

ORIGINAL ARTICLE

Infantile Diarrhoea: Breast and Bottle feeding compared with special reference to their clinical role

by

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Abstract

This study was conducted to evaluate a clinical presentation of diarrhoea in infants under 2 years of age, in relation to their types of feeding. It was found that the duration of diarrhoea in bottle-fed infants was significantly longer than in breast-fed ones. It was 7.2 ± 0.46 days in bottle-fed, compared to 5.5 ± 0.17 days in breast-fed infants.

The prevalence of acute Otitis media and Rhinopharyngitis in bottle-fed infants under 1 year of age was higher than in breast-fed infants. However, it was not so after 1 year of age.

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Introduction

The role of infant feeding, particularly breast feeding in infants' health is always interesting to be studied. Breast feeding as one of the human nature is closely related to nutritional aspects in growth and development, to economic and social development, but it is also closely related to the morbidity and mortality rates of infants: (Rohde, 1980; Muni and Mustadjab, 1980). Since breast milk has anti infective effect, either against bacteria or virus, it is assumed that the risk of infection such as gastroenteritis and upper respiratory tract infection in breastfed infants is lower than in bottlefed infants.

While diarrhoea is still the main child health problem, erosion of breast feeding

attitude by bottle feeding grows in the community of big cities. In Manado as the capital of the province of North Sulawesi, bottle feeding was practised in 15.6% of infants up to six months of age, and rose with the increase of infants' age. Only less than 40% of infants were still being breast-fed after 1 year of age (Munir et al., 1983). It is well documented that bottle feeding in developing countries with hygiene and sanitation far from being satisfactory, and particularly lack of clean-safe water supply, is harmful indeed and even known as baby killer.

It is also interesting to study the clinical feature of diarrhoea in bottlefed infants as compared with breastfed infants. This brief study shows some clinical features which implies clinical management.

Method and Results

All infants under 2 years of age with diarrhoea admitted to the pediatric ward of Gunung Wenang Hospital, were chosen for this study. Type of feeding, either breast feeding, bottle feeding or combined feeding (breast and bottle feeding), age of infants (in months), duration of diarrhea, associated diseases, were redorded. Cases with fever

were consulted to the E.N.T Department for ENT examination.

There were 375 infants, consisting of 221 breast-fed, 88 bottle-fed, and 66 combined-method-fed, evaluated in this study.

Duration of diarrhoea and associated diseases as related to the types of feeding, can be seen in Table 1.

TABLE 1 : Duration of diarrhoea and associated diseases as related to types of feeding

Subject	Breast-fed (A)	Bottle-fed (B)	Combined-fed (C)
Number of cases	221	88	66
Duration of diarrhoea :			
Range (days)	2 - 16	2 - 29	2 - 20
Mean \pm SE (days)	5.5 \pm 0.17*	7.2 \pm 0.46*	2.2 \pm 0.51*
Associated Diseases :			
Acute otitis media	8.6% ** (19)	15.9% ** (14)	16.7% ** (9)
Rhinopharyngitis	17.2% ** (38)	27.3% ** (24)	33.3% ** (21)
Pneumonia	4.5% (10)	3.4% (3)	4.5% (3)
Bronchitis	4.5% (10)	3.4% (3)	4.5% (4)
Pyelonephritis	2.3% (5)	1.1% (1)	—
Encephalitis	—	4.4% (4)	—

Figure : Shows a spectrum of duration of diarrhoea related to types of feeding.

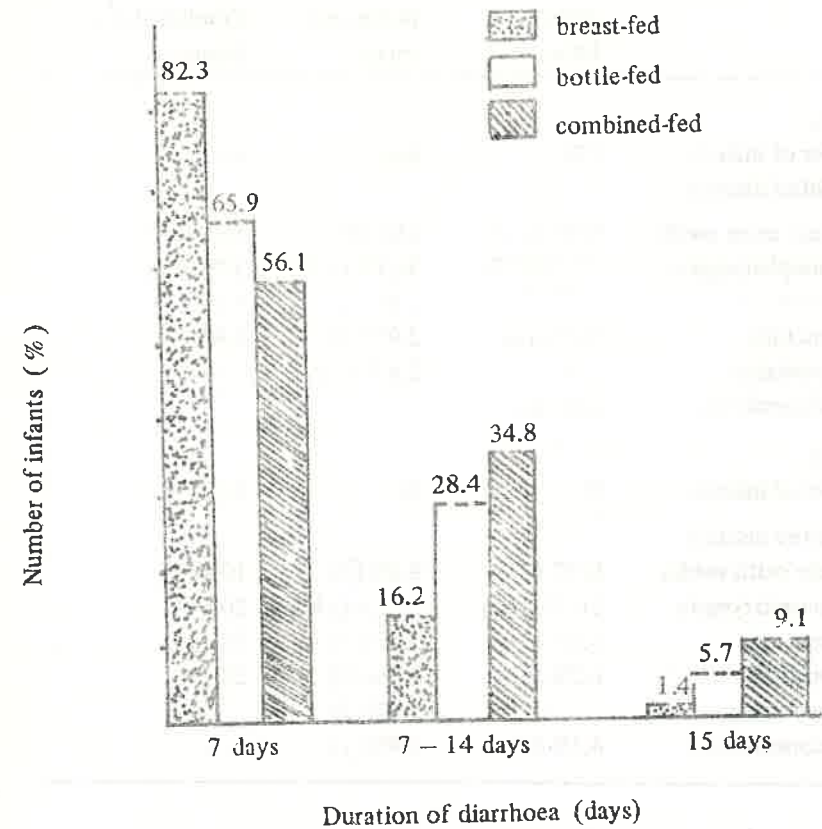


Figure 1 : Number of infants in relation to duration of diarrhoea and types of feedings.

