International Journal of Contemporary Pediatrics
Varghese B et al. Int J Contemp Pediatr. 2021 Nov;8(11):1866-1872
http://www.ijpediatrics.com
pISSN 2349-3283 | eISSN 2349-3291

DOI: https://dx.doi.org/10.18203/2349-3291.ijcp20214161

Original Research Article

Association of infant and young child feeding practices and acute lower respiratory infections

Bibin Varghese*, Mehul M. Gosai, Asha V. Patel, Akash Patel

Department of Pediatrics, Sir T. G. Hospital, Bhavnagar, Gujarat, India

Received: 16 September 2021
Accepted: 13 October 2021

***Correspondence:**
Dr. Bibin Varghese,
E-mail: bibinvarghese92@gmail.com

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ABSTRACT

Background: Suboptimal maternal–child nutrition leading to malnutrition is the major cause increasing morbidity and mortality from severe acute lower respiratory infection (ALRI) among under two children. This research compares the infant and young child feeding (IYCF) practices in children with ALRI and children coming for routine immunization to find out the independent risk factors.
Methods: The study was a hospital-based case control study. Infant and young children from 6 months to two years with ALRI admitted to the pediatric ward were studied as cases. Infant and young children of same age coming for routine immunization to the pediatric immunization clinic were studied as controls. Feeding patterns, socio-demographic, environmental and parenting factors were obtained from them in between May 2019 to April 2020.
Results: Mixed feeding till 6 months (adjusted OR=34.191; 95% CI, 2.158–541.801; p=0.012), early initiation of complimentary feeding (AOR=30.389; 95% CI, 1.426–647.603; p=0.029), late initiation of complimentary feeding (AOR=28.696; 95% CI, 1.217–676.566; p=0.037) and inadequate amount of complimentary feeding (AOR=14.406; 95% CI, 1.898–109.371; p=0.010) were significant in multivariate analysis.
Conclusions: Interventions to increase awareness of breastfeeding and complimentary feeding practices seldom reach lower sections of the society. Feeding visits, mother support groups and community projects to provide home based counselling on IYCF are needed to improve the situation.

Keywords: ALRI, Breastfeeding, Complimentary feeding, IYCF, Feeding visits, Pneumonia

INTRODUCTION

Acute lower respiratory infections (ALRI) are a leading cause of mortality and morbidity worldwide causing 13.1% of all deaths in children younger than five years. Nearly a third of all ALRI related deaths in children below five years happen in India.

Ideal maternal–child nutrition is essential for promoting neonatal, infant and child survival including the prevention of mortality due to severe ALRI.[1,2] Breastfeeding ensures transfer of lactoferrin, lysozyme, secretory IgA and leukocytes from mother to infant and stimulates immune-system maturation.[3] Breastfeeding promotion efforts in promotion of breastfeeding intervention trial resulted in increased breastfeeding continuation and a significant decrease in hospitalizations due to ALRI.[4]

Childhood malnutrition is responsible for 61% of lower respiratory infection deaths.[5] Enhancing the consistency, frequency and quality of complementary foods prevent malnutrition, however if they directly reduce the incidence and mortality of ALRI have not been studied.[2] With the known benefits of breastfeeding and complementary feeding, any intervention trials in this domain will be considered unethical. This research addresses these questions by studying the feeding practices in infant and young children with acute lower respiratory tract infection and comparing them with the feeding practices in infant

and young children coming for routine immunization.

Aims and objective

Aim of the research was to study the relationship between infant and young child feeding practices and ALRI.

Objective was to determine the proportions of feeding practices among cases and controls and to determine the odds ratio of these practices.

METHODS

The permission from ethics committee and institutional review board (IRB number 858/2018) and registration of clinical trials (CTRI/2019/07/020283) were completed before starting this hospital-based case control study.

Sample size for unmatched case control study studied was calculated using OpenEpi for an odds ratio of 2.0 for exposures present in 44% of the control children, with a power of 80% and an α error of 0.05.[6-8] According to Fleiss method of calculation, sample size was at least 97 cases and 97 controls.[9]

A case of ALRI was defined as an infant or young child between six months and two years of age admitted to the Pediatric ward for cough and/or difficult breathing with fast breathing of ≥50 breaths/minute in child aged 6-11 months, ≥40 breaths/minute in child aged 12-24 months and general danger signs.[10] A control was defined as an infant or young child between six months and two years of age coming for routine immunization to the Pediatrics immunization clinic. Children with previous episode of wheezing, chronic cardiopulmonary disease, genetic disease, syndromic child or inborn error of metabolism, primary immune deficiencies and gastroesophageal reflux disease were excluded from the study.

