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RESEARCH ARTICLE
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THE RELATIONSHIP BETWEEN BREAST AND BOTTLE FEEDING AND RESPIRATORY ILLNESS IN THE FIRST YEAR OF LIFE

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Abstract:
Objectives: To determine the relationship between feeding method (breastfeeding or bottle-feeding) and respiratory illness in the first year of life.
Materials and Methods: This was a cross sectional study in which we have enrolled total of 95 infants. The enrolled infants were divided into two group. Group A infants were serve by breast feeding and group B infants were serve by bottle-feeding. Data were collected by using predesign questionere. This study duration was 6 month from November, 2023 to April, 2024 and was conducted at Shahida Islam Teaching Hospital Lodhran, Pakistan and Department of Pediatric Medicine, The Children's Hospital and University of Child Health Sciences (UCHS)
Results: The mean age of all enrolled infants was 5.95±2.4 months. Among male infants, the mean age was 5.97±2.20 months, while among female infants, it was 5.94±2.59 months. The study included 43 male infants (45.3%) and 52 female infants (54.7%). Regarding health conditions, 33 infants (34.7%) were diagnosed with pneumonia, and 28 infants (29.5%) were diagnosed with acute bronchitis. In the subgroup of breastfed infants, 13 patients (39.4%) had pneumonia, while 20 patients (60.6%) had pneumonia in the bottle-fed group, with insignificant p-value. For acute bronchitis, 11 breastfed infants (39.3%) and 17 bottle-fed infants (60.7%) were diagnosed, with an insignificant p-value. Examining gender differences, 10 male infants (35.7%) and 18 female infants (64.3%) were diagnosed with acute bronchitis, yielding a insignificant p-value.
Conclusion: It was concluded that breast feeding pattern reduces the incidences of respiratory illness in the first year of life.

Key words: Breast feeding, Bottle feeding, respiratory illness, Pneumonia, Acute Bronchitis

INTRODUCTION:

Infant pneumonia is a serious health concern worldwide, including in Pakistan.(1) Poor living conditions, malnutrition, and limited access to healthcare services can contribute to the prevalence of pneumonia in some regions, including parts of Pakistan.(2)

Breastfeeding and bottle-feeding are two common methods of providing nutrition to infants.(3) Each method has its own set of advantages and considerations, and the choice between the two depends on various factors, including the mother's preference, medical considerations, and the baby's needs. Both breastfeeding and safe bottle feeding practices can contribute positively to infant health. (4) Breastfeeding has so many health advantages, it is typically advised as the best nourishment source for babies. Antibodies and vital nutrients found in breast milk shield newborns from diseases like pneumonia.(5) The act of breastfeeding itself does not cause pneumonia; rather, it supports the development of a strong immune system, reducing the risk of respiratory infections.(6, 7) Over 600,000 fatalities globally are attributed to acute lower respiratory infections that can be prevented by breastfeeding; in Latin America, this accounts for 50% of preventable neonatal mortality from acute respiratory infections and around 30% of postnatal mortality.(7, 8) Breastfeeding has been shown to provide numerous health benefits for both infants and mothers.(9) Breastfeeding is known to offer protection against acute lower respiratory infections (ALRIs) in infants.(10) Breast milk contains antibodies, immune cells, and other beneficial components that help protect infants from infections, including those affecting the respiratory system.(11) The World Health Organization (WHO), the American Academy of Pediatrics, and other health organizations recommend exclusive breastfeeding for the first six months of life, with continued breastfeeding along with the introduction of complementary foods for at least the first year and beyond.(12) Several studies have demonstrated that infants who are exclusively breastfed are less likely to experience respiratory infections, such as pneumonia and bronchiolitis, compared to those who are not breastfed or receive formula. The protective effect is attributed to the immunological and nutritional benefits provided by breast milk. This study aim to determine the association between feeding practices and respiratory illnesses during the first year of life.

Objective:

To determine the relationship between feeding method (breastfeeding or bottle-feeding) and respiratory illness in the first year of life.

MATERIALS AND METHODS:

Study Design: Cross sectional study.

Study setting: Shahida Islam Teaching Hospital Lodhran, Pakistan and Department of Pediatric Medicine, The Children's Hospital and University of Child Health Sciences (UCHS).

Duration of the study: Duration of the study was 6 month (November, 2023 to April, 2024).

Inclusion Criteria:

- Infants aged 0 to 12 months.
- Both males and females.
- Infants who were exclusively breastfed, exclusively bottle-fed (with formula), or receive a combination of breast milk and formula.

