

REVIEW ARTICLE

Diarrhea Management in children of Developing Countries by Mothers and General Practitioners

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ABSTRACT:

Despite continuous improvement and advancement of treatment, diarrhoeal disease is the second leading cause of death in children under the age of five years globally and is a major cause of concern in developing countries. Research suggests that lack of proper and timely management leads to increased mortality and morbidity. The aim of this review is to assess the knowledge, attitude and practices of mothers/caregivers and general practitioners (GPs) toward management of diarrhoea in children under the age of five years in developing countries. A systematic review was performed using observational evidence. A thematic approach was used for the analysis of the data and narrative synthesis methodology to summarise the review findings. Results suggest that oral rehydration salts solution are not considered a sufficient cure for childhood diarrhoea and, are given, mostly with traditional medicines and unnecessary non-prescribed drugs. Health care seeking and feeding practices were also found to be very poor. Prescribing practices among GPs were influenced by professional knowledge as well as a number of factors, such as, fear of losing patients, loss of prestige, family demands, and external pressures like hospital work load and pharmaceutical interests. Barriers of recommended childhood diarrhoea management were linked to lay beliefs, economic constraints, and lack of education.

Keywords: Diarrhea, Children, Mothers/caregivers, General practitioners, Management, Developing countries

INTRODUCTION:

Childhood diarrhea is a major cause of concern in developing countries because of lack of hygiene, unsatisfactory health and nutritional status, and most importantly lack of proper and timely management that leads to increased mortality and morbidity rates. It is responsible for killing 1.5 million children every year that makes diarrhea, a second leading cause of death in children under five years of age. Death due to diarrhea is mainly due to its complication i.e. dehydration (loss of water and salts from body) which can be treated simply and effectively by giving extra fluid by mouth at home, commonly referred to as oral rehydration therapy (ORT).¹

Recommendations for the treatment of diarrhea have been developed by the WHO and UNICEF more than 20 years ago advising a single formulation of ORS. This was followed by revised recommendations in 2004 by a joint statement which focused on two main elements: the low osmolarity ORS to prevent dehydration and zinc treatment. ORS became well known from the 1990s onwards but unsatisfactory application and unawareness

created problems in diarrheal diseases control.^{1,2}

Repeated episodes of childhood diarrhea are also a major contributor to malnourishment. Undernourished children are more susceptible to infections because of their impaired immune system and are more likely to suffer from diarrhea and its consequences, which further impede their development.³ Satisfactory sanitation and good hygiene are key factors in improving diarrhea, but unfortunately lack of these are common in developing parts of the world.⁴

An estimated 2.5 billion cases of diarrhoea occur in children under 5 years of age every year.⁵ Although mortality rate in children in year-2004 decreased from an estimated 5 million deaths to 1.5 million over last two decades, diarrhoea is still the second leading cause of child death worldwide. It was found that 80% of children were under two years of age, among these 1.5 million children died.⁶ In developing countries, children under three-year-old experience on average three episodes of diarrhoea every year. More than 80 percent of deaths occurred in Africa and Southern Asia where malnutrition continues to be a major public health problem. A total of 15 countries account for three quarters of all deaths by diarrhea per year, out of which India has a very high rate.^{1,7}(Table-1)

Knowledge and awareness among mothers towards diarrhea treatment has a great impact on child health. Other factors influencing successful treatment of diarrhea and consequently morbidity and mortality rates include attitude and behavior- collectively or individually. Traditional beliefs and cultural factors are also related to the occurrence of diarrhea.⁸

The proper management of diarrhea depends on skills, and good understanding of appropriate ORS dose with its composition. There are deficits in the knowledge of physicians regarding the correct treatment of childhood diarrhea, and especially its dietary and nutritional management. Importantly, there is also a lack of training to upgrade knowledge of physicians in developing countries and especially in the rural areas. Inadequate

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knowledge regarding correct management of diarrhea may contribute to the underutilization of oral rehydration solution.⁹ In addition, the practice of prescribing unnecessary antibiotics and a range of ineffective and sometimes harmful drugs for diarrhea treatment is still continuing in developing countries.¹⁰

This literature survey was conducted to gather information regarding general awareness, attitude, perceptions and practices of mothers/caregivers and general practitioners toward diarrhea treatment in children of developing countries.

METHODOLOGY:

The standard five stages of a systematic review were followed, which includes:

1. Protocol Development
2. Mapping exercise: includes developing Inclusion/Exclusion criteria and identification of studies according to the Inclusion/Exclusion Criteria.
3. Quality appraisal of studies identified
4. Data extraction: study findings and characteristics
5. Analysis and synthesis of findings

For the purposes of this review, a comprehensive online literature search was undertaken using CINAHL, MEDLINE, Pub Med, Cochrane, Research gate, Global Health, Bioline International from the year 1990 onwards using various key words and phrases related to the topic. Grey Literature in the form of topic relevant books on qualitative research, doctoral thesis and dissertation, official policies, health/clinical guidelines and reports of national and international organizations including policies issued by WHO and UNICEF were also located and reports were searched for relevant references. All published observational and qualitative studies after 1990 in English with study sample of mothers/caregivers of children less than 5-year of age and general practitioners/Paediatricians on diarrhoea management practices in the developing part of the world were selected. The short-listed papers were then each critically appraised using Critical Appraisal Skills Programme (CASP) tool developed by the Public Health Resource Unit (PHRU) within the National health services (NHS), United Kingdom.