Chest X-ray, complete blood count, C-reactive protein and blood culture were done and cases were treated with antibiotics as per hospital protocol. Adequate oxygenation, hydration and respiratory physiotherapy were given. Bronchodilators or hypertonic saline nebulization were used when indicated. Improvement in respiratory distress and oxygen requirement were assessed daily. Antibiotics were upgraded as per hospital protocol and ventilatory support provided when necessary.

Informed written consent was taken from the mother of all the infants and young children included in the study. Sociodemographic and environmental characteristics like gender, updated modified Kuppuswamy socioeconomic status, immunization status, birth weight, passive smoking exposure, household smoke exposure, contact with tuberculosis and weight for length, parenting factors namely poor parent child interactions, misreading signals of hunger, inappropriate technique of feeding for age, handwashing before handling the infant and whether awareness about infant and young child feeding (IYCF) was given after birth, feeding factors in particular breastfeeding initiated in first hour, feeding up to six months, adequacy of feeding, initiation of complimentary feeding (months), frequency of complimentary feeding, amount of complimentary feeding, consistency of complimentary feeding, breastfeeding continued till (months) were entered to the data collecting proforma by interview method in the local language from the mothers of infant and young children belonging to both case and control groups by the principal investigator from May 2019 to April 2020.[11]

Contact of a person with any form of active tuberculosis within last 2 years was considered as contact of tuberculosis.[12] Weight for length was plotted using World Health Organization (WHO) growth charts for 0-5 years.[13] Lack of warmth, sensitivity, and responsiveness in caring for the infant was taken as poor parent child interactions, failure to recognize facial expressions like puckering, smacking, licking lips, putting hands to mouth as hunger cues in infant by mother was considered as misreading signals of hunger.[14,15] Infants less than a year need to be fed by caretaker, older infants are encouraged to complete the meal in the company of their parent, but without coerciveness, when done otherwise were considered as inappropriate technique of feeding for age.[16]

Exclusive breastfeeding was defined as no other food or drink, not even water for first six months except medicines. Adequacy of feeding till 6 months, frequency, amount and consistency of complimentary feeding were considered adequate when they were as per IYCF guidelines for age.[17]

The data collected were entered in "Microsoft excel" 2007, version 12.0 (Redmond, WA: Microsoft Corp.) Data was analyzed using IBM statistical package for the social sciences (SPSS) statistics for Windows, Vversion 20.0 (Armonk, NY, USA: IBM Corp.). Age, birth weight, initiation of complimentary feeding (months) and breastfeeding continued till (months) were converted to categorical variables. Frequencies of categorical variables among cases and controls were studied and their associations were examined on cross tabs using Chi-square test or Fischer's exact t-test as appropriate. P value <0.05 was considered significant and crude odds ratio was calculated for 2×2 tables with 95% confidence interval (CI). Multivariate analysis was done using logistic binary regression for risk factors with a p value of ≤0.05 in the univariate analysis. Feeding practices were interpreted as significant at p value <0.05 with 95% CI and adjusted odds ratio was calculated.

RESULTS

About 40% of cases and controls were less than one year of age. 51% cases and 59% controls were female. 57% of children with ALRI were partially immunized and 35%

fully immunized compared to 9% partial immunization and 75% full immunization among controls. Frequency of pneumococcal vaccination in controls were four times higher than cases (Table 1). 70% cases and 30% controls belonged to the lower socioeconomic class according to updated modified Kuppuswamy socioeconomic status. Passive smoking exposure among cases was three times higher than controls. Around 40% of both cases and controls had household smoke exposure and less than 10% of both cases and controls had contact with tuberculosis (Table 1). 7% and 26% of cases had severe acute malnutrition and moderate acute malnutrition respectively compared to zero percent and 5% among controls.

54% of parents of children with ALRI and 38% of controls misread signals of hunger. 21% of cases and 4% of controls had poor parent-child interactions. Inappropriate feeding techniques among cases were twice as compared to controls (Table 2). Handwashing before handling the infant was practiced by 36% cases and 62% controls. Awareness about IYCF was given after birth to parents of 82% of controls and 58% of cases.

