

FEEDING PRACTICES AND NUTRITIONAL STATUS IN CHILDREN OF ONE MONTH TO THREE YEARS OF AGE PRESENTING WITH ACUTE GASTROENTERITIS

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ABSTRACT

BACKGROUND: Acute Gastroenteritis (AGE) is the leading cause of death in third world countries. Feeding practices, water source and malnutrition are the well recognized risk factors for gastroenteritis.

OBJECTIVE: This study had been conducted to find out the feeding practices and nutritional status in children below three years of age among the community presenting with acute gastroenteritis.

DESIGN: Observational study.

METHODS: This study was carried out in the Department of Paediatrics, Pakistan Ordnance Factories (POF) Hospital Wah Cantt from January 2009 to August 2009. All the patients between the ages of one month to three years who were admitted in Paediatric ward of POF Hospital were included in the study. Patients were clerked on a pre-designed proforma.

RESULTS: In our study 63% affected children were males and 37% were females. 32% children were exclusively breast fed. 42% males were Failure to thrive and 40% females were failure to thrive. As a whole most affected group was seven to twelve months old as this was 34%.

CONCLUSION: AGE presents more in population less than two years of age, in whom breast feeding not given with no sex propensity. About 42% patients were failure to thrive (<5th centile weight for age).

KEY WORDS: Gastroenteritis, feeding practices, nutritional status, breast feeding.

INTRODUCTION:

Acute gastroenteritis is either decrease in the consistency of stools (loose or liquid) and/or increase in the frequency of evacuations (3 or more in 24 hours), with or without fever or vomiting¹. However change in stool consistency versus previous stool consistency is more indicative of diarrhea than stool number

particularly in the first months of life. Many of these are food borne illnesses. The term diarrheal disorder is more commonly used to denote infectious diarrhea in public health

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setting. Several non infectious causes of gastrointestinal illness with vomiting and diarrhea are well recognized. According to the World Health Organization (WHO) and UNICEF, worldwide about 2 billion cases of diarrheal disease occur every year and the mortality related to diarrhea is 1.9 million children younger than 5 years of age and it accounts for 18% of all the deaths of children below the age of 5 as it is equivalent to more than 5000 deaths in children every day as a result of diarrheal diseases². In majority of children with symptoms of presumed infective gastroenteritis, no causative organism can be isolated reflecting transient nature of illness. In those where pathogen is found, a virus is usually the cause³. Rotavirus is the most common culprit in sporadic cases. In one study it was found that although exclusive breast feeding appears to protect infant against severe rotavirus diarrhea, breast feeding per se conferred no overall protection during the first two years of life suggesting the breast feeding temporarily postponed rather than prevented the outcome⁴. It is estimated that due to poor nutrition 35% of deaths occur in children⁵. Appropriate feeding practices in children are basic for health, growth, survival, development and nutrition and also to the well-being of the mothers. It is evident that certain preventive interventions such as exclusive breastfeeding in the first six months help in diarrhea prevention, pneumonia and neonatal sepsis. Also complementary feeding is important in preventing diarrhea, pneumonia, measles and malaria⁶. There is also role of vitamin A in prevention of diarrhea as other interventions including breast feeding; complementary feeding and zinc supplementation can prevent 25% of total deaths in under-five years' age⁷. Breastfeeding alone is associated with decrease child mortality. Promotion of appropriate infant feeding practices such as early initiation of breastfeeding and exclusive breastfeeding for up to six months is an effective strategy for improving child survival. About 30% of the hospital admissions would have been avoided for each additional month of full breast feeding among infants who are younger than 1 year in an industrialized country⁸. In addition to have more illnesses formula fed infants cost the health care system money⁹. Research has

documented the protective effect of breast feeding against a variety of infections during infancy and early childhood specially, gastroenteritis¹⁰. Incidence and prevalence rates of diarrhea in infants younger than 6 months of age were less among those who were exclusively breast fed compared with those who received other liquids or artificial milks in addition to breast milk¹¹. There is protective effect of breast feeding against diarrhea¹². The use of lactose free formula milk in vast majority of children appears to be unjustified as normal diet can be resumed without restriction of lactose intake in most cases¹³. It is evident that poor infant and young child feeding practices are a significant contributor to poor nutrition in many countries and that improving these feeding practices can yield substantial benefits¹⁴.

