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Original Research Article

Home Management of Acute Watery Diarrhoea and Its Impact on Dehydration: Perceptions and Practices

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Abstract

Aim: The aim of the present study to evaluate the perception and Practices of Home Management of Acute Watery Diarrhoea and Its Impact on Dehydration. **Methods:** This prospective and descriptive analysis study was done in the Department of Pediatric, Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar, India, for 1 year. A total of 100 cases with acute diarrhea were included in this study. Prior to the initiation of any rehydration therapy, investigator performed a clinical evaluation, with particular attention to the dehydration and illness,degree of dehydration, purging rate, physical characteristics of stool and nutritional status. Investigator questioned each mother with the help of a preformed questionnaire. **Results:** In 100 cases 25% were aged 5-10 months, 8% were under 5 months and rest were over 10months. The age range was 2 – 59 months,Mean ± SD = 19.78±12.56. Male comprised 60% of the studied subject. Most of the parents used closed latrine and all the parents used tube well water in the studied population. Most of the patients had both increased frequency and fluidity of stool according to the parent's perception (82%). Only 3% parent initially thought about taking the patient to the hospital. Regarding treatment more than half of the patients (55%) were treated at home with both ORS and drugs, while 42% were treated with only ORS and 3% patients were not treated atall. The drugs received by the patients were metronidazole (15%), cotrimoxazole (13%), erythromycin (17%), nalidixic acid (4%), zinc (9%) and antiemetics (11%). Regarding perception of ORS intake, about two third had appropriate perception, only 20% took adequate amount of ORS, all the patients continued breastfeeding during ORS. Most of the parents had theperception of returning back to hospital when thechild got sicker (55%). Regarding dehydration status, only 3% had severe dehydration, 17% had some dehydration and 80% had no sign of dehydration. **Conclusion:** This study held in India, provides important information about perception and practices of home management of diarrhea in children. Most of the caregivers used ORS at home yet they had wrong idea regarding the preparation.

Keywords: Diarrhea, Perception, Practices.

Introduction

Diarrhoea is characterized by passing three or more loose or watery stools per day. Acute diarrhoea persists for one to two days. The tendency of passing well-formed stools more frequently than normal, is not diagnosed as diarrhea. Also, the passing of loose, pasty stools in breastfed babies is not considered as diarrhoea[1]. In developing countries, children under the age of three years suffer from an average of three episodes of diarrhoea per year[2]. Each episode of diarrhoea worsens the nutritional status of the body necessary for growth and development of the child. Consequently, it is a major cause of malnutrition and malnourished children are highly susceptible to further attacks of diarrhoea[2]. This disease is a manifestation of gastrointestinal infection induced by bacteria, predominantly, E. coli, Salmonella paratyphii and Shigella species. Infection is spread through contaminated food or drinking water or from person-to-person contact as a result of poor hygiene[3]. Diarrhoea deteriorates the immunity of children, specifically in the age group of two to three and is responsible for worldwide mortality of 1.5 to 5 million children per year under the age of five years[4]. It undermines the resistance of the body, coupled with dehydration and viciously depreciates the nutritional status of children aged below five years[5]. Diarrhoeal disease mostly results from contaminated food and water sources. Worldwide, 780 million individuals lack access to improved drinking-water and 2.5 billion lack improved sanitation[2]. It is believed that diarrhoeal diseases form major public health problems in children under 5 years of age, especially in developing countries. In 2002, an estimated 1.6 million children died as a consequence of diarrhoeal disease in developing countries. The diarrhoeal morbidity in India in the year 2005 stood at 1.07 million cases and mortality stood at 2,040 in these children[6]. Diarrhoeal disease is one of the diseases leading to two out of three deaths among children and young adults in Africa and South-East Asia[7]. In Nigeria, diarrhoeal diseases are the third leading cause of death in children below 5 years, accounting for 16% of the Nigerian under 5 mortality rate[8]. Most of these deaths are as a result of severe dehydration, which could have been prevented by oral rehydration therapy (ORT) using Salt Sugar Solution (SSS) or Oral Rehydration Salt (ORS)[9]. International efforts to combat this worldwide problem include the Diarrhoeal Disease Control Programme, whose objectives are to reduce diarrhoeal morbidity and mortality. Diarrhoea dehydrates the body, weakens the immunity and impedes the body's ability to absorb nutrients from diet. These events set forth a vicious circle, wherein, the children become malnourished, which further enhances their bodies' susceptibility to infections[10]. Childhood is a period of rapid physical growth, including the development of the brain almost to its full adult size, and is also a critical period for the development of cognitive functions. The key factors for child growth and development are adequate care, good health, nutrition and stimulation[11]. The knowledge and practice of adequate and quality childhood care could promote the health of the child in terms of prevention of early childhood diseases while lack of knowledge and poor practices increase the chances of a high prevalence of childhood diseases. The main concerns of mothers and other caregivers with respect to feeding, hygiene in the home and the prevention, diagnosis and response to illness in young children should be adequate knowledge and quality practices. Reports indicate that in spite of the recommendation of exclusive breast feeding for newborn, the practice is still very low in India, indicating that the great majority of mothers have little knowledge of nutritional value of breast milk or of the health risks of early exposure to other liquids and solids, leading to one of the main causes of diarrhoea in young

