

Original Research Article

Management of acute diarrhea in children: is the treatment guidelines is really implemented?

Jaigam Abbas, Dinesh Chandra Pandey*, Ashish Verma, Vijay Kumar

Department of Pediatrics, Career Institute of Medical Science, Lucknow, Uttar Pradesh, India

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***Correspondence:**

Dr. Dinesh Chandra Pandey,

E-mail: dr_dc_pandey@yahoo.com

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ABSTRACT

Background: Acute diarrhea is a common problem in children especially in poor and developing nations. It is one of the leading cause of under-five years' mortality globally. The children used to die each year of dehydration and electrolyte imbalance caused by acute diarrhea. Despite of WHO recommendations on the use of ORS and zinc in the management of acute diarrhea as a simple and effective treatment, the prescribing trend of ORS and zinc in acute diarrhoea is not up to the mark, which further increases the burden of the problems. Objectives: we aimed to assess; (1) prescribing trend of ORS and zinc in acute diarrhoea in children aged 6months to 5years by health care providers, (2) to asses' proportion of patient education in acute diarrhea by health care providers.

Methods: This was a qualitative, cross-sectional, hospital based study carried among children aged 6months to 5yrs.

Results: This study was conducted among 313 children of acute diarrhoea who had been treated outside. Mean age (months) was 27.53 ± 15.87 . Out of all children who were treated from outside, 180 (57.50%) took treatment from general physician, 113 (36.10%) children took the treatment from pediatrician, and 20 (6.85%) took the treatment from the physician and 25 (7.9%) took treatment as over the counter antidiarrheal by the pharmacists. Out of them dehydration was documented only in 97 (30.99%), while ORS was given in 229 (73.16%) and zinc was given in 121 (38.65%) children. Patients education was done in 39 (12.46%).

Conclusions: There was gross under implementation of treatment guidelines in the management of acute diarrhea by health care providers especially by general physicians.

Keywords: Acute diarrhea, ORS, Prescribing trend, Zinc

INTRODUCTION

Every year more than a million children under five years of age succumb to the fluid loss and dehydration associated with the majority of diarrhoea related deaths. It is estimated that 13% of all years lost due to ill-health, disability, or early death (so-called "disability-adjusted life years") are caused by diarrhea.¹⁻⁴ The lack of access to safe, clean drinking-water and basic sanitation, as well as poor hygiene cause nearly 90% of all deaths from diarrhoea, mainly in children.⁵ While 87% of the world's

population now have access to improved water sources, 39% still lack access to improved sanitation.⁶ Moreover, in developing countries 1.1billion people still defecate in the open, and hand washing with soap is practiced, on average, only after 17% of toilet uses.^{6,7} Diarrhea is the third most common cause of death in under-five children, responsible for 13% deaths in this age-group, killing an estimated 300,000 children in India each year.⁸ Oral rehydration is a well-known and relatively simple treatment approach.⁹⁻¹⁵ Zinc supplementation has been found to reduce the duration and severity of diarrhoeal

episodes and likelihood of subsequent infections for 2-3 months.¹⁶⁻¹⁹ Zinc supplements are generally accepted by both children and caregivers and are effective regardless of the type of common zinc salt used (zinc sulphate, zinc acetate or zinc gluconate).^{20,21} Treatment with ORS is simple and enables management of uncomplicated cases of diarrhea at home, regardless of etiologic agent. As long as caregivers are instructed properly regarding signs of dehydration or are able to determine when children appear markedly ill or appear not to be responding to treatment, therapy should begin at home. Early intervention can reduce such complications as dehydration and malnutrition. Early administration of ORS leads to fewer office, clinic, and emergency department (ED) visits and to potentially fewer hospitalizations and deaths.²² Currently, only a very small proportion of children in need have access to zinc supplementation.²³ Guidelines on the use of zinc supplementation in the management of diarrhoea may accelerate progress towards the United Nations Millennium Development Goal 4 for reducing child mortality by two-thirds by 2015.²⁴

Despite of the global consensus on the use of ORS and zinc as a simple and effective treatment in acute diarrhoea, the prescribing trend of zinc and ORS is not up to the mark, because of this complication is often seen in some patients of acute diarrhea. So, its reflects poor patient education, poor communication and lack of stickiness to guideline in the management of acute diarrhea by health care providers.

