

**KNOWLEDGE AND BELIEF OF NURSING MOTHERS ON NUTRITIONAL
MANAGEMENT OF ACUTE DIARRHOEA IN INFANTS, IBADAN,
NIGERIA**

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ABSTRACT

Malnutrition continues to be a major public health problem in Nigeria, and this contributes substantially to childhood mortality. Culturally related food restriction and reduction in feeding frequency during common childhood illnesses such as diarrhoeal diseases further contributes to the burden of malnutrition and thus to childhood morbidity and mortality. This study was designed to determine the knowledge, attitudes and practices of nursing mothers with respect to food restriction during acute diarrhoea in Ibadan, South West Nigeria. This single round cross-sectional study adopted a purposive sampling procedure to select 250 nursing mothers aged between 17 and 45 years from the sick-baby and immunization clinics of two health facilities in Ibadan, between November 2003 and February 2004. Information on nutritional management of acute diarrhoea was collected with a structured interviewer-administered questionnaire and two focus group discussions exploring food withdrawal practices during acute diarrhoea. Data analysis was done using SPSS 11.0. Descriptive and inferential statistics were generated to test for associations. About half (46.8%) of the respondents had secondary education. Only 6.0% had knowledge of nutritional management of diarrhoea while 54.8% had knowledge of oral rehydration therapy. Seventy-one percent of respondents reported food withdrawal during acute diarrhoea in infants, 44% also reported reduction in breastfeeding frequency during acute diarrhoea and more than two-thirds of these (71.2%) cited cultural reasons for withholding breastfeeding. Mothers' educational level had no significant effect on their knowledge of nutritional management of acute diarrhoea in infants ($p = 0.610$). Mothers' knowledge of nutritional management of acute diarrhoea had a significant effect on their attitude ($p = 0.03$) but not on their practice ($p = 0.257$). Relatives and health care providers were the sources of advice on food restriction/withdrawal during acute diarrhoea. Appropriate nutritional management during acute illness is important, and this has been found to be deficient among caregivers in the family setting. Targeting appropriate health and nutrition education to caregivers particularly mother would reduce morbidity and mortality commonly associated with childhood diarrhoea.

Key words: Infants, diarrhoea, food restriction, mothers

INTRODUCTION

Each year about 12 million infants and children die in the developing countries [1]. Specifically in Africa, more than 20% on average do not reach their fifth birthday [2]. Majority of these deaths are due to infections and parasitic diseases, while about 54% of the children die malnourished. In poor countries, children from birth or soon after are caught in a malnutrition-infection cycle, which many do not survive due to poor feeding practices and unhealthy environment [3].

Diarrhoeal diseases are marked by an increase in the frequency by two or more times of the usual daily number of stools that in addition are loose extending over a period of 24 hours or more [4]. Acute diarrhoea is one of the leading causes of childhood morbidity and mortality in the developing countries and a major contribution to malnutrition [5]. Approximately 4 billion cases of diarrhoea are reported each year, causing about 2.2 million deaths mostly among children under five. This is equivalent to 42,000 children dying every week, 6,000 every day, four every minute and one every fourteen seconds. In Nigeria, diarrhoeal diseases are accountable for 27% and 19% of all infant and under-five mortality, respectively [6]. Fifty percent of all diarrhoea deaths among children are either due to lack of access to oral rehydration solutions and/or health facilities or as a result of incorrect case management (at home or in the health facility) [7].

Diarrhoea is in reality as much a nutritional problem as one of fluid and electrolyte imbalance, as such, its management is inadequate unless both aspects of the condition are treated. Dietary management of diarrhoea requires adequate feeding and health care practices during and between episodes of diarrhoea, when the child is not sick. This prevents under-nutrition in the child and greatly reduces the risk of death from a future episode [8].

The duration and reoccurrence of diarrhoea greatly depends on the management pattern [9]. Cultural factors are particularly important determinants of the management of diarrhoea. Withholding of food by a caregiver and failure to compensate for decreased food intake during illness by increasing feeding during convalescence are major contributors to the adverse nutritional outcomes of diarrhoea. The belief of resting the gut during diarrhoea is based on the idea that feeding could enhance the passage of frequent watery stools, thus increasing the severity and prolonging the duration of diarrhoea. In addition to folk belief, medical advice often supports the withholding of particular foods during and after diarrhoea [10-14]. However, the World Health Organization (WHO) has strongly recommended that breastfeeding and any kind of usual feeding be continued during diarrhoea [15].

