

# DIARRHOEA AND ORAL REHYDRATION PRACTICES BY MOTHERS AT OBUASI, ASHANTI REGION, GHANA.

**Ernestine A. Addy (Mrs)**, BA, MSc, Dip Diet, Dip MCN.  
 School of Medical Sciences, Department of Community Health.  
**Lynda Ansah-Asamoah**, BSc, MB, ChB.  
 Komfo Anokye Teaching Hospital, Kumasi.  
**Anthony K. Edusei**, MSc.,  
 School of Medical Sciences, Department of Community Health.

## ABSTRACT

*A cross-sectional, descriptive study to determine diarrhoeal incidence and oral rehydration practices by 160 mothers sampled from mothers who attended ante-natal and post-natal clinics in the Obuasi district is presented. The purpose of the study was to determine diarrhoeal morbidity and mortality patterns, and ascertain the use of Oral Rehydration Therapy and other diarrhoeal management practices to provide the basis for a more effective diarrhoeal control programme.*

*Interviews through questionnaire revealed that diarrhoeal morbidity in the area is quite high (37.1%). Though mothers are aware of the use of Oral Rehydration Salts (ORS), only 16.4% use them. Instead, enema and the use of a combination of herbs and other 'medicines' is the common practice.*

*A programme to educate the mothers on the importance of preventing excessive dehydration so as to reduce mortality from diarrhoea is recommended.*

**KEYWORDS:** *Diarrhoeal disease, Oral Rehydration Therapy, Oral Rehydration Salt, dehydration, enema.*

## INTRODUCTION

Diarrhoea is a disease condition characterized by an increase in frequency and volume of a watery stool, as well as a decrease in consistency when compared with the patient's usual bowel habits [1].

In most of the developing world, diarrhoea is among the principal causes of death in pre-school children, causing an estimated 3.2 million deaths worldwide in children under 5 years of age [2]. In Ghana, approximately 82,500 of the under-five population of 2.5 million die from diarrhoea every year [2].

Besides dietary 'sterile' diarrhoea, resulting from intake of coarse, spicy or unfamiliar foods, diarrhoeal disease is caused by viruses, bacteria and protozoa. In the developing world, rotavirus and *E. coli* are the most common pathogens causing diarrhoea [3]. Apart from the children's invariable contact with a hostile environment at the time they start crawling and exploring, they come into contact with these pathogens through bottle-feeding and other food items.

Even though the incidence of diarrhoeal diseases varies from one country to the other, in most developing countries it ranges from 2 to 6 episodes per child per year. On the average, each pre-school child suffers around 4 episodes per year, each of 5 days duration [3]. The incidence of diarrhoea shows a bimodal distribution, peaking around the time when the newborn starts to get into more intensive contact with the immediate environment, that is, 4-6 months, and at weaning [3].

Dehydration, with electrolyte loss, is a major complication associated with infantile diarrhoea. In place of intravenous fluids Oral Rehydration Therapy (ORT), found to be simple, safe and inexpensive, has proved to be the most effective means of managing dehydration and, therefore, averting death through diarrhoea at home and in health facilities [4]. It is against this background that in 1975, the World Health Organization (WHO) and the United Nations International Children's Emergency Fund (UNICEF) agreed to promote the use of a single solution (WHO-ORS) containing (in mmol/L): sodium, 90; potassium 20; chlorine, 80; base, 30 and glucose, 111.

Gains from using ORS have been impressive regardless of the age of the patient, aetiological agent of the diarrhoea and initial serum level, thus providing the basis for the WHO Global Diarrhoeal Diseases Control Programme [5].

A decline in incidence and mortality of diarrhoeal diseases has been reported in Egypt [6]. In other places of the developing world, like India and Bangladesh, a substantial percentage of the expenses previously incurred in intravenous fluids has been saved through the use of ORS [7].