68% cases and 80% controls were breastfed within first hour. 65% cases and 74% controls were given exclusive breastfeeding till six months. 85% of controls and 69% of cases were adequately fed in these six months. Complimentary feeding was initiated after completing six months in 72 % cases and 89% controls. 16% cases and 10% controls initiated early and 14% cases and 1 % controls initiated complimentary feeding late. Frequency, amount and consistency of complimentary feeding was inadequate in majority of cases and controls (Table 3). 78% of controls and 59% of cases continued breastfeeding to 24 months.

Immunization, birth weight, updated modified Kuppuswamy socioeconomic status, passive smoking exposure, weight for length (Table 1), misreading signals of hunger, poor parent-child interactions, use of inappropriate feeding technique, handwashing and awareness about complimentary feeding (Table 2), adequate feeding as per WHO guidelines in first 6 months, initiation of complimentary feeding (months), complimentary feeding amount, consistency and frequency and continuation of breastfeeding to 24 months (Table 3) had statistically significant association with ALRI in univariate analysis. Age, gender, household smoke, contact with tuberculosis, breastfeeding within first hour and feeding pattern followed up to six months were not significant.

Mixed feeding till 6 months, early initiation of complimentary feeding, late initiation of complimentary feeding and inadequate amount of complimentary feeding were significant in multivariate analysis. Lower socioeconomic status and passive smoking exposure were also significant (Table 4).

Table 1: Sociodemographic and environmental characteristics among cases and controls.

Parameters	Case	Control	P value	Crude odds ratio	CI	
					Lower	Upper
Age (months)			0.772	1.134	0.643	2.000
Less than 12	41	38				
More than 12	59	62				
Gender			0.320	0.723	0.414	1.265
Male	49	41				
Female	51	59				
Immunization			<0.001			
No	4	0				
Partial	57	9				
Full	35	75				
Full + pneumococcal	4	16				
Birth weight (kg)			0.049			
<1	2	3				
1-1.5	3	5				
1.5-2.5	47	28				
>2.5	48	64				
Updated modified Kuppuswamy socioeconomic status			<0.001			
Lower	70	28				
Upper lower	12	53				
Lower middle	8	8				
Upper middle	6	11				
Upper	4	0				
Passive smoking exposure			<0.001	4.168	1.967	8.830
Absent	66	89				

Continued.

Parameters	Case	Control	P value	Crude odds ratio	CI	
					Lower	Upper
Present	34	11				
Contact with tuberculosis			0.767	1.430	0.438	4.667
Absent	93	95				
Present	7	5				
Household smoke exposure			0.190	0.653	0.367	1.160
Absent	57	67				
Present	43	33				
Weight for length			<0.001			
<-3 SD/severe acute malnutrition	7	0				
<-2 SD/moderate acute malnutrition	26	5				
-2 SD to +2 SD/no acute malnutrition	61	81				
>+ 2 SD/overweight	6	14				

SD: Standard deviation, CI: confidence interval, kg: kilogram

Table 2: Parenting factors among cases and controls.

Parameters	Case	Control	P value	Odds ratio	CI	
					Upper	Lower
Misreading signals of satiety or hunger			0.03	1.915	1.090	3.365
No	46	62				
Yes	54	38				
Poor child parent interaction			<0.001	6.380	2.103	19.357
No	79	96				
Yes	21	4				
Inappropriate technique of feeding for age			<0.001	2.698	1.474	4.937
No	54	76				
Yes	46	24				
Hand wash			<0.001	0.345	0.194	0.612
No	64	38				
Yes	36	62				
Awareness about complimentary feeding			<0.001	0.307	0.161	0.586
No	42	18				
Yes	58	82				

CI: confidence interval

Table 3: Feeding patterns among cases and controls.

Parameters	Case	Control	P value	Odds ratio	CI	
					Upper	Lower
Breast feeding initiated in first hour			0.076	0.531	0.279	10.013
No	32	20				
Yes	68	80				
Feeding up to 6 months			0.219	0.653	0.356	10.197
Exclusive breastfeeding	65	74				
Mixed feeding	35	26				
Adequacy of feeding till 6 months			<00.001	0.258	0.135	.491
Adequate	69	85				
Inadequate	31	15				
Initiation of complimentary feeding (months)			<0.001			
04 to 05	16	10				
06 to 08	70	89				
9 or more	14	1				
Frequency (6-24 months)			<0.001	0.271	0.147	0.501
Adequate	22	51				

Continued.