The number of infants whose diarrhoea continued up to 7 days was as follows : 82.3% or 182 out of 221 breast-fed, 65.9% or 58 out of 88 bottle-fed, and 56.2% or 37 out of 66 combined-fed infants.

The number of infants whose diarrhoea continued for 8 to 14 days was 16.7% or 36 out of 221 breast-fed, 28.4% or 25 out

of 88 bottle-fed, and 34.8% or 23 out of 66 combined-fed infants.

The number of infants whose diarrhoea continued for more than 14 days was 1.3% or 3 out of 221 breast-fed, 5.7% or 5 out of 88 bottle-fed, and 9.1% or 6 out of 66 combined-fed infants.

TABLE 2 : *A Spectrum of associated diseases in relation to types of feeding and age groups.*

Age group	Breast-fed Infants	Bottle-fed Infants	Combined-fed Infants
0 - 12 months :			
Number of infants	124	36	46
Associated diseases :			
Acute otitis media	8.9% (11)	25% (9)	15.2% (7)
Rhinopharyngitis	17.7% (22)	36.1% (13)	37% (17)
Pneumonia	5.5% (7)	2.8% (1)	4.3% (2)
Bronchitis	3.2% (4)	2.9% (1)	6.4% (3)
Encephalitis	—	2.8% (1)	—
Pyelonephritis	0.8% (1)	—	—
12 - 24 months :			
Number of infants	97	52	20
Associated diseases :			
Acute otitis media	8.2% (8)	9.6% (5)	10% (2)
Rhinopharyngitis	16.5% (16)	21.1% (11)	20% (4)
Pneumonia	3.1% (3)	3.8% (2)	5% (1)
Bronchitis	6.2% (6)	3.8% (2)	5% (1)
Encephalitis	—	5.8% (3)	—
Pyelonephritis	4.1% (4)	1.9% (1)	—

Discussion

Although efforts have been made to reduce morbidity and mortality rates of diarrheal disease during the last decade in this country, it still remains to be a continuous child health problem, since this disease is still one of the main causes of hospital admission and death in infants and young children. This disease can indeed be regarded as one of the national disasters : It causes 350,000 death every year, and incurs a lot of funds for its treatment, particularly for the clinical cost of hospitalised cases.

The role of infant feeding in infant health is interesting to evaluate. In developing countries, bottle feeding directly or indirectly harms infant health. The risk of contracting diarrhoea and upper respiratory tract infection in bottle-fed infants is much higher than in breast-fed ones (Mata, 1978; Munir and Mustadjab, 1979 ; Munir et al., 1983). The particular resistance to intestinal infection of breast-fed infants living in unsatisfactory environments is accounted for by

factory environments is accounted for by less bacterial contamination, by bifidus factors of breast milk, and by the existing antibodies against bacterial and viral infection. In developed countries in which environmental sanitation and clean-safe water supply are favourable, the beneficial role of breast milk in infection is questionable. Many controversial findings have been reported widely and attractive to be studied (Cushing and Anderson, 1982; Ferguson et al., 1981; Cunningham, 1978; Watkins et al., 1979).

The possible role of bottle milk in the duration and in the severity of diarrhoea are necessary to be discussed. It is well known that acute infantile diarrhoea may damage intestinal mucosa, causing an increase of foreign protein of cow's milk absorption, and as such be potentially antigenic, resulting in cow's milk intolerance. This in turn accounts for the development of further intestinal mucosal damage and prolonged diarrhoea.

This study showed that the prevalence of prolonged diarrhoea in bottle-fed infants was much higher than in breast-fed infants (figure 1). It was also found that the duration of diarrhoea in bottle-fed infants was significantly longer than in breast-fed infants. The possible role of cow's milk protein intolerance in the development of longer duration of diarrhea and higher prevalence of prolonged diarrhoea in bottle-fed infants than in breast-fed infants, might be taken into account since low lactose milk had been started on the first day of admission, whether it was associated with sugar intolerance or not.

Mucosal changes in bottle-fed infants may precede clinical manifestation. As such

it is advisable to cease bottle feeding temporarily to avoid the development of prolonged diarrhoea or recurrent diarrhoea. Tripp et al. (1977) reported that recurrent diarrhoea, occurred in 3% of their cases when bottle feeding was reintroduced. Although, in general, low-allergic special feedings are not necessary in bottle-fed infants with diarrhea, it is advisable to cease bottle feeding temporarily and to substitute for it low allergic feedings such as low allergic milk (Prequestimil, Mead Johnson) or chicken meat porridge or milk. Since all of the available low allergic feedings are expensive, it is necessary to develop a number of alternatives of low cost low allergic feedings. It is important however to remind that infants who show intolerance to cow's milk may also be intolerance to soy bean protein (Whittington et al., 1977; Eastham et al., 1978).

The most common associated diseases in infantile diarrhoea in this study were acute otitis media, rhinopharyngitis, pneumonia, bronchitis, encephalitis and pyelonephritis. Only acute otitis media and rhinopharyngitis seemed to have a close association with bottle feeding, since the prevalence of these diseases in bottle-fed infants under one year of age was significantly higher than in breast-fed infants of the same age. In infants after one year of age, however the prevalence of these diseases was not different. The prevalence rates of lower respiratory tract infection such as pneumonia and bronchitis were not associated with the types of feeding. Taylor et al. (1982), also found that breast feeding did not associate with the risk of lower respiratory tract infection. The controversial findings concerning the role of breast feeding in the risk of contracting upper and lower respiratory

tract infection might be accounted for by a widely distributed health facilities during the last ten years. Sick infants are able to be ta-

ken to the health facilities earlier, so that the risk to develop lower respiratory tract infection decreases.

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