International Journal of Contemporary Pediatrics
*Sharma R et al. Int J Contemp Pediatr. 2017 Sep;4(5):1717-1720*
http://www.ijpediatrics.com
pISSN 2349-3283 | eISSN 2349-3291

DOI: http://dx.doi.org/10.18203/2349-3291.ijcp20173772

**Original Research Article**

# Infant feeding practices and risk of occurrence of diarrheal and respiratory infections in infancy-a hospital based study

**Rakesh Sharma, Arvind Sood*, Priyanka Nair**

Department of Pediatrics, Indira Gandhi Medical College Shimla, Himachal Pradesh, India

**Received:** 05 May 2017
**Accepted:** 17 June 2017

***Correspondence:**
Dr. Arvind Sood,
E-mail: sood.arvind@ymail.com



## ABSTRACT

**Background:** Breastfeeding is the most cost-effective intervention for protecting children against various childhood morbidities. Suboptimal breastfeeding has been linked with numerous adverse child health outcomes including increased incidence of diarrheal disease and pneumonia.
**Methods:** A sample of 360 infants was surveyed during the period of one year (2013-2014). The socio-demographic characteristics and feeding modes were collected from the parents of the children during the interview.
**Results:** A total of 228 (63.3%) were suffering from acute gastroenteritis and 132 (37.7%) were suffering from pneumonia. The risk of diarrhea and pneumonia was higher and statistically significant in partially breastfed and non-exclusive breast fed as compared to exclusive breast fed. Infants who were bottle fed had higher risk of morbidity. Infants who were breast fed for longer duration (more than 4 months) has lesser risk of morbidity as compare to counterparts who were fed for lesser duration.
**Conclusions:** These results indicate that promoting exclusive breastfeeding will play an important role in reducing the risk of infantile diarrhoea and pneumonia. This observation is important given the growing concern of the modern society wherein breastfeeding is on the decline.

**Keywords:** Breastfeeding, Diarrhoea, Pneumonia

## INTRODUCTION

Pneumonia and diarrhea are the leading causes of death in children under five years old worldwide. Both these illnesses account for a great number of physician visits and hospitalizations. Breastfeeding for at least six months has been reported to decrease worldwide infant morbidity and mortality.[1,2]

In-spite of knowledge and the fact that breastfeeding culture comes naturally to Indian mothers, the rates of exclusive breastfeeding in India are dismal. This is evident from the National Family Health Survey of India, which has documented that initiation of breastfeeding within one hour of birth is only 24.5%, and exclusive breastfeeding up to six months of age is only 46.4%.[3]

With this background, the present study aimed at assessing the infant feeding practices and exploring its relationship with risk of occurrence of diarrhea and pneumonia in infants.

## METHODS

This was a hospital based cross sectional study conducted in the Department of Pediatrics, Indira Gandhi Medical College, Shimla. The study period was one year (from May 2013 to April 2014).

Hospitalized infants suffering from diarrhea and pneumonia were included in the study. Acute diarrheal illness was diagnosed in infants with passage of 3 or more loose or liquid stools in any 24-hour period (also

requires the mother to state that stools were different from normal) or passage of at least 1 liquid stool with visible blood in a 24-hour period with or without fever, vomiting and signs of dehydration. Pneumonia was diagnosed in infants with history of cough and/or difficult breathing, with or without fever, fast breathing (RR >60 in 1-2months RR >50 in 2-12 months), lower chest wall in drawing, with or without cyanosis, unable to feed or drink, grunting, unconsciousness, hypothermia and convulsions.

Exclusively breast-fed was defined as where only breast milk and no other liquids or solids not even water were given. Predominantly breast-fed was defined as where breast milk plus water or water based fluids may have been given.

Partially Breast-fed was defined as where other milk or formula had been given but breast feeding had not yet stopped. Non-Breast-fed was where no breast milk had been given. Informed consent was taken from all mothers of all infants included in the study.

## RESULTS

The mean age of admitted infants was 5.6 months (SD +3.3 months). Among 360 infants who presented with both type of illness there were more males (68.3%) as compared to females (31.7%).

Infants suffering from diarrhea and pneumonia had a higher incidence of admissions in the early periods of breastfeeding. As the duration of breastfeeding increased the risk of suffering from diarrhea and pneumonia decreased.

At 4 month of age the proportion of admissions were 23% for diarrhea and 13% for pneumonia. At 6 months, this decreased to 9% for diarrhea and 3% for pneumonia (Figure 1).