Other forms of Oral Rehydration Therapy (ORT) in use are home fluids, such as sugar-salt solution and cereal-base solutions. Ideally, liquids containing salt and either starch, sugar or protein are recommended because they facilitate absorption of fluid and salt.



Good examples are soups and salted rice-water. Sugar-salt solution is a home-made version of ORS containing table salt (½ a level standard 5 ml teaspoon or 3g) and sugar (4 level teaspoons) dissolved in ½ litre or 1 pint of water. Rice-salt solutions have successfully replaced ORS in some areas of Thailand [8]. Its effect in decreasing stool volume has implications not only for treating diarrhoea but also for preventing the use of additional unnecessary treatments such as anti-diarrhoeal drugs and antibiotics use [9].

Though the use of ORT in managing diarrhoeal diseases has proved very effective, diarrhoea is still a major health problem in Ghana because of the ineffectiveness of the other management practices and low response to the WHO's ORS Global Diarrhoeal Disease Control Programme.

With the desire to reduce diarrhoeal incidence and prevalence in the Obuasi district, this study was carried out to determine the diarrhoea morbidity profile, and ascertain the management practices by the mothers in the district, to serve as the basis for a more effective programme for the control of this disease.

## MATERIALS AND METHODS

In a cross-sectional survey, over a 2-month period, 160 mothers, with the last child under the age of five years taken as the index child, were sampled systematically at post-natal and child welfare clinics at both Ashanti Goldfields Corporation (AGC) Hospital and the Obuasi Health Centre. On each of four unannounced visits made to each of the two centres, every fifth card that was posted at the Out-Patient Department was selected. A total of 160 children under five years of age were studied.

By means of a pretested questionnaire, the mothers of the children were interviewed on diarrhoeal episodes their children had experienced over the past two weeks, and the sources and types of management practices they adopted during such situations. The data thus collected was entered into a personal computer, using D-base III+ and analysed using Epi Info 5 softwares.

## RESULTS

### Socio-demographic Characteristics of Mothers:

The age distribution of the mothers was slightly skewed to the left (Table 1). The age of the mothers ranged from 17 to 40 years with a mean of 25.8 years, whilst that of their children (subjects of the study) ranged from 1 month to 54 months, with 57.1% below 12 months.

The level of education completed by the mothers is shown in Table 2. About a quarter of the mothers (25.6%) had had no education at all. Slightly less than a half (49.5%) had completed middle school and above.

**Table 1. Frequency Distribution of Ages of Mothers.**

Age Group (Years)	Frequency	Percentage (%)
< 14.5	0	0.0
14.5 - 19.5	8	5.0
19.5 - 24.5	58	36.3
24.5 - 29.5	64	40.0
29.5 - 34.5	19	11.9
34.5 - 39.5	9	5.6
39.5 - 44.5	2	1.3
> 44.5	0	0.0
Total	160	100.0

**Table 2. Educational Status of Mothers (Completed)**

Educational level	Frequency	Percentage (%)
None	41	25.6
Primary School	40	25.0
Middle School	50	31.3
Vocational School	11	6.9
Secondary School	11	6.9
Post Secondary	5	3.1
Tertiary	2	1.3
Total	160	100.0

Majority (58.7%) of the mothers were traders (Table 3) and almost all of them (99.0%) were married. Among the married women, 84.0% were in their first marriage whilst 13.0% had been married twice and 3.0% more than twice. The main occupation of the husbands of the mothers under the study was mining, with 51.3% of the men being employees of Ashanti Goldfields Corporation.

**Table 3. Occupation of Mothers**

Occupation	Number of Mothers	Percentage (%)
Trading	94	58.8
Housewife	26	16.3
Seamstress	23	14.4
Farming	6	3.8
Teaching	6	3.8
Clerical work	4	2.5
Baking	1	0.6
Total	160	100.0

The mean number of children per mother was 2.6.