children that ultimately results in illness and malnutrition[12].

Material and methods

This prospective and descriptive analysis study was done in the Department of Pediatric, Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar, India, for 1 year. after taking the approval of the protocol review committee and institutional ethics committee.

Methodology

A total of 100 cases with acute diarrhea by World Health Organization (i.e the passage of three or more loose or watery stools in a 24-hour period, a loose stool being one that takes the shape of a container) were included in this study.

Prior to the initiation of any rehydration therapy, investigator performed a clinical evaluation, with particular attention to the dehydration and illness, degree of dehydration, purging rate, physical characteristics of stool and nutritional status. Investigator questioned each mother with the help of a preformed questionnaire. The questions focused on socioeconomic and demographic characteristics, medical history, use of oral rehydration therapy at home, breast feeding practices for the child, personal hygiene, use of drinking water and housing conditions.

Each child was weighed undressed using a balance scale and height was measured. After taking the history, a through physical examination was done and recorded on the preformed questionnaire. Dehydration was assessed as no dehydration (no clear signs of dehydration), some dehydration and severe dehydration was diagnosed according to WHO criteria for assessing dehydration, which includes two or more signs (i.e., sunken eyes, absent tears, dry tongue), with at least one key sign (i.e., mental change, thirst and skin pinch). Collected data was analyzed by SPSS 21.0.

Results

In 100 cases 25% were aged 5-10 months, 8% were under 5 months and rest were over 10months. The age range was 2 – 59 months, Mean ± SD = 19.78±12.56. Male comprised 60% of the studied subject. (Table 1).

Only about one third (34%) parents were literate, the rest were illiterate. Nearly half of the parents had minimal monthly income of less than 3000 rupees while only 1% had more than 20000 rupees monthly income. Most of the parents used closed latrine and all the parents used tube well water in the studied population (Table 2).

Exclusive breast feeding (EBF) up to 6 months was only practiced by 11% of the studied subjects and 9% children continued only breast feeding after 6 months. About 20% of the infants continued EBF up to 3 months and 41% up to 4 months, 16% up to 5 months.

Most of the patients had both increased frequency and fluidity of stool according to the parent's perception (82%). Only 3% parent initially thought about taking the patient to the hospital. (Table 3).

Regarding treatment more than half of the patients (55%) were treated at home with both ORS and drugs, while 42% were treated with only ORS and 3% patients were not treated at all. (Table 4).

The drugs received by the patients were metronidazole (15%), cotrimoxazole (13%), erythromycin (17%), nalidixic acid (4%), zinc (9%) and antiemetics (11%). Regarding perception of ORS intake, about two third had appropriate perception, only 20% took adequate amount of ORS, all the patients continued breast feeding during ORS. Most of the parents had the perception of returning back to hospital when the child got sicker (55%). (Table 5) Regarding dehydration status, only 3 % had severe dehydration, 17% had some dehydration and 80% had no sign of dehydration (Table 6).

