The Attitude of Breastfeeding*

by

RULINA SURADI, SUHARYONO, SUPARDI, HARIARTI and W.A.F.J. TUMBELAKA

(Department of Child Health, University of Indonesia Cipto Mangunkusumo Hospital Jakarta).

Abstract

A study of 211 mothers has been done at the Dr. Cipto Mangunkusumo General Hospital Jakarta and showed that:

More than half respectively 51.9% in the low income group and 54.3% in the middle income group started feeding their babies not before 12 hours after birth and in the high income group 50.9% were fed after 24 hours. The number of mothers from all income group who breastfed has increased if we compare it to the condition before breastfeeding campaign one year before.

The main reason to stop breastfeeding are in the middle and high income group due to willingness of the mother (the mother does not want to breast feed any more) because she has no work or due to the influence of advertisements.

While in the low income group it is to the thought that after a certain time solid foods is enough for the baby.

IUD is more popular amongst the low income mothers. This must be investigated more widely as to be used for breastfeeding campaign.

### TABLE 3: Frequency of diarrhea before and after rehydration

<table>
<thead>
<tr>
<th>Group</th>
<th>Mild Dehydration</th>
<th>Moderate Dehydration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency of diarrhea</td>
<td>Frequency of diarrhea</td>
</tr>
<tr>
<td></td>
<td>Before rehydration</td>
<td>After rehydration</td>
</tr>
<tr>
<td></td>
<td>(in hrs)</td>
<td>24</td>
</tr>
<tr>
<td>Coconut water</td>
<td>6</td>
<td>3 × 0.6</td>
</tr>
<tr>
<td>(2 - 3)</td>
<td>(1 - 2)</td>
<td></td>
</tr>
<tr>
<td>Oratroyte Group</td>
<td>3</td>
<td>3 × 1</td>
</tr>
<tr>
<td>(2 - 6)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**FIG. 1: The duration of diarrhea in both groups after oral rehydration**

### Introduction

At the end of this century the complicated condition of growing and raising urban society and the rapid improvement of technology reduced the number of mothers in the cities who gave breast feeding and raised the industry of food for babies (Suharyono, 1977; Marvin and Selly, 1973; Jelliffe and Jelliffe, 1977). Breast feeding is used as a policy to increase the quality of food in our government programme according to the Inpres no. 14, 1974, to repair people’s food menu (Malasan, 1977). In India (Chadbury et al., 1977) 70% of 500 mothers who visited The Well Baby clinic, Calcuta Hospital, gave their baby industrial milk since the age of 3 months.

Before breast feeding campaign in 1977 according to Suharyono (1977), 153 mothers of the low income group in Jakarta, only 66.4% gave their babies breast milk until 3 months, 15.7% until 6 months and 9.2% until a year and in the middle and high income group only 15% out of 65 mothers breast fed their babies until 3 months, 10% until 6 months and 1.3% until one year. In 1957 the reduction was not severe, 50% of mothers still breast fed their babies at the age of one year (Sugiono, 1957).

This could be due to distribution, advertisement and promotion of milk formula in developing countries which could be called unethical (Jelliffe, 1968).

Early sucking produce breast milk earlier and also make breast feeding last longer (White, 1978). Lactation until 2 years would protect mothers from becoming pregnant as effective as calendar system or coitus-interruptus (Muki Rejosprodjo, 1977). Thus, giving breast feeding until 2 years can be a simple family planning method. The mother will have a healthy baby even though she does not use the family planning method (Muki Rejosprodjo, 1977).

The purpose of using "let down reflex" and "prolactin reflex" is to get enough breast milk. So giving breast feeding early (2 - 4 hours after birth) will enhance the production of milk. (Dien Sanyoto Besar' 1977).

Beside that, mother’s willingness to give breast feeding is a very important factor although she works or is having other activities (Suharyono, 1978).