### Diarrhoeal Morbidity and Mortality:

Of the 160 children in the study, 100 (62.5%) had had diarrhoea at least once in their life-time. One hundred and seventeen of the children (73.1%) had had one or more episodes in the past two weeks (Table 4). Four or more episodes of diarrhoea accounted for 14.4%. Frequency of diarrhoea in the age group 1-6 months was low.

Among the 160 mothers, 35 (21.8%) reported a child death. Death due to diarrhoea accounted for 37.1% of all deaths.

Table 4. Frequency of Diarrhoeal Episodes per Child over a Two-week Period.

Number of Episodes/child/year	Number of children	Percentage (%)
None	43	26.9
One	52	32.5
Two	23	14.4
Three	19	11.9
Four or more	23	14.4
Total	160	100.0

### Diarrhoeal Disease Management Practices:

Almost half (47.8%) of the children reported to have had diarrhoea were sent to the hospital for treatment, whilst 15.0%, 3.9% and 1.3% sought assistance from a drug store, herbalist and health centre, respectively. About a third (32.0%) of the mothers treated their children's diarrhoeal diseases at home.

**Home Management:** Oral Rehydration Salt (ORS) solution alone was used in the management of 13.1% of the reported diarrhoeal cases. A combination of ORS and other treatments such as ORS and enema, ORS and rice-water were employed by 2.0% and 1.3%, respectively. Altogether 16.4% of the children who had diarrhoea were given ORS.

Sugar-salt solution was given to 5 children (3.1%). Rice-water alone was not used in any of the cases.

Other diarrhoea management practices included enema (35.9%), enema combined with oral herbal medicine or other 'medicines' (10.4%), and use of a combination of 'medicines' alone (28.7%). The remaining mothers used other management practices.

The mothers who did not give ORS gave the following reasons; their children never had diarrhoea (36.0%); they preferred other kinds of medicine (18.0%); they did not believe in its efficacy (1.6%); and their children would not accept it (1.6%). The rest did not have any readily available reason.

### Mother's knowledge about Oral Rehydration Salts (ORS) and Sugar-Salt Solution (SSS):

Majority of the mothers in the study (80.0%) had heard about ORS. The sources of information about ORS were hospitals (43.8%), friends (20.3%), mass media (16.0%) and drug-stores (5.0%). Of the 128 mothers who had heard about ORS, 88 (68.8%) knew how to mix it correctly.

Though there was no obvious relationship between the mother's age and knowledge about ORS, a positive relationship, however, existed between their age and ability to mix ORS solution correctly. There was no significant relationship between mother's educational level and ability to mix ORS correctly.

More than half (53.7%) of the mothers were aware of the use of sugar-salt solution, mostly from friends (43.0%), post-natal clinics (24.4%), the mass media (18.5%) and hospitals (11.6%).

### Relationship between mother's socio-demographic characteristics and use of ORS:

There was no significant relationship between the age of the mother, her educational level and occupation, and use of ORS.

## DISCUSSION

### Socio-demographic characteristics of mothers:

The mean age of the mothers in the study (25.9 years) is a reflection of the fact that only 5.0% of the mothers who attended ante-natal and post-natal services were teenagers, and 6.9% were above 35 years (Table 1). In a truly representative sample as in the case of this study, this is expected, since in most communities the most active reproductive age for mothers is between 20 and 35 years. The low percentage of teenage mothers attending ante-natal and post-natal services (5.0%) indicates that either teenage pregnancy is not a major health problem in the Obuasi district, or the teenage expectant mothers and mothers do not attend ante-natal and post-natal services. Considering the fact that the study area is a mining community with a high population, the latter explanation seems more probable. Therefore, the non-attendance of teenage expectant mothers and mothers is a serious health issue in the light of the risk factors associated with teenage pregnancies and deliveries.

Financial constraints and ignorance about the availability of the ante-natal and post-natal services might explain the non-attendance of the teenage mothers.

The apparent absence of diarrhoea in the age group 1-6 months has also been reported in Nigeria [10].

