

Home-based management of acute diarrhoeal disease in an urban slum of Aligarh, India

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Abstract

Introduction: Diarrhoea is a major cause of morbidity and mortality in children. Most deaths are caused by dehydration and are easily preventable by using oral rehydration therapy. Early management and recognition of danger signs are key strategies in treating diarrhoeal diseases at home. This study assessed the knowledge and health-care seeking behaviour of families regarding diarrhoeal illness in children aged under five years.

Methodology: The study was undertaken during June and July 2009 in an urban slum of Aligarh, Uttar Pradesh, India. Mothers of children (n = 101) suffering from diarrhoea with at least one episode in the last two weeks prior to the interview were included. Information was gathered on a predesigned and pretested questionnaire.

Results: Overall prevalence of diarrhoea in children under five was 36%. Life-threatening symptoms which the mothers knew were watery stool (85%) and repeated vomiting (54%). Two thirds (69%) of the mothers continued breastfeeding their children during the episode, while the remaining either withheld or interrupted breastfeeding. The majority visited a nearby unsanctioned health practitioner. Less than half (46.5%) of the mothers knew about oral rehydration salt solution and only 29.8% of those knew the correct method of preparation. Only 38.7% of the respondents knew about suitable fluids available at home, out of which salt sugar solution was the choice in most cases.

Conclusion: The study highlights that the mothers' knowledge is not adequate. Educating mothers and caretakers regarding early home-based case management of childhood diarrhoea may substantially decrease morbidity and mortality due to diarrhoea.

Key words: Home based management; diarrhoeal diseases; oral rehydration therapy

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Introduction

Between 1992 and 2000, estimates revealed that 49 million children per year died in developing areas and countries as a result of diarrhoeal illness during their first five years of life. This assessment showed a decline from previous estimates of 13.6 (between 1955 and 1979) and 5.6 (between 1980 and 1989) per thousand per year. Despite improving trends in mortality rates, diarrhoea accounted for 21% of all deaths in children under five years of age in these countries (2.5 million deaths per year) [1]. During 2005, about 1.07 million cases of acute diarrhoea were reported in India with 3,124 deaths [2]. Among the first five causes of mortality in Aligarh, Uttar Pradesh, India, diarrhoea ranked second, contributing to 27% of the total deaths in the under-five age group [3]. In recognition of the huge burden of diarrhoeal

diseases, the World Health Organization initiated a special programme in 1980 for the Control of Diarrhoeal Diseases in children. The Indian version of this programme was launched in 1985-86 as the Diarrhoeal Disease Control Programme wherein focus shifted to strengthening the case management of diarrhoea in children under five years of age. This programme became a part of the Child Survival and Safe Motherhood Programme in 1992 and the Reproductive Child Health Programme in 1997 and finally the Integrated Management of Childhood Illness Programme in 2005. The strategy for the Integrated Management of Childhood Illness Programme aims to reduce childhood mortality and morbidity by improving the case management skills of health-care workers, improving the health-care system, and improving family and community

practices through education of mothers, fathers, other caregivers and members of the community with a focus on health-care seeking behaviour, compliance, care at home, and overall health promotion [4].

The World Health Organization recommends the use of oral rehydration salt (ORS) and also zinc supplementation in diarrhoea [5]. Oral rehydration salt solution is a life-saving treatment that is safe for people to use in their homes. Zinc supplementation during diarrhoea has been shown to reduce the duration and severity of the episode. It has been the experience of health-care workers in Kolkata, India, that as many as 90-95% of all cases of cholera and acute diarrhoea can be treated with oral fluids alone [6]. The use of oral rehydration therapy (ORT) is the first choice in diarrheal disease control efforts. The fluids given could be either ORS or recommended home-based fluids (*e.g.*, soups, rice water, yoghurt drinks or clean water). It was advised that all children with diarrhoea should be given more fluids to drink to compensate the loss of fluids and that feeding should not be stopped during diarrhoea [7]. According to different country-specific data sources, significant progress was reported during the 1980s regarding the effects of oral rehydration therapy at the country level. The low coverage of ORT in India has, in contrast, been seen as a major reason for higher rates of diarrhoeal deaths in children [8]. Despite well-implemented clinical management training in many countries, advising mothers on how to treat their children for diarrhoea at home, this remains the weakest element of case management. Results of health facility surveys show that only 1-10% of mothers were correctly advised [9].