How good breast milk is, is well known. For example Oliver White have said "The breast are more skillful at compounding a feeding mixture than the hemisphere of the most learned professor’s brain”. (Muljono, 1977). It was also suggested to give breast feeding early, 2 - 4 hours after birth to fill in the immunity gap in the intestine to prevent Necrotizing Enterocolitis (Barlow et al., 1974), which have a high mortality rate (Thomas et al., 1975).

The purpose of this study is to find out some aspects of giving breast feeding, for example : when the milk was given, how long it was given, when the baby was given additional food, habits which
Body weight, frequency of diarrhea, vomiting, faecal form, duration of diarrhea, the willingness to drink (acceptability), severity of dehydration before and after rehydration, the symptoms and signs of side-effects such as abdominal cramps and hyperkalemia were recorded.

The severity of dehydration was determined by the Maurice King's criteria. Routine examinations such as blood examinations, urinalysis, and stool examinations were performed in every case. Blood examinations for detecting malarial parasites, and ENT examinations were conducted when indicated only.

The outcomes of the oral rehydration in this study were determined by the following criteria:

Very good: diarrhea stops within 24 hrs after oral rehydration.

Good: diarrhea stops within 48 hrs after oral rehydration.

Fair: diarrhea stops within 72 hrs or more after oral rehydration.

Fail: the patient falls into severe dehydration.

Tetracycline 50 mg/kg bw/day was given to all cases for 3-5 days, without determining the bacteriological cause of diarrhea.

Results

This study consisted of 25 cases in the coconut water group, and 18 cases in the oratroyte group. The sex distribution, mean body weight and age can be seen in Table 2.

<table>
<thead>
<tr>
<th>TABLE 2: Sex distribution, mean body weight and age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factors</td>
</tr>
<tr>
<td>Male/Female</td>
</tr>
<tr>
<td>Age (mean ± SE) in months</td>
</tr>
<tr>
<td>Body weight (mean ± SE) in kg</td>
</tr>
</tbody>
</table>
1. First of all, a survey to determine the weight of one pinch of finely ground salt was done.

For this purpose 72 mothers and paramedical personnel were asked to take finely ground salt between two fingers (thumb and index finger) as in cooking practices. The weight was measured with an automatic milligrams weight scale manufactured by Backer & Soa.

It was found that the mean weight of one pinch of finely ground salt was 220 mg (ranging from 140 - 300 mg).

2. One part of coconut water (1 glass of 200 cc) was diluted with one part of water.

Six pinches of finely ground salt were added to this solution. The mean weight of 6 pinches of finely ground salt was 1.3 grams.

The mineral content of undiluted coconut water compared to the mineral content of half strength of coconut water and salt solution can be seen in the following table.

**TABLE 1: Mineral content of salt added to half strength of coconut water as compared to that of undiluted coconut water**

<table>
<thead>
<tr>
<th>Composition</th>
<th>Before dilution</th>
<th>After dilution and 6 pinches salt added</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Eiseman et al.</td>
<td>Ranti et al.</td>
</tr>
<tr>
<td>Na⁺ (meq/l)</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>K (meq/l)</td>
<td>49</td>
<td>56</td>
</tr>
<tr>
<td>Ca (meq/l)</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>Mg (meq/l)</td>
<td>17</td>
<td>9</td>
</tr>
<tr>
<td>Cl (meq/l)</td>
<td>63</td>
<td>70</td>
</tr>
<tr>
<td>HCO₃ (meq/l)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Sugar (gr/l)</td>
<td>—</td>
<td>10 - 40</td>
</tr>
<tr>
<td>pH</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

**FIG. 1c:** Fasting period in the high income group

**FIG. 2:** The frequency of breast feeding period (211 mothers of high, middle and low income group - Jakarta 1978).

*Note:*
- high income group
- middle income group
- low income group
influence breast feeding, reasons not to give breast milk and others.

**Material and method**

211 mother was included in this study. They were divided into:

- 83 mothers of a middle income group
- 23 mothers of a low income group
- 89 mothers of patients admitted for gastroenteritis in The Cipto Mangunkusumo Hospital, who are of low income group.