Parameters	Case	Control	P value	Odds ratio	CI	
					Upper	Lower
Inadequate	78	49				
Amount (6-24 months)			0.023	0.419	0.205	0.855
Adequate	14	28				
Inadequate	86	72				
Consistency (6-24 months)			0.008	0.219	0.070	0.680
Adequate	4	16				
Inadequate	96	84				
Breast feeding continued till(months)			0.015			
24	59	78				
06	21	12				
12	20	10				

CI: confidence interval

Table 4: Results of multivariate analysis.

Parameters	B	S.E.	P value	Adjusted OR	95% C.I.	
					Lower	Upper
Lower socioeconomic status	5.283	2.013	0.009	197.002	3.808	10190.506
Passive smoking exposure	5.353	1.463	0.000	211.236	12.019	3712.616
Mixed feeding till 6 months	3.532	1.410	0.012	34.191	2.158	541.801
Early initiation of complimentary feeding	3.414	1.561	0.029	30.389	1.426	647.603
Late initiation of complimentary feeding	3.357	1.612	0.037	28.696	1.217	676.566
Inadequate amount of complimentary feeding	2.668	1.034	0.010	14.406	1.898	109.371

OR: odds ratio, CI: confidence interval, B: beta coefficient, S.E.: standard error

DISCUSSION

Breastfeeding and its inadequacy are significant risk factors for severe pneumonia among under-five children.[18] 65% cases and 74% controls were exclusively breastfed till 6 months of age. Mixed feeding during this time was a significant risk factor in multivariate analysis (Table 4). Adequate feeding in first six months was significant in univariate analysis but was not in the final model. Initiating breastfeeding within first hour had no association with ALRI.

Around 13 million infants does not get adequate complementary feeding along with continued breastfeeding till two years of age.[19] Early complementary feeding was significantly associated with increased risk for respiratory infection.[20] Initiation of complimentary feeding was significant in univariate analysis, both early initiation before 5 months and late initiation after 9 months were significant in multivariate analysis. The amount, consistency and frequency of complimentary feeding were statistically significant. However, only inadequate amount for complimentary feeding was identified as an independent risk factor in multivariate analysis. Continuation of breastfeeding to 24 months was also significant in univariate model, but not retained in the multivariate analysis.

Vaccination is one of the most cost-effective strategies to prevent death from pneumonia.[21] In India, only half of children aged 12-23 months receive basic vaccinations.[22] Cases had significantly higher percentage of partially immunized and unimmunized children and four times lower percentage of pneumococcal vaccinated children. However, the relationship was not significant in multivariate models.

Birth weight less than 2.5 kg was found as an independent risk factor in previous studies.[18] Though birth weight was significant in univariate analysis, it was not significant in the final model. Lower socioeconomic status is an important risk factor for ALRI.[23] 70% children with ALRI belonged to lower socioeconomic class and the association was significant in both univariate and multivariate analysis.

Biomass fuels burnt in households and environmental tobacco smoke generate toxic products that affect local defenses of the respiratory tract.[24-26] Children with ALRI had significantly higher exposure to household smoke and environmental tobacco smoke. Of the two, only passive smoking exposure remained significant in multivariate analysis (Table 4). Children with pneumonia have moderate acute malnutrition and severe acute malnutrition as a co-morbidity.[27,28] Significant number of cases had weight for length less than two standard deviations in

univariate analysis, however it was not significant in the final model.

Mother-child relationship is the main determinant of childcare practices. Adverse geopolitical, cultural, social and psychological factors lead to mothers being emotionally distant, reducing physical contact and changing feeding practices. This results in malnutrition and infections in children.[29] Many parents misinterpret heritable and usual eating behaviors and resort to coercive feeding practices. These parent-centered non-responsive feeding practices are counterproductive.[16] However, no previous studies regarding the association of these parenting factors with ALRI were found. Significant proportions of children with ALRI had poor parent-child interactions, misinterpreted signals of hunger, and used inappropriate feeding techniques than controls. However, these factors were not significant in multivariate analysis.