Table 1: Distribution of AWD cases in relationto age and sex

Age in months	Number	%
<5	8	8
5 up to 10	25	25
10 up to 15	16	16
15 up to 20	10	10
20 up to 25	9	9
25 up to 30	2	2
30 up to 35	6	6
35 up to 40	10	10
40 up to 45	5	5
45 up to 50	5	5
50 up to 55	1	1
55 up to 60	1	1
Gender		
Male	60	60
Female	40	40

Age range = 2 – 59 months, Mean ± SD = 19.78±12.56, Modal age = 17 months

Table 2: Demographic details of the caregivers

Demographic details	Number	%
Education level		
Illiterate	66	66
Literate	34	34
Monthly income (household)		
<3000	45	45
3000 up to 4000	40	40
4000 up to 5000	8	8
5000 up to 7000	3	3
7000 up to 10000	2	2
10000 up to 20000	1	1
<20000	1	1
Latrines		
Sanitary latrine	42	42
Borehole latrine	42	42
Pit latrine	11	11
Open space	5	5
Source of drinking water		
Tube-well	100	100
Well	0	0

Table 3: Caregivers' perception

Caregivers' perception	Number	%
Regarding Criteria of stool		
Increase in the frequency of stool	3	3
Increase in the frequency and fluidity of stool	82	82
Fluidity of stool	15	15
Regarding Treatment option		
Take the child to nearer hospital	6	6
Treat the child at home	50	50
Take the child to local quack/ pharmacist/doctor and treat the child at home.	44	44

Table 4: Treatment given at home in AWD cases and Perception about ORS preparation

Treatment option	Number	%
ORS only	42	42
Drugs only	0	0
ORS+ Drugs	55	55
Not treated	3	3
Perception about ORS preparation		
Status of perception of caregiver		
Perception about ORS		
Don't know	4	4
Appropriate perception	66	66
Inappropriate perception	30	30
Quantity of ORS		
Adequate	20	20
Inadequate	75	75
Don't know	5	5
Breast feeding		
Continue breast feeding	100	100
Stopped	0	0
Food option		
Usual food should be allowed	64	64
Food should be restricted	3	3
Soft rice should be given	24	24
Breast feeding	9	9
When to return		
Becomes sicker	55	55
Drinks poorly	4	4
Blood in stool	3	3
Fever	0	0
If not improved after 5 days	2	2
If not improved after 3 days	17	17
If not improved after 2 days	19	19
If not improved after 1 day	5	5

Table 5: Dehydration status of AWD cases

Dehydration status	Number	%
No dehydration	80	80
Some dehydration	17	17
Severe dehydration	3	3

Discussion

Childhood diarrhoea affecting children under the age of five accounts for approximately 63% of the global burden[13]. It is a leading cause of mortality in this age group[14]. Appropriate and timely treatment is very important to decrease the burden. Perception of diarrheal diseases is often inadequate in a developing country like Bangladesh. Thus, this study has been done to evaluate the perception and practices of home management of AWD and its impact on dehydration.

According to WHO diarrhea is usually

defined in epidemiological studies as the passage of three or more loose or watery stools in a 24-hour period, a loose stool being one that takes the shape of a container. However, mothers may use variety of terms to describe diarrhea for example, upon whether the stool is loose, watery, bloody. Infants who are exclusively breast-fed, normally pass several soft or semi-liquid stools each day; for them, it is practical to define diarrheoa as an increase in stool frequency or liquidity that is considered abnormal by the mother[15]. In this study most of the caregivers' (82%) perception about diarrhoea is increase in the frequency and fluidity of stool.

Clinical experience and intervention studies in developing countries have indicated that proper home management can reduce morbidity and mortality due to diarrhoea. Factors of particular importance include prevention of dehydration during diarrhoeal episodes through the use of ORS, support of nutritional status through the continuation of an adequate diet, and the avoidance of harmful practices[16]. Most cases of diarrhea can be treated at home by the health care givers without getting admission into hospital[15]. Most diarrhoea deaths occur due to ignorance of health care givers about home management of diarrhea. They should know the proper use and administration of correct volume of ORS[17]. Since ORT is a simple and inexpensive lifesaving means, both government and international bodies have been promoting its household use[18].

This study shows 94% of the caregivers' perception is to treat diarrhoea at home**.** Perception about ORS preparation is appropriate in 66% cases, inappropriate in 30% cases and in 4% cases do not know how to make ORS solution. Bandyopadhyay S et al have shown that only 10.8% of mothers in Delhi, India prepared the ORS correctly[19]. Widarsa KT et al showed that only 37% of mothers in West Lombok, Indonesia were able to prepare ORS properly[20]. Taha AZ et al found that in rural Bangladesh 64% mothers knew how to prepare ORS correctly[21].

This study shows treatment was given at home with ORS in 94% cases. For management of childhood diarrhoea Sodesman M et al have shown in a suburban West African community that only 58% of diarrhoeal episodes were treated with ORS[17]. Ali M et al have shown for management of childhood diarrhoea in rural India overall ORT use rate was 29%[18].