<table>
<thead>
<tr>
<th>TABLE 4b: The main reasons to stop breast feeding (25 mothers of high and middle income group — Cipto Mangunkusumo Hospital Jakarta, 1978).</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. There was no breast milk or the breast milk was too dilute</td>
</tr>
<tr>
<td>2. Working or busy mother</td>
</tr>
<tr>
<td>3. Influenced by the advertisement</td>
</tr>
<tr>
<td>4. Afraid the breast to be hurt or damaged</td>
</tr>
<tr>
<td>5. Wanted to be called &quot;modern&quot;</td>
</tr>
<tr>
<td>6. Others (prohibited by husband, suggested by friends or family)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TABLE 5a: The attitude of 25 mothers to give breast feeding in public.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>1. Do not want to</td>
</tr>
<tr>
<td>2. Depend on the situation</td>
</tr>
</tbody>
</table>

The reasons:

- 77%: because they think it is indecent
- 23%: because they are shy

<table>
<thead>
<tr>
<th>TABLE 5b: Mother's attitude to suggest their daughters to give breast feeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Breast milk</td>
</tr>
<tr>
<td>2. Artificial milk</td>
</tr>
</tbody>
</table>

**Introduction**

Diarrheal disease is one of the main child health problems in Indonesia where its morbidity rate is still high, especially among the children of under 5 years old. Recently many hospital reports have claimed noticeable decline in their mortality rate.

As the health coverage — especially for rural communities which comprise 80% of the total population — is abridged, while the role of the hospital in supporting the health conditions of rural communities is also limited, these reports did not represent entirely the real situation in the community (Bahrawi, 1976).

This disease is closely related to socio-economic conditions, geography, environmental sanitation, beliefs, and the availability of health services. Thus, in overcoming this disease all the abovementioned factors should be taken into consideration.

Many efforts have been made to overcome this disease, particularly in preventing severe dehydration with the outlook to decrease its mortality rate to the lowest possible level. Those efforts are mainly: rehydration centres throughout the country (Harun Nurasing, 1971), oral electrolyte solutions (King, 1974; Pitono et al., 1976; Sunoto et al., 1977), sucrose electrolyte solution and salt sucrose solution (Munginah et al., 1977).

Encouragement to use oral solutions to overcome mild and moderate dehydration by applying simple, appropriate technology and materials which are available in the community, will reduce the prevalence of severe dehydration. Hence, the mortality rate of this disease is decreasing.

Coconut water, besides containing electrolyte, vitamins, amino-acids and RNA = DNA phosphates, fat and glucose, is also isotonic to the body water (Tulacce et al., 1961; Ranti et al., 1965). With a simple modification, this solution seems to be very ideal for oral electrolyte solutions.

This study was performed to evaluate the effectiveness of salt in diluted coconut water; and especially whether or not it can be used as one of the oral electrolyte solutions in remote areas.

**Material and methods**

The subjects in this study were 43 children under 5 years of age with mild and moderate dehydration caused by diarrhea, examined at the outpatient clinic of the army hospital Teling, Manado, Indonesia. All these patients were admitted to the hospital to ensure the validity of our evaluations.

The patients were divided into two groups by using odd and double count methods, namely the coconut water group rehydrated by salt in half strength of coconut water, and the oratrole group rehydrated by oratrole solutions which are manufactured by Kimia Farm.

Solutions of salt in half strength of coconut water were prepared as follows:
Coconut Water as One of the Optional Oral Electrolyte Solutions

by

MUIZIEF MUNIR and I. MUSTADJAB.

(Department of Child Health, Medical School, Sam Ratulangi University/ Gunung Wenang Hospital, Manado, Indonesia).

Abstract

In an attempt to overcome mild and moderate dehydration, caused by diarrhoeal diseases with the outlook of reducing its mortality rate, it seems to be very important to find out many varieties of oral electrolyte solutions which are available in the communities.

Our study was performed to evaluate the effectiveness of salt in half strength of coconut water solution as one of the optional oral electrolyte solutions. Children under five years of age with diarrhea were used as subjects in this study, and were divided into two groups, i.e. the coconut water group and the oratrolyte group (Kimia Farma).

