# Feeding Practices among the Infants Presenting with Acute Diarrhoea

R MAHMOOD   A KHURSHID   S M J IQBAL   *M M N KHAN*
*Department of Paediatrics, Allama Iqbal Medical College/ Jinnah Hospital, Lahore*
*Correspondence to Dr. Rashid Mahmood, Assistant Professor*

**Introduction:** To study various feeding practices in children who present with acute watery diarrhea. The objective of the study was not only to study the feeding patterns but also draw an association between different feeding patterns and acute diarrheal episodes. **Setting:** Outdoor and indoor unit of Department of Paediatrics Jinnah Hospital affiliated with Allama Iqbal Medical College Lahore. **Subject:** Two hundred and fifty patients with acute watery diarrhea of less then 14 days between the ages of 1 month to 1 year were included in the study. **Methods:** It was a case control cross sectional study. The data related to 250 patients was collected. The required information was obtained from mother/ attendant of the infant in the questionnaire. All the questionnaire were filled by the doctors. **Results:** The majority of the infants with acute diarrhea were between 4 months to 1 year 195 (78%). Forty two (17%) were exclusively breastfed while 78 (31%) exclusively bottle-fed. Fifty five (22%) had both breast feeding as well as bottle feeding. A large number of mothers 112 (44.8%) gave the reason of insufficient milk for the baby. **Conclusion:** Majority of the infants with acute diarrhea episodes were between 8 and 12 months when either breast milk is being replaced by bottle milk or improper weaning practices are being used. A large number of infants with acute diarrhea were either mixed fed or bottle fed. Because of increased mixed and bottle feeding there is high incidence of diarrhea in our community.
**Key words:** Feeding patterns, Breast feeding, Mixed feeding, Bottle feeding, Acute watery diarrhea.

The biological properties of human milk as a nourishing and protective agent are astonishing[1]. The importance of breast milk in an infant's nutrition is now well extablished[2]. The problems of various false beliefs in our society interfere with the feeding of infants. The practice of exclusive feeding is now very limited and various types of pre-lacteal feeds are started right from the first day like bottle feeding, arq, honey etc. Sometimes milk is checked in the laboratory with the belief that there is something wrong with the milk. The presence of few pus cells (leukocytes) is regarded abnormal and breast feeding is discontinued[3.] Some mothers do not like to breast feed the newborn with the belief that their milk is bad as the insects are killed when dropped in expressed milk. These above "breast milk deprivation practices" predispose the infants to various types of morbidity and ultimately to mortality[5].

In developing countries like Pakistan in which an organized setup for integrated health care is lacking including the general awareness of the public about the mortality and morbidity of acute diarrhea and importance of breast feeding, it is worth while to study the feeding practices among infants presenting with acute diarrheal episodes.

## Materials and methods:

The study was conducted in the department of Paedaitrics Jinnah Hospital Lahore which serves as a referral centre for patients from Lahore as well as areas around. Catchments areas of Jinnah Hospital lack proper sanitary services and most of the population belongs to poor socioeconomic class. This is the reason for high prevalence of diarrheal diseases in this area.

This was a case control cross sectional study. A total of 250 patients from 1 month to 1 year of age having duration of diarrhea 1 to 14 days were included in the study. The required information was obtained from mother/ attendant of the patient in the questionnaire. Children having bloody diarrhea and children having 2nd and 3rd degree malnutrition with diarrhea were excluded from the study.

Infants who were still on breast feeding and were not offered any supplemental were considered exclusively breast fed (EBF), while those who never received breast feed or breast feeding was completely stopped and were fully fed on top feed were considered bottle fed (BF). The intermediate group getting breast milk plus top feed was considered mix fed (MF) infants. Early weaning (EW) was considered if started before 6 months of age and late weaning (LW) was considered if started after six months of age.

## Results:

The majority of the infants were between 4 months and 1 year. The numbers of infants from 1 to 4 months were 55 (22%); while from 4 months to 1 year were 195 (78%) (table1). Duration of symptoms varied from 1 to 14 days. In 112 infants (44.8%) it was less than 3 days, while it was 3-7 days in 90 (36%), and 7-14 days in 48 (19.2%) of infants (table 2). One hundred and two (40.8%) of infants had severe dehydration while 148 (59.2%) had some dehydration. Other symptoms found were vomiting alone 55 (22%), fever 42 (16.8%), both fever and vomiting in 110 (44%). Eleven (4%) infants had history of fits and 15 (6%) presented with irritability (table3)

In this study analysis of the feeding patterns showed that 42 (17%) were exclusively breast fed while 78 (31.2%) exclusively bottle fed. Fifty five (22%) had both breast feeding as well as bottle feeding. Twelve (4.8%) of infants who were breast fed were started early weaning, while 22 (8.8%) had late weaning. Fourteen (5.6%) who

were bottle fed had early weaning while 18 (7.2%) had late weaning. Four (1.6%) with mixed feeding had early weaning while 5 (2%) had late weaning (Table4).