The rationale of this study was to assess breast feeding pattern, types of different milk weaning, use of boiled water and also to assess the nutritional status and the feeding practices in children presenting with acute diarrhea in our setup so that the modifiable factors could be recognized and the burden of this preventable disease could be decreased.

MATERIALS AND METHODS:

This was a cross sectional observational study done at indoor department of paediatrics, POF hospital, Wah Cantt from January 2009 to august 2009. After approval from hospital ethical committee of POF hospital Wah Cantt patients were enrolled in the study. Parents consent was taken prior to inclusion of patients in study. Patients were in consecutive manner. All the children with diagnosis of acute gastroenteritis having abrupt onset of three or more loose stools per day, less than 14 days duration were included in the study. All those children who were more than three years of age, any metabolic disorder, and gut anomalies leading to diarrhea or chronic diarrhea were excluded from the study.

Patients were included after taking history and proper examination and data was entered on specified proforma. Sample size was calculated by who sample size calculator. The studied population was described using frequencies and percentages. Data was analyzed by SPSS 10.0.

RESULTS:

In our study total of 342 patients were included initially and out of these 342 patients 60 patients were excluded due to audit reasons. Of remaining 282 patients there were 177(63%) males and 105(37%) females. The age distribution is shown in figure I. Feeding status of study population is shown in figure II, that shows approximately one third of study population was being breast fed and further 20% were being given breast milk in combination with cow milk, formula milk and goat milk.

Nutritional status of children presenting with acute diarrhea was also accessed as patients were taken failure to thrive (FTT) i.e. by plotting weight for age and taken as <5th percentile as FTT. Out of total 282 patients 42% patients were FTT overall. Overall 14% patients were falling more than 50th centile as only 3% patients were more than 95th percentile (figure III). Male patients were prone to FTT as 42% of male patients were less than 5th percentile and 40% of female patients were less than 5th percentile (Table 1). The use of boiled water for drinking was in 44% patients while 13% patients use filter water for drinking. 43% patients were not using boiled water. Only 1% patients were using both filter and boiled water.

DISCUSSION:

As POF Wah Cantt has multi ethnic community with people living here from all over the Pakistan, so on the basis of our study we assume that this study represent the feeding practices in whole of the country. We have observed that there is a wide variability in feeding practices. 48% of the children with gastroenteritis were using either cow or formula milk or both. Gastroenteritis is most common among the children of ages seven to twelve months and thirteen to twenty four months. Moreover, it is observed that either discontinuation of breast feeding or addition of weaning diet is also associated with increased risk of diarrhea incidence and prevalence. This is consistent with other studies like one done in Peru by Kenneth H. Brown and Robert E. Black in 1989¹¹. One study done by Haricharan KR¹⁵ et al showed that AGE accounted for 10.12% of

total hospital admission in paediatric population. Male to female ratio was 1:0.85 while in our study the gender ratio was 1:0.7. In their study they noted the maximum cases (71.3%) occurred in less than two year of age group while in our study also majority of patients (92%) were less than two years of age. In their study exclusive breast feed babies were 14.66 % while in our study exclusive breast fed patients were 32%, which is almost double than their study. While formula fed patients were 22% and in our study only 6% patient were taking formula milk along with breast feeding. In Haricharan KR¹⁵ et al study out of total, 51.33% patients was FTT while in our study 42% patients were FTT. Another study done in India by Mishra M¹⁶ et al showed that 56.25% infants were exclusively breastfed while in our study 32% patients were exclusively breast fed. In their study about 40% patients were FTT in comparison to our study 42% were FTT, which is comparable to their study. In an other study by Menon P¹⁷ et al done in India analyzed that there will be poor nutrition outcomes in children who are not following age appropriate infant and young child feeding practices. One study conducted by Lauer JA et al¹⁸ showed that breast feeding is the universal consensus as it can 1.45 million children's lives each year. Another study done in Bangladesh by Arifeen S et al¹⁹ showed that as compared with exclusive breastfeeding given in the first few months of life with partial or no breastfeeding, there was an association of a 2.23-fold higher risk of infant deaths resulting from all causes and 3.94-fold higher risk of deaths attributable to diarrhea. In literature²⁰ it has been recommended that by change of hospital routine, breast-feeding can be promoted by giving support and information to mothers. The most likely reductions in the prevalence of non-breast-fed are about 30% and 10% in between three to six months and 6 months to one year of age respectively. Ant it is estimated that it can reduce diarrhea morbidity by 8-20% and diarrhea related mortality by 24-27% in the first 6 months of life. In one study²¹ it was shown that young infants who were not being breast-fed have a 25-time greater risk of dying of diarrhea than those who are exclusively breast-fed and it has been recommended that breast feeding should be supported and ensured immediately after delivery of the

infants and subsequently if they are admitted in the hospital. Also there should be promotion of mothers and infants rooming together, on demand breast-feeding along with no bottle feedings of water or infant formula. In addition mothers should be given appropriate advice by health professionals on how to breast-feed and counteract breast-feeding problems.