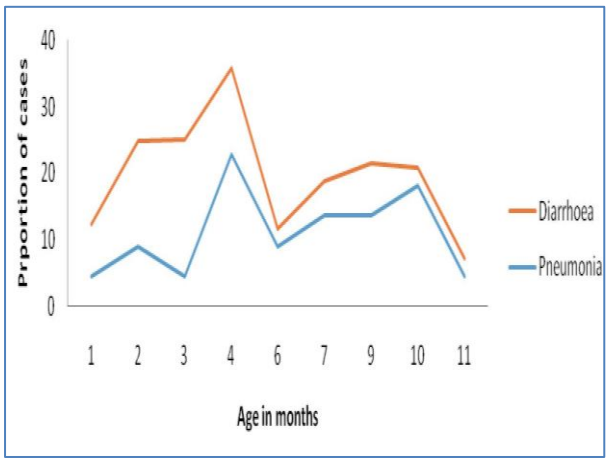


**Figure 1: Time trend of infant morbidity in hospitalized infants.**

Majority of mothers reported partial breast feeding (43.3), predominant breast feeding their child (20.0%) and no breast feeding (31.7%) at all. Only 5% infants were exclusively breast fed. The common reason for not exclusive breast feeding were inadequate breast milk (54.4%) and some religious practices (24.9%) (Table 1).

A total of 228 (63.3%) were suffering from acute gastroenteritis.

The risk for presenting with acute gastroenteritis was higher and statistically significant in male p= <0.05). Similarly, the risk was higher and statistically significant in both the partially breastfed (36.8%) and in the non-exclusively breast fed (36.8%) as compared to exclusive breast fed (5.3%, p <0.05).

Infants of higher educated mothers (graduate/postgraduate) had lower risk of acute gastroenteritis as compared to those who attended primary/secondary school (40.9% Versus 50%, p <0.05) Also, infants who were bottle fed had higher risk of acute gastroenteritis (72.7%) as compared to those who were not bottle fed (27.3%) (Table 1).

## DISCUSSION

In present study, a majority of male infants were affected with both illnesses as compared to their female counterparts which indicate a higher susceptibility to these infections in them. This may also be explained by the higher rates of seeking medical attention by parents in male infant's due to prevailing gender bias in this society.

The present study maximum admissions for diarrhea and pneumonia corresponded to early months of infant's age. This proportion of hospitalization for these morbidities decreased with increasing age, possibly indicating that the immunity conferred by breast milk which takes time to reach its optimum level by mid-infancy and then steadily increases.

Similar to present finding a meta-analysis reported that hospitalization for respiratory disease was less in breast fed infants for longer duration.[5] A study from Spain estimated that exclusive breastfeeding for more than 4 months prevented more than half of hospitalizations in children who were younger than 1 year.[6]

Quigley et al observed that compared with infants who were not breastfed, those who were exclusively breastfed had a large and statistically significant reduction in risk for hospitalization for diarrhea and pneumonia.[7] Exclusively breast feeding is the best possible protection for the child. Out admissions, very few belonged to this group. Mostly mothers partially breast fed or did not breast feed their baby. The most common reasons were inadequate breast milk and some religious practices.

**Table 1: Associations between socio-demographic factors, feeding modes and other factors with acute gastroenteritis and pneumonia morbidity in the children surveyed.**

| | Acute Gastroenteritis (n=228) | Pneumonia (n=132) | Combined morbidity (n=360) |
|---|---|---|---|
| **Age group** | | | |
| Neonate (n=24) | 18 (7.9) | 6 (4.5) | 24 (6.7) |
| Post-neonate(n=336) | 210 (92.1) | 126 (95.5) | 336 (93.3) |
| **Gender** | | | |
| Male(n=246) | 162 (71.1) | 84(63.6) | 246 (68.3) |
| Female (n=114) | 66 (28.9) | 48(36.4) | 114 (31.7) |
| **Education** | | | |
| Illiterate | 18 (7.9) | 12 (9.1) | 30 (8.3) |
| Attended school (primary/secondary | 96 (42.1) | 66 (50.0) | 162 (45.0) |
| Passed secondary school (12th pass) | 78 (34.2) | 54 (40.9) | 132 (36.7) |
| Graduate/post graduate | 36 (15.8) | 0 (0) | 36 (10.0) |
| **Socio economic status** | | | |
| Lower class | 6 (2.6) | 6 (4.5) | 12 (3.3) |
| Upper lower class | 48 (21.1) | 6 (4.5) | 54 (15.0) |
| Lower middle class | 102 (44.7) | 90 (68.2) | 192 (53.3) |
| Upper middle class | 72 (31.6) | 30 (22.7) | 102 (28.3) |
| Upper class | 0 (0) | 0 (0) | 0 (0) |
| **Breast feeding practice 0-4 months** | | | |
| Exclusive (n=18) | 12 (5.3) | 6 (4.5) | 18 (5) |
| Predominantly breast-fed (n=72) | 48 (21.1) | 24 (18.2) | 72 (20) |
| Partial breast-fed (n=156) | 84 (36.8) | 72 (54.5) | 156 (43.3) |
| Non-breast fed (n=114) | 84 (36.8) | 30 (22.7) | 114 (31.7) |
| **Breast feeding practice 4-6 months (n=180)** | | | |
| Exclusive (n=6) | 0 | 6 (4.5) | 6 (3.3) |
| Predominantly breast-fed (n=12) | 12 (5.3) | 0 (0) | 12 (6.7) |
| Partial breast-fed (n=84**)** | 36 (15.8) | 48 (36.4) | 84 (46.7) |
| Non breast-fed (n=78) | 54 (23.7) | 24 (18.2) | 78 (44.3) |
| **Cause of non-exclusive feeding** | | | |
| Inadequate breast milk | 114 (50.0) | 72 (54.5) | 186 (54.4) |
| Religious practices | 55 (24.1) | 30 (22.7) | 85 (24.9) |
| Maternal illness | 23 (10.1) | 12 (9.1) | 35 (10.2) |
| Others | 24 (10.5) | 12 (9.1) | 36 (10.5) |
| **Bottle feeding** | | | |
| Yes (n=246) | 150 (65.8) | 96 (72.7) | 246 (68.3) |
| No (n=114) | 78 (34.2) | 36 (27.3) | 114 (31.7) |
| **Duration of breast feeding** | | | |
| <4 months | 186 (81.6) | 78 (59.1) | 264 (73.3) |
| >4months | 42 (18.4) | 54 (40.9) | 96 (26.7) |