Many studies in different parts of the world have focused on the management of acute diarrhoea. A Mexican study found that some medical officers in some rural areas of Mexico had little or no "faith" in sustained feeding during acute diarrhoea in infants and rather focused on antibiotics, fluid management, breastfeeding, delayed feeding and gradual feeding [16]. Another study carried out in Egypt found a higher incidence

of recurrent diarrhoeal diseases and a significant longer duration of diarrhoea in infants fed with food only on mothers' request than in infants fed with food regardless of the mothers' request [17]. Also, in a study carried out in a rural area of Nigeria, it was observed that majority of the mothers would reduce fluid intake for most common types of diarrhoea [18]. This study, therefore, described the belief and knowledge of nursing mothers with respect to food restriction during acute diarrhoea.

MATERIALS AND METHODS

Study Area

This study was carried out in two health facilities in Ibadan: State Maternity Hospital, Adeoyo and the University Health Clinic, University of Ibadan. The State Maternity Hospital is managed by the Oyo state Hospital Board; it has the highest antenatal and postnatal clinic attendance rate in Ibadan. The University Health Clinic is managed by the health service management board of the University of Ibadan. Regular patients at the health clinics include the university staff and indigenes from the surrounding communities. These two health facilities, located in the centre of Ibadan metropolis, the capital city of Oyo state in southwestern Nigeria, run sick-baby and immunization clinics.

Sample size and Selection

A sample size of 250 was calculated using the statistical formula for proportion:

$$n = (Z^2 pq) / d$$

Where n is the minimum sample size, Z is the standard score at 95% confidence interval ($z = 1.96$), p is the estimated proportion of infants with acute diarrhoea in the population (0.19), q is the complement of p (0.81) and d is the proportion of sample error in a given population (0.05). The minimum sample size was adjusted to 250 for a non-response rate of 5%.

A single round cross-sectional survey of 250 nursing mothers aged between 17 and 45 years who have at least a child less than a year were selected purposively from the sick-baby and immunization clinics in the two health facilities after obtaining verbal consent. The study was conducted between November 2003 and February 2004.

Data collection

Quantitative information on knowledge, attitude and practice of respondents on management of acute diarrhoea was collected with a pre-coded and pre-tested questionnaire. The questionnaire was structured to obtain information regarding definition, causes, signs, symptoms, and treatment of diarrhoea. Diarrhoea was defined as an intestinal disorder characterized by abnormal fluidity and frequency of faecal evacuation, generally the result of increased motility in the colon.

The questionnaire was divided into 2 sections:

Section 1: Background and demographic information and

Section 2: Knowledge, Attitude and Practice of respondents on Nutritional Management of Acute Diarrhoea in Infants.

Questions testing respondents' knowledge included: definition of diarrhoea, types of diarrhoea, cause of acute diarrhoea, types of management of diarrhoea, aggravation of acute diarrhoea to persistent diarrhoea, and the implication of breastfeeding during acute diarrhoea on its duration and reoccurrence. Questions that evaluated respondents' attitude included: health care seeking behaviour during acute diarrhoea, beliefs on continued /sustained feeding during acute diarrhoea, and cultural support of food withdrawal during acute diarrhoea. Questions asked in the respondents' practice sub-section included: home management of acute diarrhoea and types of food to be given or withdrawn.

Respondents' knowledge, attitude and practice were measured based on either positive or negative response (or even neutral response) to the questions asked.

Focus group discussions were carried out in the sick-baby clinic of the State Maternity Hospital, Adeoyo, Ibadan. Qualitative data were thus collected on food withdrawal practices during acute diarrhoea.

Data Analysis

Data entry and analysis were done using SPSS version 11.0. Descriptive statistics were generated to summarize variables and also illustrate characteristics like the central tendency and dispersion around the mean and median. Associations and significant differences in parameters were tested using chi-square test. A p-value of less than 0.05 was considered significant.

For the purpose of analysis, the tendency to act in a way that is beneficial to health was considered as positive attitude and tendency to act that is harmful to health was considered as negative attitude.

RESULTS

A total of 250 nursing mothers participated in the study with the mean age of 27.5 years (± 6 SD) while the mean age of the infants was 7 months (± 2 SD). Table 1 shows the socio-demographic characteristics of the respondents. Majority (94%) of the nursing mothers belonged to the Yoruba ethnic group, 46.8% had at least secondary education while 72.8% were trader/artisans. Respondents' household characteristics in table 2 show that the major source of water was well water (62.4%), public refuse dump and bush disposal methods were the common methods of refuse disposal reported by the respondents (67.6% and 32.4% respectively). About 56% of the respondents had access to water toilet system while 42% had access to pit latrines.