Metanalysis data shows that handwashing before handling infants lowered risks of respiratory infection, with risk reductions ranging from 6% to 44%.[30] Handwashing was significant in univariate analysis but was not retained in final model. 58% cases and 82% controls were given awareness about complimentary feeding after birth. Giving early awareness about IYCF improves child's health and nutrition status, and promote responsive feeding practices and effective food parenting.[16,31] Most mothers come to medical facility at ninth month after 14 week's vaccination visits. During this lost time, some sort of feeding inadequacy develops making further successful establishment of complimentary feeding difficult. Feeding visits at 6 months, 9 months and 12 months should be encouraged so that the quantity, quality and diversity of complimentary feeding as well as responsive feeding can be ensured and continuation of breastfeeding can be ensured.

Limitations

Recall bias as well as cultural beliefs, comfort, interest and attitude of the mother to interview might have affected responses.

CONCLUSION

Breastfeeding and complimentary feeding are basic human rights of the mother and baby. A large percentage of mothers belonging to underprivileged sections of society, suffer from complex socioeconomic, cultural and psychosocial problems which adversely affect pregnancy, delivery and mother-child relationship after birth and feeding practices. Interventions to increase awareness of breastfeeding and complimentary feeding practices seldom reach these sections of the society.

The first 1000 days of life once lost cannot be regained. Nutritional interventions need to happen within this time so that growth and development of the child is not affected. Mother support groups which aims at providing emotional support to the mother as well as educating her of IYCF practices need to be strengthened. Harmful effects of smoking also need to be stressed. Routine 'feeding visits' at 6 months, 9 months and 12 months will help ensure optimum responsive complimentary feeding. Community projects to provide home based counselling and surveillance on IYCF are required to guarantee adherence.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Victora CG, Kirkwood BR, Ashworth A, Black RE, Rogers S, Sazawal S, et al. Potential interventions for the prevention of childhood pneumonia in developing countries: improving nutrition. Am J Clin Nutr. 1999;70(3):309-20.
2. Roth DE, Caulfield LE, Ezzati M, Black RE. Acute lower respiratory infections in childhood: opportunities for reducing the global burden through nutritional interventions. Bull World Health Organ. 2008;86(5):356-64.
3. Newburg DS, Walker WA. Protection of the Neonate by the Innate Immune System of Developing Gut and of Human Milk. Pediatr Res. 2007;61(1):2-8.
4. Kramer MS, Chalmers B, Hodnett ED, Sevkovskaya Z, Dzikovich I, Shapiro S, et al. Promotion of Breastfeeding Intervention Trial (PROBIT): A Randomized Trial in the Republic of Belarus. JAMA. 2001;285(4):413-20.
5. Troeger C, Blacker B, Khalil IA, Rao PC, Cao J, Zimsen SRM, et al. Estimates of the global, regional, and national morbidity, mortality, and aetiologies of lower respiratory infections in 195 countries, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. Lancet Infect Dis. 2018;18(11):1191-210.
6. Revised WHO Classification and Treatment of Pneumonia in Children at Health Facilities: Evidence Summaries. Geneva: World Health Organization. 2014. Available at: https://www.ncbi.nlm.nih.gov/books/NBK264164/. Accessed on 14 June 2021.
7. Sullivan KM, Soe MM. OpenEpi - Sample Size for Unmatched Case-Control Studies. Available at: https://www.openepi.com/SampleSize/SSCC.htm. Accessed on 12 October 2021.
8. César JA, Victora CG, Barros FC, Santos IS, Flores JA. Impact of breast feeding on admission for pneumonia during postneonatal period in Brazil: nested case-control study. BMJ. 1999;318(7194):1316-20.
9. Gupta U, Tiwari P, Singh S, Muang T, Magh H. Awareness regarding feeding practices among mothers attending an immunization center: An institutional study. Int J Stud Res. 2017;7:3-8.