Exclusion Criteria:

- Infants with pre-existing respiratory conditions or congenital anomalies that may affect respiratory health.
- Preterm infants or those with a gestational age below a certain threshold.
- Infants with known medical conditions or syndromes.
- Infants who have received a combination of breast and bottle feeding.

Methods:
After the approval of ethical committee of this study was conducted at the Department of Pediatric Medicine Shahida Islam Teaching Hospital Lodhran, Pakistan and Department of Pediatric Medicine, The Children's Hospital and University of Child Health Sciences (UCHS)from November, 2023 to April, 2024. In this study we enrolled 90 infant. The infants were divided into two groups. Group A infants were breast feeding while group B infants were bottle feeding. All the infants were kept in observation and the mother were asked to feed the infants according to our feeding pattern. A predesign questionere were used to collect data. For statistical analysis we used SPSS Version 25.

RESULTS:
The mean age of all the enrolled infant were 5.95±2.4 months. The mean age of male infants and female infants were 5.97±2.20 and 5.94±2.59 month respectively (Table 3). In this study 43(45.3%) infants were male and 52(54.7%) were female (Table 1 and *Fig 2*). Out of total enrolled infants 33(34.7%) were suffering from pneumonia and 28(29.5%) were suffering from Acute bronchitis (Table 2 and ***Fig 1***). In breast feeding infants 13(39.4%) patients and in bottle feeding infants 20(60.6%) were suffering from Pneumonia with insignificant P-value of 0.11. In breast feeding infants feeding 11(39.3%) patients and in bottle feeding infants 17(60.7%) were suffering from Acute bronchitis with insignificant P-value of 0.15 (Table 6). 10(35.7%) male infants and 18(64.3%) female infants were suffering from Acute bronchitis with insignificant P-value of 0.22 (Table 7).

Table 1: Distribution of infants on the basis of gender (*n=95)*

Gender	Frequency	Percentage
Male	43	45.3
Female	52	54.7
Total	95	100.0

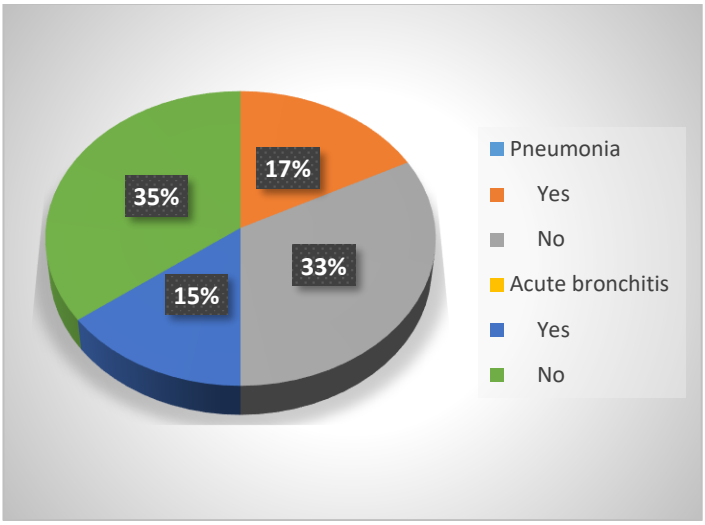

Fig 1: Graph showing the frequency of Pneumonia and acute bronchitis in infants.

Table 2: Infants distribution on the basis of Pneumonia

Pneumonia	Frequency	Percentage
Yes	33	34.7
No	62	65.3
Acute bronchitis		
Yes	28	29.5
No	67	70.5

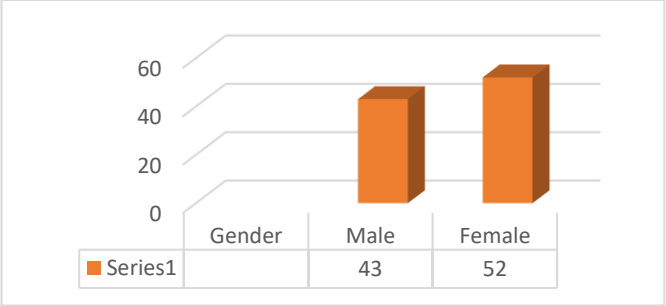

Fig 2: Graph showing distribution of patients on the basis of gender.