About 48% had knowledge of acute diarrhoea, 53.2% and 33.6%, respectively ascribed food contamination from unhygienic preparation and food allergy (and nutrient malabsorption) as the major causes of diarrhoea in infants. Only 6.0% had

knowledge of nutritional management of diarrhoea while 54.8% and 32.9%, respectively had knowledge of ORT and drug therapy during acute diarrhoea. About 78% acknowledged that the aggravation of acute diarrhoea to persistent diarrhoea depends on the management pattern (that is addressing both electrolyte imbalance and malnutrition in the sick child). More than half of the respondents (59%) believed that breastfeeding during acute diarrhoea reduces its duration in the infant. It is important to clarify that respondents' knowledge of nutritional management of acute was defined as sustained feeding (breast milk, solid and liquid food). Less than a quarter (19%) reported that aggravation of acute diarrhoea to persistent diarrhoea depends on the management pattern (Table 3).

Majority of the respondents (71.2%) reported food withdrawal during episodes of diarrhoea in infants while only 28.8% reported sustained feeding. About 56% and 44% reported withdrawing breast milk (and other liquid foods) and solid foods, respectively. Such withdrawal was based on the ideology that the foods prolong the duration of the diarrhoea in the child (86%), and induces vomiting/loss of appetite (14%). About 44% of those that reported food withdrawal highlighted reduction in breastfeeding frequency during acute diarrhoea while more than two-thirds of these (77%) cited cultural reasons for withholding breastfeeding, representing about one third (25%) of the respondents (Table 4). The cultural reasons cited include home-based practices passed from generations and also traditional belief that diarrhoea is a normal occurrence during infancy and as such some foods should be withdrawn during its occurrence.

The bivariate analysis of some of the respondents' socioeconomic characteristics as associated with their knowledge, attitude and practice indicated a non significant association with most of the variables. However, respondents' level of education was significantly associated with their attitude towards food restriction during acute diarrhoea.

The two focus group discussions held with the mothers points towards the aforementioned findings. The mass media and hospital health talks (particularly on immunization days) were the main sources of information on diarrhoea to the mothers, regardless of their educational level. Television and radio jingles sponsored by the government (state and federal governments) and some non-governmental organizations in the state were reliable sources of information to the mothers on the signs and symptoms of diarrhoea in infants. The visual representation of these messages by the television media helps the mothers to fully comprehend such messages. Information given to the mothers by the nurses in the hospitals includes the signs and symptoms of diarrhoea (especially dehydration), availability of oral rehydration tablets, recipe for home-based oral rehydration therapy (salt-sugar solution and other solutions) and also when to refer the case to a physician.

The mothers usually adopt a combination of treatments in managing an episode of diarrhoea. Mothers' infant-feeding practices were shaped by cultural aspects, including advice from elders (their own mothers, their mothers-in-law, or other

women with ascendance) and home-based practices passed from generations. Mothers may also adopt new practices or change existing ones depending on experience gained in treating previous episodes of diarrhoea. Although some mothers were likely to withhold food completely from the child during diarrhoea, most recognized the need to feed: - however, they tend to modify the usual diet. Animal milk and infant formula were well diluted when given to the child during diarrhoea. Food withdrawn and given to the child during diarrhoea depends on the mother's perception of the cause of diarrhoea: - however, commonly withdrawn solid foods include: fruits, vegetables, meat products beans products and beverages.

The mothers further explained that health care providers were also source of advice on food restriction/withdrawal during acute diarrhoea. They were usually advised by these health care providers to restrict heavy and solid foods while light, easy-to-digest foods were given during acute diarrhoea.

DISCUSSION

Beliefs regarding food restrictions during diarrhoea in infants were common amongst the respondents, regardless of their educational level and religious inclinations. Most of the foods withdrawn during diarrhoea were indigenous foods rich in protein but believed to aggravate diarrhoea in the child. Such beliefs play an important role on the nutritional outcome and status of the child, because these restrictions, if severely imposed, compromise the nutritional status of the child, already at risk from poor appetite, vomiting, increased nutrient needs or increased nutrient losses from the gastro-intestinal tract. In addition, starving a child during diarrhoea is dangerous, as it always result in the deterioration of the child's nutritional status. Food withdrawal leads to weight loss, growth faltering and aggravates any existing malnutrition. It also delays the repair of the damaged intestinal lining and the return of its ability to produce certain digestive enzymes. This may lead to other problems, such as prolonged malabsorption of various nutrients and persistent diarrhoea.

The mothers' perception observed in this study is consistent with the findings of studies carried out in different rural communities which reported a reflection of the aetiology of illness and of the therapeutic properties of local foodstuffs in the diet fed to infants by their mothers during common childhood illnesses. Rice, sugar, sweet foods and groundnut preparations perceived as causes of diarrhoea were withdrawn [18, 19]. The implications of the restriction of these energy-rich staple foods on the nutritional outcome of the child cannot be overemphasized especially during convalescence.