Different forms of rehydration therapy were used in this study. A combination of milk and ORS was given to 118 (47.2%) of infants. Bottle feed or breast milk was given in 21 (8.4%). Home made ORS was used in 32 (12.8%) and WHO recommended ORS was used in 28 (11.2%) of infants. Plain water and milk was given to 38 (15.2%) while juices and rice water etc were given to 10 (4%) infants and only 3 (1.2%) of infants had history of getting intravenous fluids (table 5)

Table 1: Age wise distribution

| Age of mothers | n= | %age |
|----------------|-----|------|
| 1 to 4 | 55 | 22 |
| 8-12 | 195 | 78 |

Table 2: Duration of symptoms prior to admission

| Duration | n= | %age |
|----------|-----|------|
| < 3 days | 112 | 44 |
| 3-7 days | 90 | 36 |
| 7-14 days | 48 | 20 |

Table 3: Associate symptoms other than diarrhoea

| Symptoms | n= | %age |
|----------|-----|------|
| Fever + vomiting | 110 | 44 |
| Vomiting | 55 | 22 |
| Fever | 42 | 17 |
| Fits | 11 | 04 |
| Irritability | 15 | 06 |
| Others | 17 | 07 |

Table 4: Types of feeding

| Types of feeding | n= | %age |
|------------------|-----|------|
| Exclusive breast feeding | 42 | 17 |
| Exclusive bottle feeding | 78 | 30 |
| Breast feeding + Bottle feeding | 55 | 22 |
| Breast feeding + Early weaning | 12 | 05 |
| Breast Feeding + Late weaning | 22 | 09 |
| Bottle Feeding + Early weaning | 14 | 5.4 |
| Bottle Feeding + Late weaning | 18 | 08 |
| Breast Feeding + Bottle Feeding + Early weaning | 04 | 1.6 |
| Breast Feeding + Bottle Feeding + Late weaning | 05 | 02 |

Table 5: Form of rehydration therapy prior to presentation

| Types of fluids | n= | %age |
|-----------------|-----|------|
| Milk + ORS | 118 | 47 |
| Milk / Breast feeding | 21 | 08 |
| Home made ORS | 32 | 13 |
| Only ORS (WHO) | 28 | 12 |
| Milk + Plain water | 38 | 15 |
| Juices & others (Rice water etc) | 10 | 04 |
| I.V Fluids | 03 | 01 |

The results for the reasons of mixed feeding were analyzed. One seventy four (100%) mothers had different reasons for mixed feeding. A large number of mother 112 (64.3%) gave the reason of mixed feeding that their own milk was insufficient for the baby. Fifteen (8.6%) started mixed feeding due to the sickness of the baby while 20 (11.4%) had some maternal sickness herself. Six mothers were advised by some health worker to start mixed feeding while only 4 (2.2%) mothers were working ladies. Mothers of 7 (4%) infants stopped feeding because of sore nipples or mastitis. Four mothers (2.2%) gave no reason while 6 (3.4%) became pregnant again (table 6). Different reasons for bottle feeding were identified. Those mothers who bottle fed their babies; fifty five (50%) had the complaint of insufficient milk. Sixteen (14%) started bottle feed after some sickness of baby while 10 (9%) mothers themselves became sick and stopped breast feeding. Seventeen (15%) mothers thought their milk was stale and 12 (10%) mothers had nipple or breast problems (table 7)

Table 6: Reasons for mixed feeding as narrated by mothers

| | n= | %age |
|--|-----|------|
| Insufficient milk | 112 | 64.3 |
| Baby sickness | 15 | 8.6 |
| Maternal sickness | 20 | 11.4 |
| Advised by health worker | 06 | 3.4 |
| Working lady | 04 | 2.2 |
| Sore nipples/Mastitis | 07 | 04 |
| For no reason | 04 | 2.2 |
| Next pregnancy | 06 | 3.4 |
| Total | 174 | 100 |

Table 7: Reasons for bottle feeding as narrated by mothers

| Reasons | n= | %age |
|---------|-----|------|
| Insufficient milk | 55 | 50 |
| Baby's sickness | 16 | 14 |
| Mother's sickness | 10 | 09 |
| Stale milk | 17 | 15 |
| Nipple & breast problem | 12 | 10 |
| Total | 110 | 100 |

## Discussion:

Acute diarrheal diseases are a leading cause of childhood morbidity, mortality and malnutrition in developing countries[6]. An understanding of the determinants of morbidity and mortality is of critical importance in the developing countries. Mortality and morbidity patterns with breast feeding, mixed feeding and bottle feeding varies widely both between the countries and within the country. Worldwide diarrhea causes one billion episodes of illness and 3-5 million deaths annually[8]. In Pakistan incidence of acute diarrhea is 3-4 episodes per year per child (maximum in 1st year). One third of early childhood mortality is diarrhea related and mortality rate due to acute diarrhea in Pakistan is 19/1000 children[9]. The focused breast feeding can increase exclusive breast feeding and reduce the prevalence of diarrhea[10]. In our study 17% of infants were exclusively breast fed while 30% were exclusively bottle fed. In another study the incidence of exclusive breast feeding was 20%[11], while the incidence of bottle or mixed feeding has been reported[12] as high as 80%. In another study from Lahore breast feeding was continued in 54.3% of infants until 12 months of age[13],