Table 3: Mean age of all enrolled infants *(n=95)*

Variables	**Mean±SD**
Age of infants (month)	5.95±2.4
Male age	5.97±2.20
Female age	5.94±2.59

Table 4: Distribution of patients according to pneumonia in both groups *(n=95)*

	Pneumonia		P-value
	Yes	No	
Breast feeding	13(39.4%)	35(56.5%)	0.11
Bottle feeding	20(60.6%)	27(43.5%)	
Total	33(100.0%)	62(100.0%)	

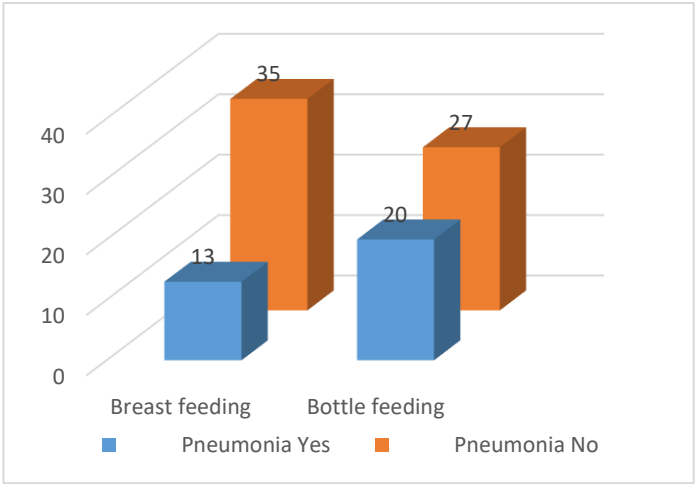

FIG 1: Bar graph showing distribution of patients according to pneumonia in both groups

Table 5: Distribution of patients according to pneumonia with respect to gender *(n=95)*

	Pneumonia		P-value
	Yes	No	
Male Infants	11(33.3%)	32(51.6%)	0.08
Female Infants	22(66.7%)	30(48.4%)	
Total	33(100.0%)	62(100.0%)	

Table 6: Distribution of patients according to Acute bronchitis in both groups *(n=95)*

	Acute bronchitis		P-value
	Yes	No	
Breast feeding	11(39.3%)	37(55.2%)	
Bottle feeding	17(60.7%	30(44.8%)	0.15
Total	28(100.0%)	67(100.0%)	

Table 7: Distribution of patients according to Acute bronchitis with respect to gender *(n=95)*

	Acute bronchitis		P-value
	Yes	No	
Male Infants	10(35.7%)	33(49.3%)	
Female Infants	18(64.3%)	34(50.7%)	0.22
Total	28(100.0%)	67(100.0%)	

Discussion:

The main aim of the present study was to determine the relationship of feeding pattern with respiratory illness in the first year of life. In the present study it was found that respiratory illness such as pneumonia and acute bronchitis is more associated with bottle feeding as compared to breast feeding. In breast feeding infants the incidence of respiratory illness was due to several factors rather the breast feeding itself. The importance of optimal breastfeeding cannot be overstated. The World Health Organization (WHO) and other health organizations emphasize the numerous benefits of breastfeeding for both infants and mothers. Our study was supported by a study conducted by A H Cushing et al.(13) in which they stated that breastfeeding reduces the severity of infant respiratory illnesses during the first 6 months of life. Breast milk provides essential nutrients and antibodies that protect infants from various illnesses.[14] That the reason that WHO and UNICEF recommend early initiation of breastfeeding within 1 hour of birth. In previous studies it was stated that Breastfeeding protects against respiratory tract infections (RTIs) in infants.[15-17] Another study[18] has shown that breastfeeding may offer protection against various acute respiratory and gastrointestinal illnesses in certain children, extending up to at least 6 months of age. Furthermore, the duration of exclusive breastfeeding appears to provide a degree of protection against otitis media, even after the cessation of breastfeeding. A study(19) reported an association between the use of feeding bottles and increased occurrence of upper respiratory infections in infants. The American Academy of Pediatrics (AAP) advocates for exclusive breastfeeding for about 6 months following birth.(12) Additionally, the AAP encourages ongoing breastfeeding, supplemented with appropriate complementary foods introduced around the age of 6 months, for as long as desired by both the mother and child, extending to 2 years or beyond.(20) These guidelines align with the recommendations of the World Health Organization (WHO). It's worth noting that medical reasons preventing breastfeeding are uncommon. To enhance breastfeeding initiation, duration, and exclusivity, the AAP recommends that birthing hospitals or centers adopt maternity care practices demonstrated to be effective.

Conclusion: It was concluded that breast feeding pattern reduces the incidences of respiratory illness in the first year of life. So we recommend breast feeding in the first year of life.

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