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Research Article

A study on association between breastfeeding and its protective role against diarrhoea in under five children in a rural block of West Bengal, India

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ABSTRACT

Background: Diarrhoea is not only one of the most common childhood illnesses, but also one of the leading causes of under nutrition and even childhood mortality globally. Breast milk is known to have protective role against childhood infections, thus preventing diarrhoea and its consequences.
Methods: This cross sectional study aims to assess the pattern of breastfeeding and also episodes of diarrhoea in previous three months before the day of interview, and also the association between breastfeeding and its protective role in diarrhoea in children of less than 5 years of age. Data was collected from 81children (their mothers being respondents) and was statistically analysed using IBM SPSS (Version 20.0).
Results: Only 55.6% children were exclusively breastfed up to six months or till date in children <6 months of age and 76.5% children received colostrum feeding. Thirty six children (44.4%) had at least one episode of diarrhoea in last three months. Of them 7 children had dysentery and 19 had associated vomiting. Statistical analysis shows significant association between Exclusive Breast Feeding (EBF) and colostrum feeding with its protective role in diarrhoea (P<0.01).
Conclusions: Incidence of diarrhoea in last three months was higher in nonexclusively breastfed babies (86.11%) when compared to exclusively breastfed babies (11.11%). EBF has protective role against childhood infections including diarrhoea and should be promoted for awareness generation among common people.

Keywords: Exclusive breastfeeding, Colostrum feeding, Diarrhoea, Under 5 children

INTRODUCTION

World Health Organization (WHO) has defined diarrhoea as "the passage of three or more loose or liquid stools per day, or more frequently than is normal for the individual".[1] Diarrhoea is one of the most common childhood infectious diseases. Diarrhoea is not only associated with loose and/or recurrent stool passage, it may also lead to malnutrition, underweight and even childhood mortality. Over the last decade, though under five mortality has decreased significantly, still the burden of diarrhea in our country remains high.[2] Diarrhoea is one of the leading causes of under five child mortality in developing countries, including India. Almost 13% of under-5 mortality is attributed to diarrhoeal diseases, which approximates around 3,00,000 deaths every year in our country[2]. In 2013, about 5,70,000 under-five children died from diarrhea globally, whereas the child mortality from diarrhoea was 1,30,000 in India alone, which accounts approximately one fourth of under-five diarrhoeal death globally.[3,4] Millennium Developmental Goal (MDG) has specially focused on decreasing mortality from diarrhoea in under five children. Promotion of exclusive breast feeding (EBF), in light of the facts that breast milk contains protective immunoglobulin, also helps to build a child's immunity,

protects him for common childhood infections, and is essential for proper growth and development of the child, has been concentrated on. Ideally breast milk is adequate for nutritional requirements for children up to 6 completed months. Breast-fed children have better chance of survival than artificially-fed children. Breast milk protects children from malnutrition and various infections. The protective agents in breast milk like macrophage, lymphocyte, secretory IgA, anti-streptococcal factor, lactoferrin, lysozyme offer protective roles against common childhood diseases like diarrhoea, necrotizing enterocolitis, respiratory infections in first few months of life.[5] In this background, our study attempted to assess the pattern of diarrhoeal episodes and to find out any association between breast feeding and its protective role in diarrhoea in under five children of a rural block of West Bengal, India.

METHODS

This study was an observational, descriptive study, cross sectional in design. The study was conducted in Amdanga block under Barasat sub division of North 24 Parganas district. This area is served by Amdanga Block Primary Health Centre (BPHC), which is the Rural Health Training Centre (RHTC) of department of Community Medicine, R. G. Kar Medical College, Kolkata. Arkhali village, which was under Amdanga block, was selected randomly. The study population was all the under five children (less than completed sixty months) of Arkhali village. Total enumeration of the population was done. Children meeting exclusion criteria (mentioned later) was excluded from the study. The study was conducted in Jan-Feb 2015, over a period of two months. Any incidence of diarrhoeal episode in last three months before the date of interview was considered for children of more than 3 months of age, while in children less than 3 months of age, any diarrhoeal incidence since birth was considered. Recall period of 3 months was considered, because a longer period could lead to recall bias. Severely ill babies, babies whose mothers would not give consent for interview, and babies (and their families) who were not present in their respective houses after second visit comprise the exclusion criteria. The total number of sample was 81. The respondents were the mothers of the under five children. Pre designed, pre tested schedule and medical records (prescriptions from health centres and/or private practitioners) were used as study tools. The participants were met by house to house visits and informed consent was sought for before interviewing them. The interview included information regarding socio demographic profile, exclusive breastfeeding (EBF) and colostrum feeding practices, pattern of diarrhea in the children. EBF was defined as giving nothing but breast milk, not even sips of water, unless medically indicated, for the first six months of life. Giving pre-lacteal feed or any other form of food before completed six months invalidates the criteria for EBF. After data collection from individual respondents (mothers of the children), they were made aware of the importance of breast feeding, its short term and long term benefits, and were encouraged to practice it.