The willingness to drink (acceptability), the frequency of diarrhea and vomiting, the severity of dehydration before and after rehydration, and the symptoms and signs of side-effects such as abdominal cramps and hyperkalemia were recorded.

From this study it is clear that finely ground salt in half strength of coconut water can be used as an optional oral electrolyte solution with satisfactory results and without any harmful effects.

Received 7th. August 1979.
### TABLE 8: The main reason why breast feeding is better than artificial milk. 176 mothers Cipto Mangunkusumo Hospital — Jakarta, 1978

<table>
<thead>
<tr>
<th>No.</th>
<th>Reason</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Breast feeding is the best and it contained complete materials and vitamins which are needed for growing.</td>
<td>23.9% (42)</td>
</tr>
<tr>
<td>2.</td>
<td>Breast milk is more healthy, contained antibodies, is sterile and seldom causes diarrhea.</td>
<td>15.9% (28)</td>
</tr>
<tr>
<td>3.</td>
<td>Breast feeding is more practical, easy to get and present no problem.</td>
<td>11.2% (20)</td>
</tr>
<tr>
<td>4.</td>
<td>Breast feeding is more economical on the other hand artificial milk is expensive.</td>
<td>10.2% (18)</td>
</tr>
<tr>
<td>5.</td>
<td>Love and tenderness between mother and child are more expressive.</td>
<td>9.7% (17)</td>
</tr>
<tr>
<td>6.</td>
<td>The breast milk’s temperature is stable and fit.</td>
<td>13 (7.4%)</td>
</tr>
<tr>
<td>7.</td>
<td>Guaranteed that it is clean.</td>
<td>12 (6.8%)</td>
</tr>
<tr>
<td>8.</td>
<td>The children grow better with breast milk.</td>
<td>11 (6.3%)</td>
</tr>
<tr>
<td>9.</td>
<td>Breast milk is a nature, original and pure material.</td>
<td>7 (4.0%)</td>
</tr>
<tr>
<td>10.</td>
<td>(1) Breast milk never became sour.</td>
<td>3 (1.7%)</td>
</tr>
<tr>
<td></td>
<td>(2) It is made directly from mother’s blood.</td>
<td>3 (1.7%)</td>
</tr>
<tr>
<td></td>
<td>(3) The baby does not want artificial milk.</td>
<td>1 (0.6%)</td>
</tr>
<tr>
<td></td>
<td>(4) Artificial milk is cow’s milk.</td>
<td>1 (0.6%)</td>
</tr>
</tbody>
</table>

### TABLE 9: Family Planning (101 mothers — Cipto Mangunkusumo Hospital Jakarta 1978)

<table>
<thead>
<tr>
<th>Income group</th>
<th>Family planning +</th>
<th>Family planning —</th>
</tr>
</thead>
<tbody>
<tr>
<td>High and middle (16)</td>
<td>93.8%</td>
<td>6.2%</td>
</tr>
<tr>
<td>Low (85)</td>
<td>45 %</td>
<td>54.1%</td>
</tr>
</tbody>
</table>
27. TOULOUKIAN, R.J.: Neonatal necrotizing enterocolitis, an update on etiology, immunity problem, the Necrotizing Enterocolitis problem is more serious in the high income group. Based on this data, the attitude of medical personnel (midwifery or hospital) and their policy or procedure to fast babies for 6 - 12 hours must be changed.

Indirect influence (table 2) of industrial milk have to be changed too. During the pregnancy the care of the breasts must be done to get a better production of breast milk. (Table 2: 27.5% because no breast milk). Suggestion to give
early breast feeding (2 - 3 hours) by the medical personnel is correct (10%) and it must be imitated intensively. Regular campaign have to be made for this key persons. (Doctors and midwife in the hospital or midwifery).