while in the present study 56% were breast feeding either alone or supplementation with bottle feeding which are almost similar figures because both studies had similar social setup. Breast feeding positively effects the growth of the infants by averting infections and possibly by improving nutrient intake during infections. In our study 31.2% of children were exclusively bottle fed which is quite high number. The reason of diarrhea in these patients could be absence of protective breast milk factors as well as use of unsterilized feeding bottles and use of unboiled water that was added to the formula milk or cow milk. Ahiadeke found that mixed fed infants aged between zero and eleven months tend to have a higher risk of diarrhea than fully breast fed infants, while the risk of diarrhea among weaned infants was twice that of mixed fed infants[14]. In this study also it was found that infants who were mixed fed had significantly higher frequency of diarrhea than exclusively breast fed infants, and also the frequency of diarrhea in weaned children was even higher 31% than mixed fed infants 25.6%. The reason could be that in mixed fed infants breast milk still holds some protective effect, but in weaned infants, use of improper food and unsterilized utensils might have caused increased frequency of diarrhea.

Golding et al showed that in developing as well as developed world, there is consistent evidence of a protective effect of exclusive breast feeding in 1st 4-6 months of life[163]. The odds ratio was generally in excess of 3.0 for non-breast milk feeds. When the family's die is low in quality, breast milk is essentially important source of energy, proteins and accompanying micronutrients in young children[164]. In the study of Meremikwu[17] et al the proportion of children with persistent diarrhea or under weight was significantly lower among currently breastfed children than the age matched non-breast fed counter parts (p 0.05). In our study also breast feeding had protective effects in both exclusive and supplemental form as the diarrhea episodes were less in breast fed children. Moreover the declining pattern of protection of breast feeding as the frequency of diarrhea was more in mixed fed infants and even more in bottle fed infants, was seen in this study.

## Conclusion:

Acute diarrheal episodes are more common in infants between 8-12 months of age, when either breast milk is being replaced by bottle milk or improper weaning practices are being used. Due to high frequency of mixed and bottle feeding there is high incidence of diarrhea in our community. Infants with late weaning had higher frequency of acute diarrheal episodes than those with early weaning perhaps due to the presence of under nutrition secondary to late weaning. We can reduce infant mortality by promoting exclusive breast feeding. Lactation management clinics should be launched in every hospital and regular training/ refresher courses should be organized for health care providers.

## References:

1. Faechem RG, Koblinsky MA. Interventions for the control of diarrheal diseases among young children. Promotion of breast feeding. Bull WHO 1994; 62:271-91.
2. Mustansar M. Practices interfering with successful lactation. PPA (Pb) Post 1995;2(2): 5.
3. Bashir A, Mustansar M. Training of TBAs to improve breastfeeding practices in Faisalabad, Pakistan. Lactation management Education Programme USAID office of nutrition 1993; DAN 517-A-009099-00:3-5.
4. Ashraf RN, Jalil F, Khan SR et al. Early child health in Lahore, Pakistan. Feeding patterns. Acta Paediatr Supple 1993;390:47-61.
5. Victoria CG, Smith PG, Vaughan JP et al. Evidence of protection by breast feeding against infant deaths from infectious diseases in Brazil. Lancet 1987;2:319-322.
6. Billo AG. Management of diarrhea in children 1994 (7).
7. WHO Bulletin. Reading on Diarrhea 1992 (4).
8. Pickening LK, Synder JD. Gastroenteritis. Nelson Text Book of Paediatrics 16th ed. 2000:176: 765-768.
9. Khan SR. Acute Diarrhea. Clinical Paediatrics 2000; 35.
10. Dories, Adetugbo. Breast feeding. Nelson Text Book of Paediatrics. 16th Ed. 2000; 41.1:150-154.
11. Bull International Centre for diarrhea research Bangladesh 1994: (8).
12. Mushtaq AK, Samina R. et al. Feeding pattern in infantile diarrhea. Pakistan Ped J, 1985; Vol 10: 26-27.
13. Kulsoom U, Saeed A. Breast feeding practices and belief aged 6-12 months. JPMA-J-Pak-Med-Assoc: Feb 1997. 47(2): 54-60.
14. Ahiadeke C. Breast feeding diarrhea and sanitation and components of infant child health. J Biosoc Sci 2000 Jan; 32 (1): 47-61.
15. Gelding J, Emmett PM et al. Gastroenetritis, diarrhea and breast feeding. Early Human Dev. 1997 Oct; 49 Supls 83-103.
16. Marquis GS, Hobichts JP. Breast milk or animal product foods improve linear growth of Peruvian toddlers consuming marginal diets. Am-J-Clin Nutr 1997 No.66 (5):1102-6.
17. Meremikwu MM, Asindi A. The influence of breast feeding on the occurrence of dysentery, persistent diarrhea and malnutrition among Nigerian children with diarrhea. West Afr-J-Med 1997 Jan-Mar; 16(1): 20-3