RESULTS

The age of the under 5 children is not normally distributed, the median age being 22 months. Table 1 shows about 55.6% of the children were female and 82.7% were Hindu by religion. About half of the mothers (50.7%) of these children completed primary or middle school (50.7% combined). Majority of the mothers (67.9%) belonged to 20-30 years of age during their childbirth, which is ideal for better outcome of pregnancy in terms of both child and mother wellbeing. Figure 1 shows exclusive breast feeding up to 6 months was done in 55.6% children. Figure 2 shows colostrum feeding was done in 76.5% children. As in Table 2, 36 children i.e. about 44.4% of all under five children in the said village had at least one episode of diarrhoea in last three months. Most of the children (75%) had only one episode in last three months while only 5.6% children had as many as three episodes or more in last three months. Of these 36 children who had at least one episode of diarrhoea in last three months, 7 children (19.4%) had dysentery and 19 children (52.8%) had associated vomiting.

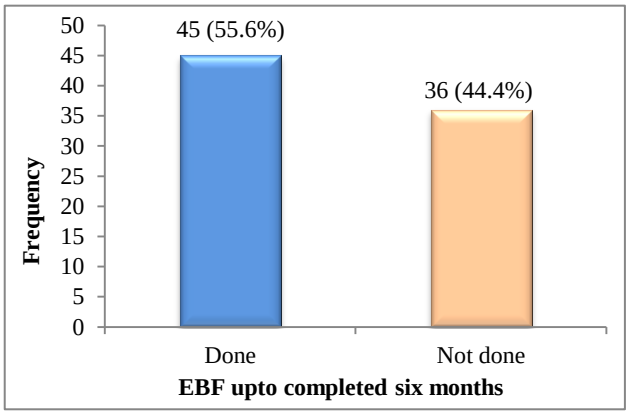

Figure 1: Distribution of under-5 children on the basis of EBF practice up to age of completed six months or at the time of interview if age is <6 months.

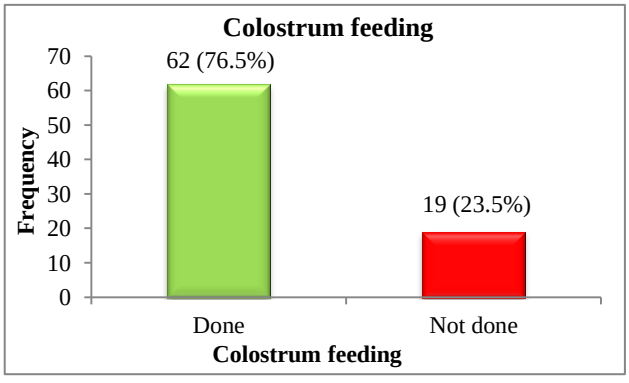

Figure 2: Distribution of under-5 children on the basis of colostrum feeding practice.

Table 1: Distribution of study subjects according to socio demographic profile (N=81).

	Frequency	Percentage (%)
Age* (In completed months)		
0-6	7	8.6
6-12	14	17.3
12-59	60	74.1
Gender		
Male	36	44.4
Female	45	55.6
Religion		
Hindu	67	82.7
Muslim	14	17.3
Educational level		
mothers		
Illiterate	5	6.2
Primary	19	23.5
Middle school	22	27.2
Secondary	16	19.7
Higher secondary	13	16.0
College and above	6	7.4
Maternal age at childbirth (in years)		
<18	6	7.4
18-20	16	19.8
20-30	55	67.9
>30	4	4.9

*Age is not normally distributed. The median age is 22 months.

Table 3 depicts association between exclusive breastfeeding, its duration and also colostrum feeding practice with its protective role against diarrhoea. Chi square tests show definite association was found between EBF practice for six month and its protective role against diarrhoea (P <0.001) and also between colostrum feeding practice and protection against diarrhoea (P<0.001). But Mann-Whitney U test didn't show any beneficial effect of duration of breast feeding on occurrence of diarrhoea (P=0.179).