METHODS

This was a cross-sectional hospital based study among children with acute diarrhea aged 6months-5years attending pediatric outdoor and indoor department of Career Institute of Medical Sciences Lucknow, India, in the academic years March'2015-March'2017. A self-designed questionnaire was administered to care givers and were asked regarding treatment received from health care providers outside.

Sampling methods and sample collection

Total 519 cases aged 6months-5yrs of acute diarrhea were enrolled from March 2015 to March 2017. Out of which, 341 cases had been treated outside by health care providers and remaining 178 cases did not receive any treatment from outside. Those who had been treated outside (n=341), only 313 care givers were able to produce treatment documentation and 28 care givers were unable to produce any treatment documentation. The study included all the cases of acute diarrhea aged 6months -5years with documented treatment from outside by health providers. The cases which did not take any treatment and took undocumented treatment were excluded from the study. Prior permission from the caregivers was taken. The study was approved by the local independent ethics committee.

Exclusion and inclusion criteria

Study excluded those cases who did not received any treatment from out sided by health care providers and those who were treated outside but unable to produced documentation regarding same. Study included all cases of acute diarrhea aged 6months -5years which had been treated outside by health care providers and able to produce documentation regarding same.

Statistical analysis

Data were analysed using SPSS statistical software version 20. Mean and SD were calculated for categorical variables. Chi-square test was used whenever required.

RESULTS

Patients' characteristics

This study was conducted among 313 children of acute diarrhea those who were treated outside and then came to pediatric outpatient and indoor department of Career Institute of Medical Sciences Lucknow, between March' 2016 and March' 2017. Out of these 197 (62.93%) were male and 116 (37%) were female.

Table 1: Baseline and demographic characteristics of patients of acute diarrhea in children (n=313).

Demographic characteristics	n (%)
Male	197 (62.93%)
Female	116 (37%)
Age (months) (mean \pm SD)	27.53 \pm 15.87
Weight (kg) (mean \pm SD)	11 \pm 2.12
Height (cm) (mean \pm SD)	86 \pm 14.9
Social status	
High	123 (39.29%)
Low	190 (60.70%)
Rural	181 (57.58%)
Urban	132 (42.17%)
Feeding practiced in the first six months	
Exclusive breast milk	126 (40.25%)
Mixed fed	81 (25.87%)
Bottle feeding	79 (25.23%)
Katori spoon feeding	27 (8.62%)
Animal milk	68 (21.72%)
Formula milk	119 (38%)
Feeding/dietary practices (complementary feeding) <6-24months (n=157)	
Adequate	73 (46.49%)
Inadequate	84 (53.50%)
Feeding/dietary practices (balanced diet) >24 months-60 months (n=156)	
Adequate	62 (39.74%)
Inadequate	94 (60.25%)
Vaccination status	
Fully vaccinated	197 (62.93%)
Partially vaccinated	60 (19.16%)
Unvaccinated	56 (17.89%)

Table 1 depicts the demographic characteristics of patients. Out of them 123 (39.29%) belonged to high and 190 (60.70%) belonged to low socioeconomic strata. Out of all the patients 181 (57.58%) belonged to rural and 132 (42.17%) belonged to urban area. Mean age (months) was 27.53±15.87. The types of milk used in the first six months of life (n=157) are exclusive breast milk, mixed milk, formula milk and animal milk in 126 (40.25%), 81 (25.87%), 119 (38%) and 68 (21.72%) children respectively. The mode of feeding that were used in the first six months of life are exclusively breast fed, mixed fed (breast fed and bottle fed), bottle fed, and katori-spoon fed in 126 (40.25%), 81 (25.87%), 79 (25.23%) and 27 (8.62%) children respectively. In children above six months (n=156), dietary practices were adequate in 62 (39.74%) and inadequate in 94 (60.25%). Out of all 197 (62.93%) were fully vaccinated, 60 (19.16%) were partially vaccinated and 56 (17.89%) were unvaccinated.