Recurrent diarrhoea episodes have been observed to negatively affect the nutritional status of a child and to also aggravate existing malnutrition. Greater weight gain, however, has been documented among infants given an unrestricted diet during diarrhoeal infections than in those receiving a more restricted diet [20-22]. Furthermore, studies have shown that even during acute infections, about 60% of nutrients are absorbed normally [20, 23]. Therefore, it is not necessary to interfere

with the regular feeding of children with diarrhoea as the emphasis on malabsorption supersedes the degree of absorption that occurs when nutrients are offered. Continued feeding during episodes is also promoted as a result of the observation that intestinal mucosal disaccharidase levels are dramatically reduced during fasting, and the decrease in intestinal enzyme levels is merely a temporary adaptive response to feeding.

The result of this study shows that even though a high percentage of the respondents are quite knowledgeable on the use of oral rehydration therapy (ORT) in the management of diarrhoea, their knowledge of nutritional management of the infection is low. This points to the fact that while oral rehydration has become accepted in the management of acute diarrhoea, continuous or sustained feeding is not yet endorsed by the mothers. This finding is consistent with a Finland study that reported wide acceptance of home use of oral rehydration relative to the acceptance of sustained feeding [24].

The findings of this study also indicate that culture has a strong influence on the management of acute diarrhoea and it sometimes interferes with personal attitude towards food withdrawal. Indeed, culture specific beliefs concerning the relationship between diarrhoea and the consumption of particular foods (notably beans and bean products and sweet beverages in this study) relates both to the causal role of the food in precipitating diarrhoea as well as to its restriction as a therapeutic measure in response to diarrhoea.

Another erroneous belief of the mothers involved in this study was the initiation of diarrhoea by the over-consumption of breast milk and thus the reduction of breastfeeding frequency during a bout of diarrhoea. On the contrary, breastfeeding reduces the severity and frequency of diarrhoea in infants by preventing dehydration and malnutrition [9]. Furthermore several studies have shown that children breastfed by their mothers during an episode of diarrhoea had reduced stool output [25- 27].

CONCLUSION

This study shows that there is a dearth in knowledge, positive attitudes and healthy practices related to appropriate nutritional management of acute diarrhoea among caregivers/mothers. Therefore, there is need to target appropriate health and nutrition education programmes that would improve caregivers'/ mothers' knowledge and help in developing positive attitude and healthy practices which will eventually help to reduce morbidity and mortality commonly associated with childhood diarrhoea. Such programmes should emphasize the importance of breastfeeding and continued feeding during diarrhoea.

Table 1: Socio-demographic Characteristics of Respondents

Variables	Frequency	Percentage (%)
Ethnic group		
Yoruba	235	94.0
Other tribes	15	6.0
Total	250	100
Education		
Primary and below	82	32.8
Secondary	117	46.8
Tertiary	51	20.4
Total	250	100
Occupation		
Traders/Artisan	182	72.8
Civil servants	45	18.0
Unemployed/housewife	23	9.2
Total	250	100

Table 2: Household Characteristics of Respondents

Variables	Frequency	Percentage (%)
Water source		
Tap/Bore hole	91	36.4
Well	156	62.4
River/Rain	3	1.2
Total	250	100
Refuse Disposal Method		
Public refuse dump	169	67.6
Bush/Anywhere	81	32.4
Total	250	100
Toilet type		
Pit latrine	105	42.0
Water system	139	55.6
Bush/River	6	2.4
Total	250	100

Table 3: Knowledge of Respondents on Management of Acute Diarrhoea

Variable	Frequency	Percentage (%)
Causes of Diarrhoea		
Food contamination	133	53.2
Malabsorption/Food allergy	84	33.6
Food poisoning/others	33	13.2
Total	250	100
Types of Management		
Drug therapy	98	39.2
Oral rehydration therapy	137	54.8
Nutritional management	15	6.0
Total	250	100
Aggravation depends on management pattern		
No	46	18.4
Yes	196	78.4
No response	8	3.2
Total	250	100
Breastfeeding reduces duration		
No	103	41.2
Yes	147	58.8
Total	250	100

Table 4: Attitude and Practice of Respondents during Acute Diarrhoea

Variable	Frequency	Percentage (%)
Withdrawal of food during episodes of diarrhoea		
No	72	28.8
Yes	178	71.2
Total	250	100
Types of food withdrawn		
Breast milk/liquid food	70	44.4
Solid food	99	55.6
Total	178	100
Reasons for withdrawal		
Prolongs duration	153	86.0
Induces vomiting/loss of appetite	25	14.0
Total	178	100
Reduction of breastfeeding frequency during diarrhoea		
No	100	56.2
Yes	78	43.8
Total	178	100
Cultural-based reduction of breast milk		
No	18	23.0
Yes	60	77.0
Total	78	100

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