In view of the above facts a study was conducted in an urban slum area of Aligarh, Uttar Pradesh, India, to assess the knowledge, and health-care seeking behaviour regarding diarrhoea in children under-five years of age.

Methodology

The study was undertaken during June and July of 2009 in the newly registered field practice areas under the Urban Health Training Centre, Department of Community Medicine, Jawaharlal Nehru Medical College, Aligarh, Uttar Pradesh, India. The study area was a peri-urban slum where approximately 50% of the population had access to safe drinking water and 40% had the provision of sanitary latrines. Approximately 80% of the mothers were illiterate. Monthly per capita income was less than 20 US \$ equivalent to approximately Indian Rs.1000/-. The

health facilities in the vicinity consisted of practitioners of the indigenous system of medicine, allopathic medicine, and the Urban Health Training Centre.

The total population of the study area was 306 households of which six households were found to be locked during the study. The study was therefore conducted on 300 households. House-to-house visits were undertaken to select mothers whose children were suffering from diarrhoea. There were 280 children less than 60 months of age, out of which 101 had at least one episode of diarrhoea in the two weeks prior to the day of the interview. The mothers of all the children suffering from diarrhoea were included in the study. Adequate information regarding the purpose of the study was explained to them and their consent was taken. Data was collected on a predesigned and pretested questionnaire.

The core Control of Diarrhoeal Disease [10] points for household survey that were taken into account included two weeks' diarrhoea prevalence, as well as the caretaker's knowledge about the following: increasing fluids; care-seeking for diarrhoea; the three rules of home case management; care-seeking for diarrhoea from a specific type of provider; oral rehydration salt use; recommended home fluid use; oral rehydration salt use among those who sought care outside the home; source of advice to use the ORS and correct ORS preparation; and knowledge of the value of zinc supplementation. The correct method of the ORS solution was verified by means of a check list prepared by the procedure specified in the Integrated Management of Neonatal and Childhood Illness training module [11].

A case of acute diarrhoea was defined as a child up to the age of 60 months, having passed three or more loose stools in a day, with or without blood or mucous in stools at least once over a period of two weeks preceding the date of interview.

Ethical issues

The approval for the study was taken from the Chairman, Department of Community Medicine, Jawaharlal Nehru Medical College, Aligarh Muslim University, Aligarh.

During the course of the survey, health education was imparted to members of households in which deficiency of knowledge of proper care was found.

Results

Two weeks' of diarrhoea prevalence

Table 1. Prevalence of diarrhoea during the previous two weeks in under-five children

Age group	No. of children seen	No. of diarrhoea cases	Prevalence (%)
0-365 days	84	37	44%
13 months – 60 months	196	62	30%
Total	280	101	36%

The overall prevalence of diarrhoea in children aged under five years was 36%. In infants, 44% suffered from diarrhoea at least once over a period of two weeks preceding the date of interview (Table 1). Only three infants were suffering from diarrhoea at the time of the interview. Out of a total 101 cases, females (57%) outnumbered male children in the disease. In the majority of cases, the duration of illness was 3 to 5 days.

Caretaker's (mother's) knowledge about care-seeking for diarrhoea

The majority (80%) of the mothers knew about at least one life-threatening symptom of diarrhoea, the prominent among them being many watery stools (85%) and repeated vomiting (54%). Few of the respondents knew that marked thirst and poor feeding are danger signs (Table 2).

Knowledge of the mothers regarding oral rehydration salt solution and home available fluids

Less than half of the mothers (46.5%) knew about ORS and of these only 29.8% knew about the correct method of preparation. Out of 38.7% of the respondents who knew about home available fluids, the commonest solution used was the sugar salt solution (51.3%). When asked about the amount of home available fluids that could be given, more than half of the mothers didn't know about the correct quantity. No mothers were aware of zinc supplementation.