After one year breast feeding campaign in Jakarta, it is shown that the number of mothers who want to give breast feeding has increased. For example from 66.4% to 88% (Table 3), from 17.7% to 72.7% (6 months), from 15% to 66% (9 months), 0.8% to 32.1% (12 months). Even until 18 months there were 10.3%, 1.7% until 24 months and the longest was 2.5 years by one mother. High and middle income group show a rather better attitude in which half of them are still giving breast feeding until 6 months although only 10% until 1 year old. Willingness and/or working mothers are the main reasons to stop breast feeding.

In low income mothers the factors to stop breast feeding are more complicated. Usually caused by factors which are out of mother's capability. But it could be solved by health education and changing the attitude of medical personnel (7.4%) in the hospital or midwifery.

Lopez (1979) said that the role of medical personnel (midwife, nurses and home visitors) are important for mother's decision of giving breast feeding. A special mother's room in public buildings (station, airport, market, plant, office, hospital and others) must be considered, because 68% of high income group mothers do not want to give breast feeding in public (Table 5a). The attitude of mothers to understand and to give breast milk is good (Table 5b and 5c) but the important thing is to do it by themselves. Generally (52.5%) the mother gives solid food earlier (3 - 6 months) as shown in Table 5 while the policy of the pediatric department is 5 - 6 months.

In the low income group or in the rural areas, additional food is given earlier as we can see in this study that there was a baby who was given banana when he was still 7 days old.

Table 7 shows that in most cases banana is the first additional food. The solid food which is popular is rice porridge although the pediatricians always suggest milk porridge or steamed rice.

The pediatricians must keep this fact and change their way of thinking about infant feeding, according to the society factor and use the most wellknown local resources. For using solid food the influence of industrial plants (S.N.M. 7.8%) seems greater than pediatricians suggestions, (milk porridge 5.2% and steamed rice 4.2%).

Very interesting is that low income mothers prefer IUD to the pill or other family planning methods, although the middle and high income mothers prefer the pill. Considering that in Indonesia 95% are of the low income group and most of them prefer IUD than the pill, the use of IUD as a family planning method would increase in the future.

Our infusion which contain a higher concentration of amino acids compared to the advisable requirements (Fomon, 1974), particularly proline and cystein are a high risk as they frequently develop into metabolic complications. However, during these observations we did not see any complication as the result of parenteral feedings. This may be because our intravenous feeding procedures were too short to develop any complications, and because of the highly caloric contents of our infusates. But, further study of this solution is needed to find out the effect of short term parenteral feeding, compared to the low concentration of amino acids.

REFERENCES


an anti staphylococcal agent, lysozyme and lactoferrin (Goldman and Smith, 1973; Burlow et al., 1974). Therefore in premature infants where enteric immuity is still immature, formula feedings will cause overgrowth of enteric bacteria. The clinical onset of NNEC is varied from an insidious onset with increasing gastric retention of food and occult blood in stools, developing over several days, to a fulminating course within a few hours with lethargy, abdominal distension and peritonitis.

Figure 1 shows a variety of clinical signs and symptoms; abdominal distension, prolonged gastric residue and lethargy were the main clinical signs and symptoms of our cases.

Our criteria for the diagnosis of NNEC in this evaluation were too strict, whereas x-ray examination required pneumoenteritis and/or pneumoperitoneum and portal vein gas. Hence this may be one of the causes of our delay in making an early diagnosis, with the result that the vast majority of our cases, 9 out of 17, were severe with frequent apnea, cyanosis, lethargy and sclerema. Anemia and thrombocytopenia were also encountered among our severe cases.

In an attempt to prevent severe cases and to reduce the mortality rate, an accurate early diagnosis should be made. Book et al. (1976), found that in testing stools from one day to four days prior to the onset of NNEC, 71% of the cases showed reducing substances to be strongly positive. In the authors' opinion, a neonate with diarrhea, especially of low birth weight, who has abdominal distention, a positive guaiac test, and positive reducing substances in the stool with unexplained radiological findings in the x-ray such as a foamy appearance or a bowel distention should be treated as a NNEC. A series of x-ray and blood examinations are advisable for detecting the progression of the disease.