10. Saleem SM. Modified Kuppuswamy socioeconomic scale updated for the year 2020. Indian J Forensic Community Med. 2020;7(1):1-3.
11. Training modules (1-4) for programme managers and medical officers; New Delhi, India: Central TB Division, MoHFW, Government of India. 2020. Available at: https://tbcindia.gov.in/WriteReadData/NTEPTrainingModules1to4.pdf. Accessed on 11 July 2021.
12. World Health Organization. WHO child growth standards: length/height-for-age, weight-for-age, weight-for-length, weight -for-height and body mass index-for-age: methods and development. 2006. Available at: https://apps.who.int/iris/handle/10665/43413. Accessed on 11 July 2021.
13. Dunst CJ, Kassow DZ. Caregiver sensitivity, contingent social responsiveness, and secure infant attachment. J Early Intensive Behav Interv. 2008;5(1):40-56.
14. McNally J, Hugh-Jones S, Caton S, Vereijken C, Weenen H, Hetherington M. Communicating hunger and satiation in the first 2 years of life: a systematic review. Matern Child Nutr. 2016;12(2):205-28.
15. Daniels LA. Feeding Practices and Parenting: A Pathway to Child Health and Family Happiness. Ann Nutr Metab. 2019;74(2):29-42.
16. Tiwari S, Bharadva K, Yadav B. Infant and Young Child Feeding Guidelines, 2016. Indian Pediatr. 2016;53(8):703-13.
17. Jackson S, Mathews KH, Pulanic D, Falconer R, Rudan I, Campbell H, et al. Risk factors for severe acute lower respiratory infections in children: a systematic review and meta-analysis. Croat Med J. 2013;54(2):110-21.
18. International Institute for Population Sciences (IIPS) and Macro International. 2007. National Family Health Survey (NFHS-3), 2005–06: India: Volume I. Mumbai: IIPS. Available at: http://rchiips.org/nfhs/NFHS-3%20Data/VOL-1/India_volume_Icorrected_17oct08.pdf. Accessed on 05 September 2021.
19. Kalanda BF, Verhoeff FH, Brabin BJ. Breast and complementary feeding practices in relation to morbidity and growth in Malawian infants. Eur J Clin Nutr. 2006;60(3):401-7.
20. Oliwa JN, Marais BJ. Vaccines to prevent pneumonia in children – a developing country perspective. Paediatr Respir Rev. 2017;22:23-30.
21. International Institute for Population Sciences (IIPS) and ICF. 2017. National Family Health Survey (NFHS-4), India, 2015-16: Gujarat. Mumbai: IIPS. Available at: http://rchiips.org/nfhs/NFHS-4Reports/Gujarat.pdf. Accessed on 27 September 2021.
22. Sonego M, Pellegrin MC, Becker G, Lazzerini M. Risk Factors for Mortality from Acute Lower Respiratory Infections (ALRI) in Children under Five Years of Age in Low and Middle-Income Countries: A Systematic Review and Meta-Analysis of Observational Studies. Plos One. 2015;10(1):e0116380.
23. Bruce N, Perez-Padilla R, Albalak R. Indoor air pollution in developing countries: a major environmental and public health challenge. Bull World Health Organ. 2000;78(9):1078-92.
24. Desai MA, Mehta S, Smith KR. Indoor smoke from solid fuels: Assessing the environmental burden of disease at national and local levels. Geneva, World Health Organization. 2004 (WHO Environmental Burden of Disease Series, No. 4). Available at: https://apps.who.int/iris/handle/10665/42885. Accessed on 27 September 2021.
25. Morrow PE. Toxicological data on NOx : An overview. J Toxicol Environ Health. 1984;13(2-3):205-27.
26. Chisti MJ, Salam MA, Ashraf H, Faruque ASG, Bardhan PK, Hossain MI, et al. Clinical Risk Factors of Death From Pneumonia in Children with Severe Acute Malnutrition in an Urban Critical Care Ward of Bangladesh. Plos One. 2013;8(9):e73728.
27. Savitha MR, Prashanth MR, Basavanagowda T. The severity of malnutrition among children with pneumonia and diarrhoea: moderate acute malnutrition- a neglected entity. Pediatr Rev Int J Pediatr Res. 2020;7(2):80-6.
28. Angood C, Kerac M, McGrath M, Shoham J. Psychosocial aspects of malnutrition management. Management of Acute Malnutrition in Infants (MAMI) Project. Available at: https://www.ennonline.net/attachments/978/mami-chapter-8-psychosocial-considerations.pdf. Accessed on 28 September 2021.
29. Rabie T, Curtis V. Handwashing and risk of respiratory infections: a quantitative systematic review. Trop Med Int Health. 2006;11(3):258-67.
30. Chand R, Kumar A, Singh N, Vishwakarma S. Knowledge, attitude and practices about complementary feeding among mothers of children aged 6 to 24 months in tertiary care centre of Kumaun region. Int J Contemp Pediatr. 2018;5:2142-7.

Cite this article as: Varghese B, Gosai MM, Patel AV, Patel A. Association of infant and young child feeding practices and acute lower respiratory infections. Int J Contemp Pediatr 2021;8:1866-72.