A wide spread strengthening of breast feeding support group is thus recommended. Inability of health care providers to help mothers experiencing breastfeeding difficulty is a major down fall.

Similar to present finding a study in Bangladesh reported inadequate secretion of breast milk as a reason among 64% mothers a high proportion of infants were bottle fed.[8] This may be attributed to lack of awareness of detrimental effects leading to higher rates of contamination. In a study by Kumar et al in infant's exclusive breastfeeding compared with mixed or bottle-feeding was associated with a significantly lower risk for upper respiratory infection and diarhoea.[9]

## CONCLUSION

In our study, we conclude that increased duration of breast feeding leads to lower risk of illness. Majority of mothers reported partial breast feeding and very few exclusive breastfed their child.

The notion of inadequate breast milk was a hindrance to mothers for exclusively breast feeding their child. These findings indicate that currently the breastfeeding support provided by health services is not up to the mark. So, exclusive breast feeding should be promoted and strengthened to decrease infant morbidity and mortality due to diarrhea and pneumonia.

*Funding: No funding sources*
*Conflict of interest: None declared*
*Ethical approval: The study was approved by the Institutional Ethics Committee IGMC, Shimla, Himachal Pradesh*

## REFERENCES

1. Black RE, Allen LH, Bhutta ZA, Caulfield LE, de Onis M, Ezzati M, Mathers C, et al. Maternal and child undernutrition: global and regional exposures and health consequences. Lancet. 2008, 371:243-60.
2. Jones G, Steketee RW, Black RE, Bhutta ZA, Morris SS, Bellagio Child Survival Study Group: How many child deaths can we prevent this year? Lancet. 2003;362:65-71.
3. Bansal CP. Breastfeeding-Why are we still failing?. Indian Pediatr. 2013;50:993.
4. World Health Organization. Global Strategy for Infant and Young Child Feeding. Geneva, Switzerland: World Health Organization; 2002.
5. Chisti MJ. Impact of lack of breast feeding during neonatal age on the development of clinical signs of pneumonia and hypoxemia in young infants with diarrhea. PLoS One. 2011;6(10):e25817.
6. Roberts TJ, Carnahan E, Gakidou E. Can breastfeeding promote child health equity? A comprehensive analysis of breastfeeding patterns across the developing world and what we can learn from them. BMC Med. 2013;11:254.
7. Quigley MA, Kelly YJ, Sacker A. Breastfeeding and hospitalization for diarrheal and respiratory infections in the United Kingdom Millennium Cohort Study. J Pediatr. 2007;119:e837-e42.
8. Joshi PC, Angdembe MR, Das SK. Prevalence of exclusive breastfeeding and associated factors among mothers in rural Bangladesh: a cross-sectional study. Internet Breastfeeding J. 2014;9;7.
9. Kumar V, Kumar L, Diwedi P. Morbidity related to feeding pattern in privileged urban and under privileged rural infants. Indian Pediatr. 1981;18:743-49.

**Cite this article as:** Sharma R, Sood A, Nair P. Infant feeding practices and risk of occurrence of diarrheal and respiratory infections in infancy-a hospital based study. Int J Contemp Pediatr 2017;4:1717-20.