This suggests prolonged exclusive breast-feeding in the study area, reduced bottle-feeding and improved hygienic practices in the care of the children. Possibly, this is a reflection of the high literacy rate (74.0%) of the mothers observed.

The diarrhoea mortality rate (37.1%) was high. Possibly, the children who died were severely dehydrated since the risk of dying from diarrhoea increases when diarrhoea is accompanied by severe dehydration. The mortality figure is consistent with the diarrhoeal increase patterns in Ghana [2], implying that increased efforts to promote the use of ORS and better hygienic practices are needed.

#### Diarrhoeal Disease Management Practices:

The high percentage of mothers (80.0%) who were aware of ORS is not consistent with the percentage who actually used it (16.4%). Majority of the mothers were rather giving enema to their children with diarrhoea. This practice supports the idea of some of the mothers who were not giving ORS, that they did not trust its efficacy in curing the disease, hence their preference for other 'medicines'. The mothers' ignorance of the need to replenish the water and electrolyte loss from the child with diarrhoea is also evident from their practices. The high percentage (47.7%) of mothers who took children to either the hospital or health centre for diarrhoea management is however, commendable. The use of ORS was not significantly related to any of the mothers socio-demographic characteristics, suggesting that every woman could be educated to use it frequently and effectively, irrespective of her socio-economic situation.

#### CONCLUSION

The results of the study showed that although there are adequate health care facilities in the Obuasi District, majority of the cases of childhood diarrhoea were managed at home, with administration of enema being more widely practised.

A majority of mothers had heard about Oral Rehydration Salts, but were unaware of the importance and appropriate use of fluids, including Oral Rehydration solution in the home management of diarrhoea.

A health education intervention, to increase awareness of the fact that dehydration resulting from

diarrhoea is the major cause of mortality due to the disease, and emphasizing the importance of proper preparation and administration of oral rehydration salts, is recommended.

#### ACKNOWLEDGEMENT

We are grateful to Professor Hutton A. Addy, and the late Professor R. T. Ansa-Asamoah for their professional advice.

We are also grateful to Ashanti Goldfield Corporation (Gh) Ltd. Hospital and Obuasi Health Centre, as well as the mothers interviewed in the study, for their co-operation.

#### REFERENCES

1. Calligaro, I. L. S., *Treatment of acute diarrhoea in children. American Pharmacy*, Vol. 11: pp 29-34, 1992.
2. Ministry of Health, *Communication plan for Control of Diarrhoeal Diseases (CDD) in Ghana*. April, 1988.
3. Professor A. A. Kielmann, *Personal Communication*, of Nairobi, Kenya. 1992.
4. Baumslag, N. (ed). *Oral Rehydration Therapy: An Annotated Bibliography*. Pan Am. Health Org. DC, pp 116, 1980.
5. Egeman, A., Bertan, M., *A study of Oral Rehydration Therapy by Midwives in a Rural Area near Ankara*. *Bull. World Health Org.* 58: 333-338, 1980.
6. Miller, P. C., *Trends in the Management of Childhood Diarrhoea in Egypt: 1979-1990*. *J. Diarrhoeal Dis. Res.*, Vol. 10: pp 193-200, 1992.
7. World Health Organization. *Oral Rehydration Therapy - Recent advances*. *World Health Forum*, No. 2: pp 245-249, 1981.
8. Chanthavanich, P., *Ricepowder salt solution in the treatment of acute diarrhoea in young children*, *South-east Asian J. Trop. Med. Public Health*, 1993; Vol. 23: pp 247-432, 1993.
9. Cusson, R. M., *Rice-based oral rehydration fluid in the treatment of infant diarrhoea*. *J. Pediatric Nursing*, Vol. 7: pp 414-415, 1992.
10. Babaniyi, O. A., *Oral rehydration of children with diarrhoea in Nigeria: a 12-year review of impact on morbidity and mortality from diarrhoeas disease and diarrhoeal treatment practices*. *J. Trop. Pediat.*, Vol. 37: pp 57-62, 1987.