Feeding during diarrhoea

Thirteen children with diarrhoea were on exclusive breastfeeding. Out of these 69% were still being breastfed, whereas in 31% cases, it was interrupted. A similar pattern of interruption was also seen in the feeding of the other children suffering from diarrhoea (Table 3).

Care seeking for diarrhoea from a specific type of provider

With regard to the health-care seeking behaviour during diarrhoeal illness, the largest proportion of cases (37%) were taken to a health-care provider after

two to three episodes of diarrhoea. The second major proportion of cases that were taken for treatment was those whose condition deteriorated (Table 4). In a minority of cases, the children were not taken to any health-care provider and no initiative was taken from the parents for treatment. The majority of the cases sought health care from unsanctioned practitioners.

Furthermore, 16% of the cases were given drugs that were left over from previous episodes. Only 4% of the cases were treated by a child specialist. An important and interesting finding was that only the child specialist and the doctors at the Urban Health Training Centre prescribed oral rehydration salt solution in all cases of diarrhoea.

Discussion

According to the Integrated Management of Neonatal and Childhood Illnesses guidelines, children with some or no dehydration should be managed at home for diarrhoea. The WHO plan A [12] also encourages mothers and caregivers to treat diarrhoea at home by giving ORS and ORT. Thus it is important to assess their awareness regarding home-based management of diarrhoea at frequent intervals to provide feedback for the ongoing programmes. The present study was undertaken during the rainy months of the year, when the incidence of diarrhoea is high, to study the knowledge and the behaviour pattern of mothers and other caregivers regarding the home-based management of acute diarrhoeal diseases in infants and children.

The prevalence of diarrhoea was recorded as 36%, which is in conformity with the findings of the other researchers [13,14,15]. A higher prevalence of diarrhoea during infancy in this study was supported by other authors [13,14,15]. The higher rate in infancy as observed in this study may be due to a decline in the maternally acquired antibodies and the introduction of complementary foods that are given in unhygienic ways. Moreover, teething and crawling begins at this age, both of which pose a risk of contamination through fingers and fomites into the mouth.

In the current study, 39% of the mothers knew more than two signs with respect to care-seeking for

Table 2. Caretaker's knowledge about care seeking for diarrhoea

Knowledge of the danger signs (n = 101)		Knowledge of ORS* (n = 101)	
Many watery stools (n = 81)	69 (85.2%)	Yes	47 (46.5%)
Repeated vomiting	44 (54.3%)	Knowledge of preparation of ORS solution (n = 47)	
Fever	19 (23.4%)	Correct method	14 (29.8%)
Lethargy (feeling of weakness)	24 (29.6%)	Home available fluid that is to be given (n = 39)	
Blood in stools	22 (27.2%)	Salt sugar solution	20 (51.3%)
Marked thirst/ Poor feeding	15 (18.5%)	Daal ka pani (pulses water)	7 (17.9%)
Knowledge of home available fluids (n = 101)		Dalia (porridge)	2 (5.1%)
Present	39 (38.7%)	Khichdi (mix of rice & lentils)	6(15.4)
Knowledge about zinc	0 (%)	Rice water	4 (10.3%)

*ORS = oral rehydration solution

Table 3. Feeding pattern during diarrhoea

Pattern	0-6 months		7 months – 5 years	Total
	Exclusively breast fed	Not-exclusively breast fed	Feeding pattern	
Continued	9 (69.23%)	1 (20%)	51 (62.20%)	62 (61.39%)
Interrupted/withheld/decreased	4 (30.77%)	4 (80%)	31 (37.80%)	39 (38.61%)
Total	13 (100%)	5 (100%)	82 (100%)	101 (100%)

