBC, ESR, PS, AEC, chest x-ray, and PFT, were done only if necessary. **Result:** Comparison of social-demographic parameters like gestational age, premature birth, mean weight at birth, caesarean birth, employment of mother, siblings, and habits of parents had a significant p-value ($p < 0.001$). In comparison of breastfeeding, 55 (± 3.5) in patients with exclusive breastfeeding before onset of symptoms in babies and 70 (± 5.3) in the control, the t-test was 21.1 and $p < 0.00$. Never-breastfed patients were 22 (± 3.2) in ARI and 12 (± 2.5) in the controlled group, t-test 27 and $p < 0.001$. **Conclusion:** It is proved that malnourished babies are more prone to ARI and need to be correlated with breast-fed babies. Nutritional supplementation must be recommended along with treatment for early recovery.

INTRODUCTION

Acute respiratory infections contribute to major disease-associated mortality and morbidity among babies up to 2 years old.^[1] The existing evidence on acute respiratory infection (ARI) is focused on the burden of illness around rural and urban slums; hence, there is a lack of representative and reliable data, resulting in an underestimation of ARI prevalence. ARI is responsible for 30-50% of all outpatients and 20-40% of inpatients. In India 31.7 million cases of ARI were reported.^[2] About 90% of ARI deaths are due to pneumonia, which is mostly bacterial cause. The incidence of pneumothorax death is 18% in India.

ARI can be classified into two types based on the site of infection. Acute upper respiratory tract infections (AURIs) include the common cold, pharyngitis, tonsillitis, sinusitis, and otitis media, while epiglottitis, laryngitis, croup syndrome (acute laryngotracheobronchitis), bronchiolitis, and pneumonia are acute lower respiratory tract infections. (ALRI).^[3]

The common organisms responsible for causing infections include bacteria and viruses. The most common organism identified is streptococcus pneumoniae, accounting for 30-50% of cases. Second most common is Haemophilus influenzae, accounting for 10-30% of cases; other organisms are

S. aureus, Klebsiella pneumoniae, and Mycobacterium tuberculosis.^[4] Hence, an attempt is made to evaluate the causes in breastfed babies below 2 years.

MATERIALS AND METHODS

80 babies, aged between six months to two years, were admitted to the pediatrics department of Srinivas Institute of Medical Sciences and Research Centre, Suratkal, Mangalore-574146, were studied.

Inclusive Criteria

The babies up to 2 years of age with ARI. The patients / guardians who gave their consent in writing for study were selected.

Exclusion Criteria

Babies with chronic respiratory ailments, any congenital defects in the lung, and pulmonary tuberculosis patients who refused to give their consent for study were excluded from the study.

Method: The babies with ARI were admitted for further evaluation and treatment. The routine blood examinations were complete blood counts (CBC), which included Hb%, differential counts, platelet counts, and hematocrit values. Absolute eosinophilia (AEC) was done. In relevant cases, a chest x-ray and pulmonary function test were done if necessary. The diagnostic criteria included a history of nasal discharge, cough, and fever; hurried breathing; chest

pain in drawing; and refusal of feeds used to assess an episode of ARI. Respiratory rate >60 /minute (among infants <3 months) >60 (2.11 months), and >40 (1–5 years) in a child with cough, cold, or fever, singly or in combination, are the criteria for recognition of pneumonia, history of ARI episodes, and history of ARI in the family members. The immunization status and diet history were also noted. Nutritional status was assessed with parameters like weight, height, and mid-arm circumference, which was also recorded.

The duration of the study was from April 2024 to May 2025.

Statistical analysis: Various findings of the ARI and controlled groups were compared with a t-test, and significant results were noted. The statistical analysis was carried out in SPSS software. The ratio of male and female babies was 2:1.

RESULTS

[Table 1] Socio-demographic study of acute respiratory infections in breast feeding babies between six months to two years of age.

- Gestation age (weeks): 37.2 (± 2.2) in respiratory infected babies (RIB), 38.8 (± 1.6) in controlled; t test was 5.20 and $p < 0.001$.
- Premature birth 28 (± 5.2) in the RIB group, 14 (± 3.1) in the control group. The t test was 20.6 and $p < 0.001$.
- Birth weight (kg): 3.0 (± 0.3) in the RIB group, 3.5 (± 0.4) in the controlled group; t test was 8.9 and $p < 0.001$.
- Caesarean Birth: 55 (± 3.5) in RIB group, 41 (± 2.3) in controlled, t test was 29.8 and $p < 0.001$.
- Employed mother mean: 60 (± 7.2) in RIB group, 40 (± 3.2) in controlled group, t test was 22.7 and $p < 0.001$.
- One or more brothers: 65 (± 2.5) in the RIB group, 42 (± 1.6) in the controlled group; the t test was 69.3 and $p < 0.001$.
- Smoking, tobacco chewer mother: 15 (± 4.6) in RIB group, 11 (± 2.4) in controlled group, t test 6.8 and $p < 0.001$.
- Smoking, tobacco chewer Father: 40 (± 3.5) in the RIB group, 25 (± 1.5) in the controlled group, t test 35.2 and $p < 0.001$.

[Table 2] Comparative study of breast feeding in patients with acute respiratory infection in a controlled group

- Patient with excessive breast feeding before onset of symptoms: 55 (± 3.5) in the RIB group, 70 (± 5.3) in the controlled group; t test was 21.1 and $p < 0.001$.
- Never breast-fed patients: 22 (± 3.2) in RI, 13 (± 2.5) in the controlled group; t test was 22.0 and $p < 0.001$.