Characteristics of Clinical profile of acute diarrhea in children

Table 2 depicts clinical profile of acute diarrhea. Out of all children, 243 (77.63%) were presented with acute watery diarrhea and 70 (22.36%) with acute bloody diarrhea. The mean duration of diarrhea (days) was 5.58±5.56. Fever was reported in 213 (68%) while vomiting, pain abdomen and cough-cold was reported in 134 (42.81%), 93 (29.71%) and 79 (25.23%) children respectively. Out of all, 193 (61.66%) had no dehydration, 73 (23.32%) had some dehydration and 47 (15%) had severe dehydration.

Table 2: Clinical profile of acute diarrhea in children.

Clinical profile	n (%)
Duration of diarrhea (days) (mean ±SD)	5.58±5.56
Watery	243 (77.63%)
Bloody	70 (22.36)
Fever	213 (68%)
Vomiting	134 (42.81%)
Pain abdomen	93 (29.71%)
Cough/cold	79 (25.23%)
Frequency of stools	
<10/day	211 (67.41%)
>10 day	102 (32.58%)
Dehydration	
No	193 (61.66%)
Some	73 (23.32%)
Severe	47 (15%)
Others	
Refusal to feed	30 (9.58%)
Seizure	18 (5.75%)
Altered sensorium	14 (4.47%)
Respiratory distress	15 (4.79%)
Shock	7 (2.23%)
Anuria	48 (15.33%)
Aspiration pneumonitis	7 (2.23%)
Abdominal distension	8 (2.55%)

Other clinical features that were observed are refusal to feed in 30 (9.58%), seizure in 18 (5.75%), altered sensorium in 14 (4.47%), respiratory distress in 15 (4.79%), shock in 7 (2.23%), anuria in 48 (15.33%), aspiration pneumonitis in 7 (2.23%) and abdominal distension in 8 (2.55%) children.

Table 3: Trend of management of acute diarrhea by health care providers.

Treatment received from outside by	
i) GP (M.B.B.S, BAMS, BUMS, BHMS etc)	155 (49.52%)
ii) Paediatrician	113 (36.10%)
iii) Physician	20 (6.85%)
iv) OTC antidiarrheal by pharmacist	25 (7.9%)
Assessment of dehydration	97 (30.99%)
Antibiotic	288 (92%)
Antiparasitic	133 (36.10%)
Antiemetic	123 (39.29%)
Antipyretic	213 (68%)
Antispasmodic	97 (30.99%)
Probiotic and prebiotic	215 (68.69%)
Rececodatril	98 (31.30)
Antimotility drugs	17 (5.43%)
Gastric enzymes	79 (25.23%)
WHO-ORS	229 (73.16%)
Zinc	121 (38.65%)
Education of parents	39 (12.46%)
Lactose free formula	57 (18.21%)
Stoppage of breast feeding	67 (21.40%0
Simple sugar solution	23 (7.34%)
Energy drinks	19 (6%)
Fasting	13 (4.16%)

Table 3 depicts prescribing trends of health care providers in the management of acute diarrhea. Out Of all the children who had received treatment from outside by health care providers, 155 (49.52%) took treatment from general physicians (BAMS, BHMS, BUMS, MBBS), 113 (36.10%) took treatment from pediatricians, and 20 (6.85%) took treatment from physicians and 25 (7.9%) as over the counter antidiarrheal by the pharmacists. Out of all children, dehydration was documented only in 97 (30.99%), WHO-ORS were given in 229 (73.16%), zinc were given in 121 (38.65%), antibiotic were used in 288 (92%), antiparasitic were given in 133 (36.10%), antiemetic were used in 123 (39.29%), antipyretic were used in 213 (68%), antispasmodic were used in 97 (30.99%), probiotic and prebiotic were used in 215 (68.69%), rececodatril were used in 98 (31.30%), antimotility drugs were used in 17 (5.43%), gastric enzymes were used in 79 (25.23%), education of parents was done in 39 (12.46%), lactose free formula were used in 57 (18.21%), stoppage of breast feeding was advised in 67 (21.40%), simple sugar solution was advised in 19 (6%) of children , energy drink were used in 19 (6%),and fasting was advised in 13 (4.16%).