Table 4. Care seeking for diarrhoea from specific type of provider

Use of services during diarrhoea (n = 101)	
No treatment	6 (5.94%)
On first day of diarrhoea / after 2-3 episodes	52 (51.48%)
When vomiting & loose stools occurs	19 (18.88%)
When condition deteriorates	22 (21.78%)
Type of services used (n = 101)	
Provider	N (%)
Nearby chemist	8 (7.92%)
Practitioner of herbal medicine	11 (10.89%)
Unqualified practitioner	26 (25.74%)
Use of leftover drugs prescribed earlier	16 (15.84%)
General practitioner	16 (15.84%)

diarrhoea, which is comparable to the National Family Health Survey figures that reported 37% for India and 33% for Delhi [16]. Feeding was interrupted in almost half of the cases, and breast milk was given in only one-third of the cases. The reason given by most of the mothers and supported by the mothers-in-law was that the breast milk was responsible for diarrhoea and so it should be withheld for as long as diarrhoea continued. The mothers also believed that the energy dense foods which they took during lactation are secreted in the breast milk, causing diarrhoea, so that these foods should also be withdrawn. These misconceptions could be because the health-care workers were not promoting continued feeding sufficiently. Moreover, caregivers felt that it was less important to continue feeding if they had been given some treatment for the diarrhoeal illness at the health-care facility. The role of the mothers-in-law in treating children for diarrhoea was also seen; thus involving mothers-in-law along with the mothers may be beneficial while imparting health education regarding the home-based management of diarrhoea. Similar findings were reported by other authors [17]. In a study from Nigeria, 71% of the respondents reported food withdrawal during diarrhoea in infants, 44% also reported reduction in breastfeeding frequency during diarrhoea, and more than two thirds of these cited cultural reasons for withholding breastfeeding [18]. In the present study, although 46.5 % of the mothers were aware of oral rehydration salts, only 29.8% knew the correct method of its preparation. Concerning the home available fluids, the majority of the respondents replied that they administered sugar salt solution, followed by *daal ka pani* (cooked pulses water) and *Khichdi* (a mix of rice and lentils). Similar observations were made by Rehan *et al.* [19]. None of the mothers knew about zinc by word or substance in the present study. It was noteworthy that zinc was not supplied by the State Health Department prior to or until the time of study.

Although 94% of the mothers sought some form of treatment, more than half did so on the first day, even though the ORS use was very low. In a study from rural north India, Bentley reported that a drastic decline in the use of ORS occurred when mothers who thought ORS was a medicine that would cure diarrhoea did not stop the episode [20]. Her interventional study placed special emphasis on explaining that the ORS was used to replace fluids lost during diarrhoea episodes and not curing the condition. A review of data from surveys (1990-

1995) showed that 46% of children were not treated with ORS although their mothers were aware of this treatment [21]. The present study also showed that despite their knowledge of the ORS, very few mothers knew how to give it correctly.

It is important that the health-care providers prescribe ORS in all cases of diarrhoea. If adequately educated about the use of ORS as well as home available fluids and zinc, an episode of diarrhoea could be managed at home and the danger could be reduced as envisioned by the IMNCI.

Conclusion

The study highlights that the knowledge and care-seeking behaviour of mothers is not adequate. If health education could be correctly provided to the specific target group (mothers, guardians and health-care providers) regarding all the rules of home management, the situation can be controlled. It calls for a serious analysis of the reasons for a situation that is disappointing, despite the significant efforts made over the past 25 years to promote proper home-based management of diarrhoea in children. Adequate management of diarrhoea is essential to reach the Millennium Development Goals of a reduction in mortality rates of children aged less than five years by two-thirds between 1990 and 2015.