Portal vein gas was first reported by Wolfe and Evans in 1955. Since then this finding has been widely reported by Goldstein et al., 1966, Touloukian et al., 1967; Stevenson et al., 1971; Mis- kian and Reilly 1969; and Yu et al., 1977), and suggested to be the ominous sign. (Wilson and Wooley 1969; Hopkins et al., 1970). Six of our cases with portal vein gas, accompanied by severe clinical symptoms and signs such as frequent apnea, cyanosis, lethargy and sclerema, died.

The management of all of our cases was mainly only conservative treatment by withholding oral feeding, institution of parenteral feedings and administration of antibiotics intravenously, the outcome of this regimen was rather poor where 9 out of 17 cases (51%), died.

Although some of our cases were absolutely surgically indicated such as perforation (Touloukian et al., 1967, Stevenson et al., 1971), sudden clinical deterioration or the obvious progressive clinical course of the disease (Stevenson et al., 1971), because of a lack of neonatologists who are familiar with the disease, so that breast feeding programme and family planning could go together perfectly.

Beside that the member of low income mothers who did not join the family planning (54%) shown in table 9 must be underlined although we are grateful for the increases of family planning acceptors which are being reported by medical personnel everywhere.

As a conclusion we recommend:

1. The attitude of the medical personnel and fasting policy for the baby after birth must be revised or changed.

REFERENCES


12. Sukaryono: The importance of willingness of the mother to breast feed her baby. Presented at the meeting between the working unit of promoting the use of breast milk and the Coordinating Minister for Woman's Role, Jakarta, 8 May, 1978.


ly prematurity (Hopkins et al., 1970; Frantz et al., 1975; Denes et al., 1970; Book et al., 1976, 1976a, 1976b), bottle feedings (Kroupokp et al., 1974; Bell et al., 1971) hyperviscosity syndrome (Leake et al., 1975), and umbilical catheterization (Hopkins et al., 1970).

Hypoxia or ischaemic injury of the bowel wall (Toulouman et al., 1972; Barlow et al., 1974; Santuli et al., 1975), direct injury of the mucosal wall by hyper — osmolar feeding (Nasrallah et al., 1968; De Lemos et al., 1974; Book et al., 1976), and infection with gram negative microorganisms such as Salmonella (Stein et al., 1972); Klebsiella (Hall et al., 1974); Pseudomonas aeroginosa (Santuli et al., 1975), and E. coli (Speer et al., 1976), have been suggested as etiological factors.

The current most acceptable theory of the pathogenesis is hypoxia which evokes a reflex resulting redistribution of blood, shunted away from less vulnerable organs like the mesenteric, the renal and the peripheral vascular bed to the first class organs (the brain and the heart) which would suffer irreversible damage if deprived of adequate perfusion.

The mucosal cells, which are highly sensitive to ischaemia, stop secreting protective mucous. Hence, proteolytic autodigestion of the mucosa occurs.

Once the integrity of mucus is broken, it will be invaded by gas forming micro organisms. Bacteria are absorbed into the lymphatics and into the radicles of the portal venous system, leading to overwhelming sepsis and death (Toulouman et al., 1967; Barlow et al., 1974).

From our observation it can be seen that diarrhea, bottle feeding and infection are the most important multiple factors responsible for the development of NNEC. It is also thought that low birth weight infants born from mothers with hypertension and poor antenatal care, and infants with pneumonia were predisposed to the development of NNEC.

All our cases prior to the development of diarrhea received bottle feedings, and out of 17 cases in which a stool culture was made, 10 were found to contain E. Coli and Pseudomonas.

The role of bottle feedings in the development of NNEC may be as follows:


2. Although the prevalence of protein milk allergy is very low, less than 1% (Lebenthal, 1975), it cannot be eliminated as a factor which cause diarrhea in our cases. As far as we know there is no publication on the prevalence of protein allergy among neonates in Indonesia.

3. Formula feeding lack protective factors such as IgA, IgG, active lymphocytes and macrophages, specific antibodies against many types of organisms (especially the most important bacterial pathogens of the neonate E. Coli), growth enhancer of gram positive lactobacilli,