The data was extracted using forms adapted from the National Institute for Health and Clinical Excellence (NICE) data extraction form templates.¹¹ The analysis of the extracted data was done by thematic analysis technique and narrative synthesis methodology was used to synthesize overall review findings.

RESULTS:

MOTHERS AND CAREGIVERS:

General awareness and attitude:

The use of ORS depends on the mother's knowledge and her attitude towards ORS use.¹² Mothers showed reasonable knowledge and familiarity with ORS and dehydration but exhibited gaps in their understanding

of what ORS actually does and consequently there was a lack of trust that ORS would be enough to treat diarrhea.¹³ Parents who knew about ORS also knew that it could replace fluid and prevent dehydration but as with previous study, it was not viewed as sufficient treatment to reduce frequency or stop diarrhea,⁵ thus mothers used additional medicines like antibiotics, herbal remedies and traditional medicines.^{14,15,16,17} There was a significant relationship between literacy status of mothers and feeding practices and fluid replacement during diarrhea which affected overall health of children.¹⁸

Uneducated mothers were mainly using traditional herbal and spiritual healing methods. In contrast, a study in Iran found that education had no positive effect on mother's diarrhea management practices because of the continuation of their fallacious beliefs regarding diarrhea management.¹⁹

Awareness and knowledge of ORS of mothers/caregivers depended on the media exposure and education by practitioners (for example at immunization days, during consultations).^{19,21} Mothers exposed to electronic media on a regular basis were more aware of ORS for childhood diarrhea and showed better practice in management. Together, these findings suggest that education through media and medical information raised awareness of ORS. This seemed to be influenced by mother's background. If mothers were unaware or unconvinced of the effectiveness of ORS, they also used other medicines— either Western drugs and/or traditional herbal remedies.^{19,20,21}

Perceptions:

Childhood diarrhea was not considered as illness, and consequently treatment was not given in all cases. Parents believed that diarrhea was a normal problem in children under age 5-year and a major milestone in growing up in all developing countries. Teething or just overeating was the cause of diarrhea and so nothing effective could be done to cure diarrhea. In some cases, parents thought that diarrhea could be transmitted from mothers via breast milk, due to contaminated food and unclean water. Mothers also linked diarrhea to malaria when accompanied by fever. Serious or life threatening cases of diarrhea were often associated with external agent such as the evil eye, demons, evil spirits or a jealous person and transgression of sexual taboos by parents, especially mothers. Hence, it was treated with traditional and spiritual therapies. Perceptions of mothers/caregivers regarding the cost, worth and status of different ORS treatment was influenced by the prescribing patterns of medicines. Cheap rates and free of cost availability of WHO-ORS made it undervalued and was considered as an inexpensive and unimportant medicine. Commercially prepared flavored ORS brands made according to consumer expectations have found to be more acceptable to children as well as caregivers. Advertising in the media raised awareness of caregivers and physicians of certain brands and influenced prescribing.^{5,14-16,20}

Practices:

Diet and fluid restriction was also very common in

developing countries.^{12,16,17,18,19,21} It was a common misconception among mothers that no fluid to be given during diarrhea.¹² There was a belief that excess fluid increased the frequency and quantity of stools and continued feeding worsened diarrhea.¹⁶ These fallacious beliefs were the result of lack of knowledge and awareness in relation to feeding practices during diarrhea.¹⁹ Ogunbiyi & Akinyele, discussed in their study that beliefs regarding food restriction were common among caregivers regardless of their educational level as it passed down through families.²¹

Self-medication and unauthorized usage of medicines were common in developing countries.²² Treatment practices at home begin in the form of special foods and use of herbs as remedies for diarrhea management.¹⁴ Mothers used a combination of drugs including anti-diarrheal, antibiotic, and herbal medicine within first 24 hours of the illness.^{5,16} These drugs were usually prescribed by mothers themselves and in some cases by shop vendors or chemists and contributed to the high use of these drugs over oral ORS.¹⁵

Seeking healthcare outside the home was influenced by several factors. Within a house-hold, it was not only the decision of mothers but other family members- especially male members and elders of the family, usually mother-in-law, who was the primary decision-maker in child care. She decided on feeding practices and home-based traditional therapies (which had been passed down through generations). Generally, parents waited for some time and treated domestically until condition worsened, then they considered taking the child to see a doctor or go to hospital. The delay in pursuing health care and using it as a last effort increased the risk of mortality and morbidity.^{5,14,20,21}

GENERAL PRACTITIONERS

General awareness and attitude:

The medical practitioners who treated childhood diarrhea cases knew the importance of ORS in diarrhea management, but only a limited number of them knew WHO-recommended formula of ORS.²³ Most of them had heard and believed in the efficacy of ORS, - the source of knowledge for the majority was their medical school. Other sources were journals, mass media and other health personal.⁷ Physicians accepted efficacy of ORS for dehydration caused by diarrhea but most of them still prescribed commercial formulations guided by pharmaceutical company representatives, which might not had the correct chemical composition of WHO-ORS.^{23,24} In addition, GPs had limited access to continuous medical education programs, except those sponsored by pharmaceutical companies. Thus, GPs prescribe anti-diarrheal and other drugs especially locally made commercial brand-ORS due to pressure from these companies. In comparison private GPs did not prescribe ORS at all compared to the pediatricians. The rationale behind this did seemed to be lack of knowledge.²⁵

Practices:

Over-prescription in relation to antimicrobials and anti-diarrheal medicines was more common in GPs. Moreover, it was a common practice to use intravenous fluids for mild or moderate dehydration to prevent possible complications and to treat children quickly in order to keep their reputation as a good doctor.

Work-settings had a significant impact on prescription writing habits of doctors. Financial motives influenced prescription, and over-prescription of private practitioners as they could charge extra money if they dispensed medicine to patients. In public sector hospitals, there

Table: 1
Child deaths per year in developing countries¹

RANK	COUNTRY	TOTAL NO OF ANNUAL CHILD DEATH DUE TO DIARRHOEA
1	INDIA	386,600
2	NIGERIA	151,700
3	DEMOCRATIC REPUBLIC OF CONGO	89,900
4	AFGHANISTAN	82,100
5	ETHIOPIA	73,700
6	PAKISTAN	53,300
7	BANGLADESH	50,800
8	CHINA	40,000
9	UGANDA	29,300
10	KENYA	27,400
11	NIGER	26,400
12	BURKINA FASO	24,300
13	UNITED REPUBLIC OF TANZANIA	23,900
14	MALI	20,900
15	ANGOLA	19,700

was great time pressure because of heavy workload of patients and thus very limited time to explain to mothers/caregivers practicalities of disease management and medicine. Physician's reputation for satisfying parents/caregivers did not benefit the public sector hospitals; it assisted in promoting their prestige resulting in an increased patient flow in their private practice. This acted as a financial incentive.^{24, 25} Expectations of mothers and caregivers had a strong impact on prescribing practices of physicians. Practitioners working for the public sector were less likely to over-prescribe due to financial incentives but were more likely to have less time for consultations.^{24,25,26,27,28} Another strong influence was drug companies pushing certain brands which might not have corresponded to WHO-ORS formula. Practitioners prescribed unnecessary drugs because of pressure from mothers/care givers and a fear to lose patient.^{26,29,30,31} Parents preferred home-based traditional medicines because of the cost and unavailability of medical services.^{32,33,34,35} Lack of access to health service facilities due to shortage of health staff, medicines and equipment was a major issue.^{36,37} It contributed to a large part to diarrhea-related mortality and morbidity especially in developing countries.²² Monetary consideration also affected continuity of health care or lack thereof.³⁸ Mass media was especially useful in countries or areas where illiteracy rates were high among mothers.³⁹ Health promotional activities to promote ORS and zinc use involving families and communities with support from governments and NGOs was very effective to raise awareness of diarrhea.⁴⁰

CONCLUSION:

This review suggested a range of factors that could influence use of ORS recommended by WHO/UNICEF. This included: mothers/caregivers education, family influences and exposure to electronic media. It was found that cultural practices influenced decision-making powers of mothers/caregivers regarding treatment of diarrhea. Lay beliefs and culture were another aspect of improper diarrheal management among mothers. This included, not considering diarrhea as an illness, change in normal feeding practices, use of traditional medicines and self-medication at home. Overall, barriers existed at several levels: this included individuals' behaviors but also wider social, cultural and economic influences.

RECOMMENDATIONS:

Health promotional activities to promote ORS and zinc use involving families and communities with support from governments and NGOs can be very effective to raise awareness of diarrhea.

Strong public health systems are vital to combat high mortality and mortality rates— especially in developing countries. WHO and UNICEF emphasize the need to strengthen health care system through: improvement in training programs for staff, reduction in staff turnover, and the need to motivate health workers at community level by using creative techniques. The co-ordination of networks between private and public sector medical

practitioners is weak in developing countries. Regulatory frameworks for controlling and updating health products do not exist in most of the developing nations. Drugs like antibiotics are easily available from medical stores, pharmacies or chemists, which should be prevented. Although there is progress, but enough is not done to reach the target of MDG 4, which is to reduce the mortality rate of children under-five-year age by two thirds, between 1990 and 2015.

Change can only be achieved through involving communities and providing education and health promotion activities; community-based approaches are most effective. Consumer research is needed to improve marketing and acceptability of WHO-ORS and zinc solutions. Health systems need to be flexible and effective and provide prevention and treatment services at local and national level. Education, awareness raising and training is needed for health practitioners in the private and public sector. The information gained through present review can contribute to developing strategies for the promotion and use of recommended ORS and zinc supplement as a first line therapy for childhood diarrhea at domestic level.

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