References

1. Kosek M, Bern C, Guerrant RL (2003) The global burden of diarrhoeal diseases, as estimated from studies published between 1992 and 2000. *Bull World Health Organ* 81: 197-204.
2. National Health Profile (2006) Government of India, Central Bureau of Health Intelligence. Director General of Health Services. Ministry of Health and Family Welfare, Nirman Bhawan, New Delhi. Available http://cbhidghs.mic.in/cbhi%20book_ch_3.pdf. Last accessed on 4 February 2010.
3. Shah MS, Khalique N, Khan Z, Amir A (2010) Verbal autopsy to determine causes of deaths among under-five children. *Curr Pediat Res* 14: 51-53.
4. World Health Organization and UNICEF (1999) Management of childhood illness in developing countries 1999: Rationale for an integrated strategy. IMNCI Information. http://whqlibdoc.who.int/hq/1998/WHO_CHS_CAH_98.1A_eng.pdf. Last accessed 10 February 2009.
5. World Health Organization (2006) Implementing the New Recommendations on the Clinical Management of Diarrhoea: Guidelines for Policy Makers and Programme Managers. Geneva: WHO. Available http://whqlibdoc.who.int/publications/2006/9241594217_eng.pdf. Last accessed 20 January 2012.
6. Park K (2009) Acute Diarrhoeal Diseases. In: Park K, editor. Park's Textbook of Preventive and Social Medicine, 20th edition. Jabalpur India: Banarsidas Bhanot p 196.

7. World Health Organization (1989) .The treatment and prevention of acute diarrhoea. Practical guidelines, 2nd edition. Geneva: WHO. 49 p.
8. Bhattacharya SK (2003) Progress in the prevention and control of diarrhoeal disease since independence. *Natl Med India* 16: 15-19.
9. WHO Notes & News. Advising mother: management of diarrhoea in the home. Available [http://whqlibdoc.who.int/whf/1993/vol14-no2/WHF_1993_14\(2\)_p200-210.pdf](http://whqlibdoc.who.int/whf/1993/vol14-no2/WHF_1993_14(2)_p200-210.pdf). Last accessed on 10 February 2010.
10. World Health Organization (1994) Household Survey Manual: diarrhoea and acute respiratory infections. Available http://whqlibdoc.who.int/hq/1994/WHO_CDR_94_8_b.pdf. Last accessed 5 February 2009.
11. Physician Manual (2010) Treat the Child. Integrated Management of Neonatal and Childhood Illness. National Rural Health Mission. Directorate of Health and Family Welfare, Government of Uttar Pradesh, India. 18-19.
12. World Health Organization (2003) The Treatment of Diarrhoea: A manual for physicians and other senior health workers. http://whqlibdoc.who.int/hq/2003/WHO_FCH_CAH_03.7.pdf. Accessed 5 February 2011.
13. Ahmad SF, Farheen A, Muzaffar A, Mattoo GM (2008) Prevalence of Diarrhoeal disease, its seasonal and age variation in under-fives in Kashmir, India. *IJHS* 2: 126-133.
14. Banerjee B, Hazra S, Bandyopadhyay D (2004) Diarrhea management among under fives. *Indian Pediatrics* 41: 1185-1189.
15. Gilany AHE and Hamed S (2005) Epidemiology of Diarrhoeal diseases among children under 5 years of age in Dakahlia, Egypt. *EMHJ* 11: 762-775.
16. National Family Health Survey (2000) International Institute of Population Sciences, Mumbai, India: 216.
17. Vyas S (2009) Importance of rural women about preparing ORS & SSS: A study from primary health centre, Uvarshad, Gandhinagar. *Health and Population: Perspective and Issues* 32: 124-130.
18. Oguinbiyi B and Akinyele IO (2010) Knowledge and belief of nursing mothers on nutritional management of acute diarrhoea in infants, Ibadan, Nigeria. *AJFAND* 10: 2291-2304.
19. Rehan HS, Gautam K, Gurung K (2003) Mothers need to know more regarding management of Childhood Acute Diarrhoea. *Indian J Prev Soc Med* 34: 40-45.
20. Bentley ME (1988) The household management of childhood diarrhoea in rural north India. *Soc Sci Med* 27: 75-85.
21. Ryland S and Riggers H (1998) Childhood morbidity and treatment patterns. Demographic and Health surveys comparative studies No. 22. Columbia. Maryland: Institute for Resource Development/Macrosystem 40-44.

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