This study shows inadequate amount of ORS has been given in 75% cases. Ali M et al documented that in the management of childhood diarrhoea in rural Bangladesh, ORS was used adequately only in 17% cases[18]. The drugs received by the patients were metronidazole (15%), cotrimoxazole (13%), erythromycin (17%), nalidixic acid (4%), zinc (9%) and antiemetics (11%). In this relation, Omokhodion FO et al have found that in case of diarrhea management by Nigerian market women, 19% of the mothers purchased drugs at a chemist[22]. Meanwhile, Perez-Cuevas R et al showed that household treatments consisted of mainly symptomatic drugs (35.2%)[23]. Okoro BA et al also have shown that in rural communities of India, drug use rate was 75.6% for home management in diarrhoea. Antibiotics (40.3%), antiprotozoals (24.6%) and antidiarrhoeals (15.3%), were the main groups of drugs used[24].

In this study changes in feeding pattern were also remarkable. Modified food was given in 25% cases. Dietary restriction was in 1% cases. Plain water was given in 30% cases which were not scientifically sound. Perez-Cuevas R et al found similar features where there were changes in feeding patterns (36.2%) consisting in suppressing milk and dietary products and interrupting breast feeding (12.2%)[23]. The results of

this study were similar to the results of other several studies performed in our country and other developing countries. In our country though the ORS use rate increased than before, there are still many obstacles of proper home management including poor knowledge of preparation of ORS, amount of ORS given insufficiently, poor referral knowledge, dietary restriction, changes in feeding pattern and positive view of the use of drugs. Thus, proper intervention should be done at an appropriate level to improve home management. As using ORS solution is the cornerstone of the global effort, initiated by WHO to reduce deaths of young children from diarrhoea, health promotion efforts should target the areas of concern to further improve the home management of through health education.[16] Improved health education should focus more on the quantity of ORS needed, early signs of dehydration and address mothers who have no prior knowledge of ORS[17]. In at least 94% of episodes of watery diarrhoea dehydration can be prevented using only ORS solutions[15]. The study showed no dehydration in 80% cases. This was due to ignorance and less confidence for home management. Some dehydration was found in 17% children and severe dehydration in only in 3% cases. Heath education should be given for clinical indicators as reasons for seeking professional treatment. In this study most of the caregivers did not know when to return immediately. In 55% cases they believed when the child becomes sicker, they should return to hospital immediately. In 40% of cases, parents believed that they should return within 1-3 days if not improved. They were not confident about treatment at home. Here, 66% of cases presented with a short history of illness of 1 up to 4 days. The cause for this might be lack of knowledge and confidence regarding home management. Socioeconomic condition is one of the most important factors having inverse relationship with diarrhoea. In this study 85% of patients came from poor socioeconomic family (within 4000 household). Most of the caregivers were illiterate (66%). In this study, 95 families used latrines, among them 42% family members used sanitary latrine while the rest used open air defecation. Most diarrhoeal episodes occurred during the first 2 years of life. Incidence was highest in the age group 6-11 months, when weaning is started in children[25]. This study offers a unique opportunity to age specific distribution of diarrhoeal cases. 59% of the cases were in between the age of 5-20 months, modal age was 17 months. It is known that risk of developing severe diarhoea is many times greater in infants who are not breast-fed than in those who are exclusively breast-fed; the risk of death from diarrhoea is also substantially greater[15]. Our study showed that in 61% cases the duration of exclusive breast feeding was up to 4 months. A related study done in this country showed lower percentage (7.4%) were on EBF[26]. In this regard, it can be mentioned that, contamination of weaning foods is a major cause of diarrhoeal diseases and malnutrition[27]. Meanwhile, all the studied subject continued breast feeding during diarrhoeal episodes which is a good practice according to WHO guideline[15]. It was appreciable that most of the caregivers' (94%) had the perception to treat diarhoea at home. But unfortunately, 30% of the caregivers' perception about ORS preparation was still inappropriate and 4% of them did not know how to make ORS solution. It was a major problem for proper home management of diarrhoea.

Conclusion

This study held in India provides important information about perception and practices of home management of diarrhea in children. Most of the caregivers used ORS at home yet they had wrong idea regarding the preparation. However, continuation of breast feeding was observed which is appreciable. Moreover, most of the patients attended the ORT with no dehydration which could be managed at home.

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