There was significant correlation found between different types of health care provider and trend of management in

acute diarrhea (p value <0.01).

Table 4: Correlation of health care provider with trend of management in acute diarrhea in children.

Health care provider	ORS	Zinc	Stoppage of breast feeding	Antibiotics	Patients education	P value
GPS	121	33	48	147	5	<0.01
Pediatrician	99	76	16	99	31	
Physician	9	7	2	18	2	
Pharmacist	5	4	1	24	1	
Total	229	121	67	288	39	

DISCUSSION

According to the IMNCI guidelines, children with no dehydration should be managed at home with ORS, home available fluids (HAF) and continue feeding including breast feeding. The early detection of diarrhea at home, early and optimal use of ORT, maintenance of proper hygienic and safe feeding practices reduces the duration, severity, hospitalization, overall medical costs and death of under five children in diarrhea. In present study Out of all children those who received treatment from outside, 155 (49.52%) took treatment from general physician, 113 (36.10%) children took treatment from pediatrician, and 20 (6.85%) children took treatment from physician and 25 (7.9%) took treatment by pharmacists as over the counter antidiarrheal, it reflects bulk of patients are still covered by the general physicians. Out of which, dehydration was documented only in 97 (30.99%), it highlights the poor quality of assessment of dehydration in acute diarrhea by the health care providers especially among general physicians in India. Studies in the past pointed out that the quality of healthcare and health care workers in developing countries continue to lack access to basic, practical information to enable them to deliver safe effective care. Research knowledge has been slow to influence practices or to bridge the know-do gap and a broad scope of ingredients bears upon the genuine ability to improve care.²⁵⁻²⁷

In present study WHO-ORS was given in 229 (73.16%), zinc was given in 121 (38.65%), antibiotics were used in 288 (92%), which reflects the poor adherence to treatment guidelines especially among the general physicians. Previous study shown that, the adherence to treatment guidelines for the management of common childhood illnesses such as diarrhoea and respiratory tract infections is low worldwide.^{25,27} Clinical practice guidelines implementation strategies have focused on altering the performance of doctors, and a minority has targeted nurses or other health professionals.²⁸ The coverage of ORS of under three years children is 26.2% according to NFHS-3. In past a study conducted in Brazil, Ethiopia, Egypt, Philippines and India (Nagpur and Lucknow), adherence to zinc for ≥ 10 days was 83.8%.²¹

The lack of access to safe, clean drinking-water and basic sanitation, as well as poor hygiene cause nearly 90% of all deaths from diarrhoea, mainly in children.⁵

So, health education is integral part of management of childhood diseases especially in the acute diarrhea. In the present study overall health education regarding hygiene, safe water, dietary and/ or feeding and ORS were done in 39 (12.46%) children.

The correlation between different health care providers and types of prescribing trends in the management of acute diarrhea was statistically significant (p<0.01). Findings of this studies pointed out that comparatively fewer assessment of dehydration, fewer patient's education, and more deviation from the treatment guidelines in the management of acute diarrhea in children among general physicians.

CONCLUSION

There was gross under implementation of treatment guidelines in the management of acute diarrhea by health care providers especially by general physicians as they form bulk of health care providers to the communities in a country like India. On the basis of finding of our study we recommend,

- Regular training and education of health care provider especially GPs regarding implementation of treatment guidelines of acute diarrhea to be made compulsory,
- Health care providers must be trained separately in the field of attitude and communication, as effectiveness of any guidelines depends on how efficiently it is being communicated to the parents or care givers,
- There should be ban on over the counter (OTC) sale of antidiarrheal and antimotility drugs by the pharmacists,
- There should be involvement of mass media and social media for promotion of health education especially breastfeeding, balance diet, and ORT and zinc.

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