Regarding nutritional status, in our study, most of the children were below 50th centile with 42% children were failure to thrive (i.e. <5th centile on weight for age growth charts). But further studies are required focusing on other contributory risk factors like prematurity, recurrent infections other than gastroenteritis, social status, poverty, family size, overcrowding and immunodeficiency which are well known causes of infections and malnutrition. In this study we have also observed that only 44% of the children were being given boiled water but we could not differentiate that either it includes water for preparing formula milk or being used for drinking purposes.

Further studies are required to know the feeding practices as well as usage of oral rehydration therapy as we could not collect data regarding oral rehydration salt usage among the children presented with gastroenteritis.

Conclusion:

In our study it was conclude that AGE presents more in population less than two years of age and in whom breast feeding not given with no sex propensity. About 42% patients were failure to thrive (<5th centile weight for age). Promotion of breast feeding and infant feeding practices can lead to improvement in the nutritional status of children.

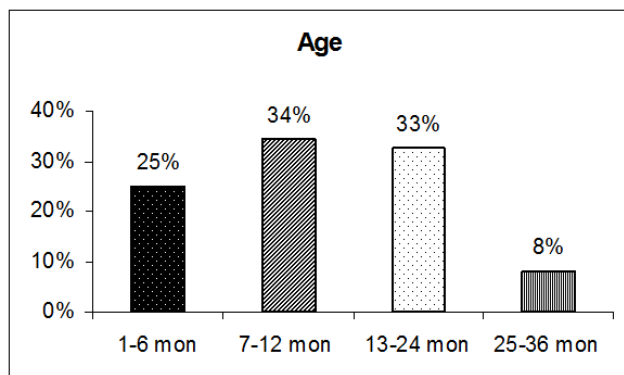


Figure I: Age distribution

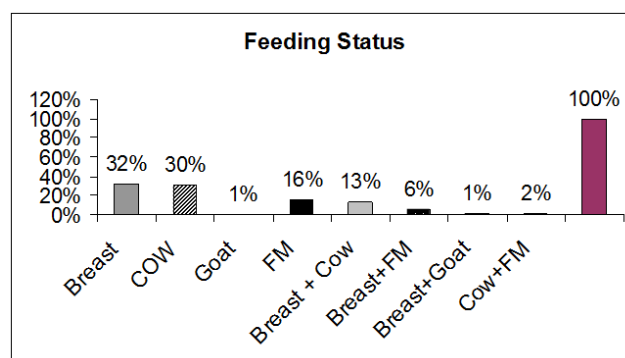


Figure II: Milk feeding types

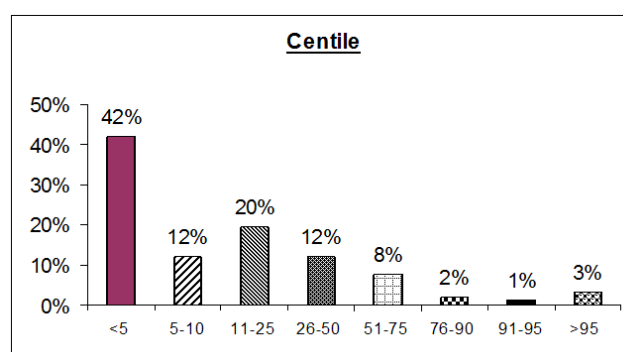


Figure III: Weight for age centile.

Table I: Centile distribution for both male and female patients

Centiles	Male	Females
< 5 th centile	42%	40%
5-10 centile	12%	12%
11- 25 centile	20%	19%
26-50 centile	12%	12%
51-75 centile	8%	7%
76-90 centile	2%	1%
91-95 centile	1%	1%
>95 th centile	3%	3%

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