Table 2: Distribution of under five children according to diarrheal episodes.

	Frequency	Percentage (%)
Diarrhoea in last 3 months (N=81)		
Yes	36	44.4
No	45	55.6
No of episodes in last 3 months (N=36)		
1	27	75.0
2	7	19.4
3	2	5.6
Time since last episode (N=81)		
<7 days	7	8.6
1week – 1 month	14	17.3
1-3 months	15	18.5
3-12 months	19	23.5
>1 year	19	23.5
Never	7	8.6
Dysentery (N=36)		
Yes	7	19.4
No	29	80.6
Vomiting (N= 36)		
Yes	19	52.8
No	17	47.2

Table 3: Relation of diarrhoeal incidence with breast feeding practice (N=81).

	Episode of diarrhoea in last 3 months		Test result with significance
	Yes	**No**	
EBF done Yes No	 5 (11.11%) 31 (86.11%)	 40 (88.89%) 5 (13.89%)	 Chi square value 45.563 P< 0.001
Months of breast feeding	Mean rank= 37.08 Sum of ranks= 1335.00	Mean rank= 44.13 Sum of ranks= 1986.00	Mann-Whitney U value 669.000 P= 0.179
Colostrum feeding done Yes No	 18 18	 44 1	Chi square value 25.428 P < 0.001

DISCUSSION

A community based study on breast feeding pattern and duration, and colostrum feeding in under five children of a village in a rural block of West Bengal. Previous incidence of diarrhoeal episodes was inquired about and statistical association between breast feeding pattern and protection against diarrhoea was sought for.

Several factors in breast milk have been proved to be protective against diarrhoea. Oligosaccharides, the third largest solid component of human milk, have been suggested to have homology to cell surface carbohydrates

and it can block the attachment of pathogens to the infant's mucosa, preventing any gastrointestinal infections. [6] Breast milk also confers immunity against gastrointestinal infections due to presence of antibodies (secretory IgA) produced by mothers.[7,8] Lactoferrin, one of the main proteins in human milk can also destroy pathogens and reduce inflammatory responses. Also, lactoferrin increases the activity of the immune system because it is a growth factor for lymphocytes, and thus protects against infections.[9]

In our study, 55.6% children were given EBF up to completed six months and 76.5% children received colostrum. In India, EBF is only 46.3% according to NFHS 3 or about 46.4 according to DLHS-3.[10] A study by Chakraborty SN et al., conducted in a slum in eastern industrial city in India, revealed 27.6% children received EBF till completed 6 months and 58.3% children received colostrum.[11] So, our study give a higher prevalence of exclusive breast feeding and colostrum feeding. Another study by I. I. Meshram et al reveals about 85% children received colostrum and only 46% of children received EBF at the age of 5 months.[12] In a study by Abdulbari Bener et al, only 59.3% children received EBF.[13]

Even after massive promotion of exclusive breast feeding and its benefits for the children, the level of breast feeding practice is not satisfactory in our country. As a result, different childhood illnesses, especially infections including diarrhoea have become the leading cause of childhood morbidity and mortality in our country. Different studies have shown association between EBF practice and diarrhoeal episodes. The study by Bener et al. shows the risk for presenting diarrhea was higher and statistically significant in children who were formula fed (48.7%) when compared to those who were exclusively breast fed, as it was for partially breastfed children (37.3%) ($p<0.001$).[13] Another study by Mihrshahi et al., conducted in Bangladesh, shows significant lower 7 days prevalence of diarrhea among exclusively breastfed children compared to those not exclusively breastfed (P value of 0.03).

CONCLUSION

The study successfully concludes that there is definite association between EBF practice and diarrhoea, as well as colostrum feeding and diarrhoea which is supported by the existing knowledge of protective role of colostrum and EBF from common childhood infectious diseases, diarrhoea being one of them. Though this study was conducted in the selected under five populations without proper sample size estimation questioning the external validity of the study, it gives us a scope for further exploration in to the said topic. Another limitation of this study is not considering other factors that may give rise to diarrhoeal episodes. For example other feeding practices, hygiene measures regarding child feeding, immunization status, concurrent morbidities etc. have not been taken into account for the study. Yet, the short and long term benefits of breastfeeding, exclusively for first six months followed by with complementary feeding, up to at least 2 years of age, are undeniable and should be enthusiastically promoted in all health care settings , as well as in the community.

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