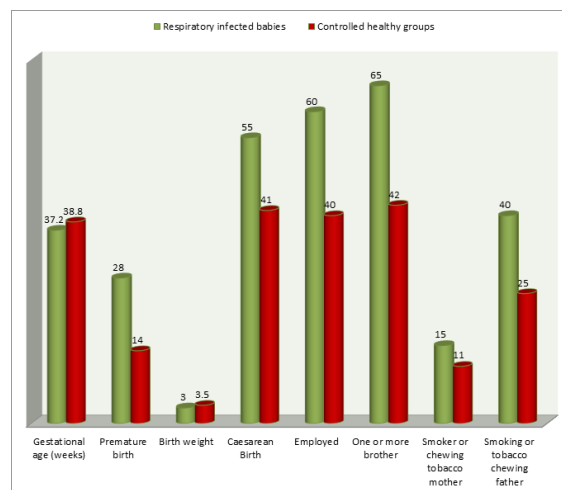


Figure 1: Socio –demographic study in acute respiratory infections in breast feeding babies between six months to two years of age

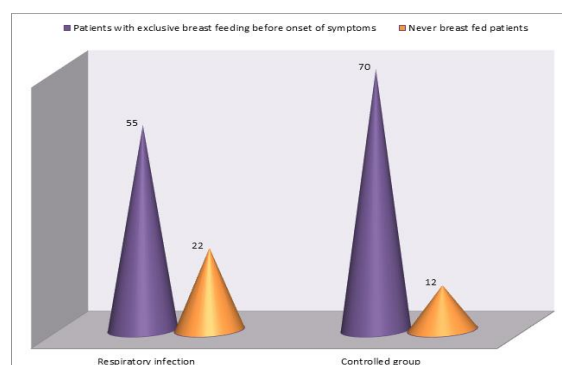


Figure 2: Comparative study of breast feeding in patients with acute respiratory infection with controlled group

Table 1: Socio –demographic study in acute respiratory infections in breast feeding babies between six months to two years of age

Sl. No	Particular	Respiratory infected babies (80)	Controlled healthy groups (80)	t test	p value
1	Gestational age (weeks)	37.2 (± 2.2)	38.8 (± 1.6)	5.20	$P < 0.001$
2	Premature birth	28 (± 5.2)	14 (± 3.1)	20.6	$P < 0.001$
3	Birth weight (Kg)	3.0 (± 0.3)	3.5 (± 0.4)	8.9	$P < 0.001$
4	Caesarean Birth	55 (± 3.5)	41 (± 3.2)	29.8	$P < 0.001$
5	Employed Mother	60 (± 7.2)	40 (± 3.2)	22.7	$P < 0.001$
6	One or more brother	65 (± 2.5)	42 (± 1.6)	69.3	$P < 0.001$
7	Smoker or chewing tobacco mother	15 (± 5.6)	11 (± 3.3)	6.8	$P < 0.001$

8	Smoking or tobacco chewing father	40 (\pm 3.5)	25 (\pm 1.5)	35.2	P<0.001
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Table 2: Comparative study of breast feeding in patients with acute respiratory infection with controlled group

Details	Respiratory infection (80)	Controlled group (80)	t test	p value
Patients with exclusive breast feeding before onset of symptoms	55 (\pm 3.5)	70 (\pm 5.3)	21.1	P<0.001
Never breast fed patients	22 (\pm 3.2)	12 (\pm 2.5)	22.0	P<0.001

DISCUSSION

Present ARI in breast-feeding babies between six months to two years of age. A sociodemographic study was compared in ARI babies, and the controlled group included gestational age and premature birth. Mean value of birth weight, caesarean birth, Employed mothers, siblings, and smokers were patients and had a significant p-value ($p < 0.001$). In the comparative study of breastfeeding in patients with ARI patients with a controlled group, in patients with exclusive breastfeeding before onset of symptoms, 55 (\pm 3.5) in ARI patients and 70 (\pm 5.3) in the controlled group, t test 21.1 and $p < 0.001$. In the never breast-fed patient study, 22 (\pm 3.2) ARI patients and 12 (\pm 2.5) were in the control group; the t-test was 27 and $p < 0.001$ (the p-value was highly significant). These findings are more or less in agreement with previous studies.^[5-7]

It is reported that breastfeeding measures are consistent with a biological phenomenon. Since maternal milk transmits both immune cells and antibodies to infants, immune modulation could explain the breastfeeding effects that are noted to extend beyond the actual period of exposure.^[8] It has been found that lymphocyte profiles differ in breast-fed babies and those who are not breast-fed. T lymphocyte profiles differ in children who are prone to asthma in infancy from those who are not so predisposed.^[9] It is also suggested that maternal smoking may account for apparent breastfeeding effects because women who smoke are less likely to breastfeed, and children of smoking mothers or fathers have an increased risk of morbidity, mortality, and hospitalization for ARI.^[10]

Some studies have reported that breastfeeding does not provide substantial protection against common infections and illnesses during the first year of life. Other studies concluded that a shorter period of breastfeeding might increase the risk of acute respiratory diseases. It is also hypothesized that breastfed babies are less susceptible to infections, including respiratory or viral diseases.^[11] In addition to this, a healthy mother's milk feed plays a vital role in immunity for babies.

Inadequate breastfeeding and inappropriate complementary food are important causes of malnutrition in infants, which predisposes them to

micronutrient deficiencies, especially iron and zinc. Zinc deficiency is associated with growth retardation and increased rates of pneumonia and diarrhea in children.

CONCLUSION

In the present ARI in breast-feeding babies up to 2 years, it was observed that breast-fed babies by healthy mothers were less prone to infection and fewer babies were hospitalized. Hence, nutritional status during pregnancy and lactation also plays a vital role in helping the babies defend themselves from infections. This study demands social awareness regarding the importance of breast feeding to minimize the hospitalization of babies.

Limitation of study: Owing to a remote location of research centre, small number patients, lack of latest technique, we have limited findings and results.

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