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Knowledge and practices among caregivers in cases of persisitent diarrhoea in children of age group 6 months-12 years

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ABSTRACT

Background: Persistent diarrhoea has a variety of infectious and non-infectious etiology and it seriously affects the growth and development of children. The objective of the is to the identify the knowledge and practices prevalent amongst caregivers of children to understand environmental and behavioral risk factors and their interactions associated with the disease and its management.

Methods: It is a hospital based cross-sectional study which included 70 children in the age group 6 months-12 years admitted in a tertiary care center at Bhopal over a period of one year with complaints of loose stools lasting for more than 14 days. A pre-tested questionnaire was used as a data collection tool for face-to-face interviews with the mothers or caretakers of the cases. Statistical analysis was done using Statistical Package of Social Science (SPSS Version 20; Chicago Inc., USA). Data comparison was done by applying specific statistical tests to find out the statistical significance of the comparisons.

Results: Most of children's mother were Illiterate, 27.1% were educated till primary school and only 5.7% were graduate. Out of 70 cases, most of 51(72.8%) were have understanding that drinking untreated water is a risk factor, only 11(15.7%) understands the value of filtered water and 8(11.4%) know the importance of doing boiling. Most of 46(65.7%) were using open field for sanitation and only 11(15.7%) were using toilets at home. 42(60.0%) were having the habit of hand washing before taking meal.

Conclusions: Community education about the prevention and management of diarrhoea will reduce the mortality and morbidity associated with persistent diarrhoea.

Keywords: Knowledge, Mortality, Oral rehydration solution, Persistent diarrhoea, Practice, Sanitation

INTRODUCTION

Persistent diarrhoea is defined as diarrhoea that lasts for more than 14 days. Although persistent diarrhoea in a young child may be caused by a variety of non-infectious causes (celiac disease, intolerance to cow's milk, allergic colitis), persistent diarrhoea is an infection-induced illness in much of the world. Persistent diarrhoea can result from multiple consecutive infections, unresolved infection, secondary malabsorption (mainly lactose) or the post-gastroenteritis syndrome (poorly

understood clinical entity in which patients have prolonged malabsorption or sensitization to food antigens after an acute or sub-acute diarrhoeal episode). 1,2 Persistent diarrhoea seriously affects growth, nutritional status and cognition. Therefore, this study was conducted to the identify the knowledge and practices prevalent caregivers of children to understand environmental and behavioral risk factors and their interactions associated with the disease and its prevention.

METHODS

The study is a hospital based cross-sectional study which included 70 children in the age group 6 months-12 years admitted in Department of Pediatrics of Kamla Nehru Hospital, Bhopal from January 2016 to December 2016 with complaints of loose stools lasting for more than 14 days.

Exclusion criteria

Children of less than 6 months and above 12 years, diarrhoea of less than 14 days duration, children with blood in stools and non-consenting caregivers were excluded from this study.

Inclusion criteria

A pre-tested questionnaire made after doing a pilot study on 15 patients was used as a data collection tool for face-to-face interviews with the mothers or caretakers of the cases. The proforma/questionnaire had the following sections:

- Demographical & socioeconomic factors: These included basic information about the children's caregiver such as age group, residence, literacy and income. Residential address was asked to differentiate cases on the basis of urban/rural lo the age, literacy, occupation and income of the parents was asked, and families categorized on the basis of modified Kuppuswamy scale. All this information was recorded as stated by the interviewees themselves.
- Feeding habits: Enquiry about various feeding habits such as type of feeds, method of feeding, complementary feeding etc. was done.
- Immunization status: This was verbally asked from the caretakers if vaccination cards were unavailable. Individual vaccines were asked according to the National Immunization Schedule of the country and questions were so framed that mothers recall the event according to the time and site of vaccination.

Statistical procedures were carried out in 2 steps

- Data compilation and presentation
- Statistical analysis

Statistical analysis was done using Statistical Package of Social Science (SPSS Version 20; Chicago Inc., USA). Data comparison was done by applying specific statistical tests to find out the statistical significance of the comparisons. Student t-test and ANOVA were used to compare the mean of quantitative variables. Quantitative variables were compared using mean values and qualitative variables using proportions. Significance level was fixed at p<0.05.

RESULTS

Demographic distribution of mothers of persistent diarrhoea cases according to age shows that out of 70 cases, most children's mother was 20-30 years old and 18(25.7%) were less than 20 years old, 12(17.2%) mothers were more than 30 years old. Assessment of education level (Literacy) of mothers reveals that most of children's mother were Illiterate, 19(27.1%) were educated till primary school and only 4(5.7%) were graduate. Most of children's mothers were unemployed and 11(15.7%) were daily wage laborer. 6(8.6%) were farmers. Our study reveals source of drinking water in 44(62.8%) were drinking tap water, 14(20%) were drinking borewell and 12(17.2%) were drinking open well water (Table 1).

Table 1: Source of drinking water among persistent diarrhoea cases.

Drinking water source	Number	Percentage
Bore well	14	20.0%
Tap	44	62.8%
Open well	12	17.2%
Total	70	100%

Knowledge regarding the treatment method of drinking water among persistent diarrhoea cases shows that out of 70 cases, most of 51(72.8%) were have understanding that drinking water without any treatment is a risk factor. Only 11(15.7%) were understanding the value of filtering the water before drinking and 8(11.4%) know the importance of doing boiling (Table 2).

Table 2: Treatment method of drinking water among persistent diarrhoea cases.

Treatment of water before drinking	Number	Percentage
Boiling	8	11.4%
Filtration	11	15.7%
None	51	72.8%
Total	70	100%

Method of sanitation among persistent diarrhoea cases was also studies in our study. Out of 70 cases, most of 46(65.7%) were using open field for sanitation and only 11(15.7%) were using toilets at home. (Table 3)

Table 3: Methods of sanitation among persistent diarrhoea cases.

Sanitation	Number	Percentage
Open field	46	65.7%
Community	13	18.6%
Home	11	15.7%
Total	70	100%

Knowledge and practice of hand washing among persistent diarrhoea cases reveals that out of 70 cases, 42(60.0%) were having the habit of hand washing before taking meal (Table 4).

Authors had also tried to assess the treatment taken for Diarrhoea among Persistent Diarrhoea cases which showed that 55(78.5%) were taken antibiotics for treatment of diarrhoea. 9(12.8%) were taken ORS & 3(4.2%) were taken Home-made fluids. There was statistically no significant difference in Treatment Taken for Diarrhoea among Persistent Diarrhoea cases. (p=0.541) (Table 5).

Table 4: Practice of hand washing among persistent diarrhoea cases.

Hand washing	Number	Percentage
Yes	42	60%
No	28	40%

Table 5: Treatment taken for diarrhoea among persistent diarrhoea cases.

Treatment history	Male	Female	Total
Home-made fluids	2	1	3(4.2%)
ORS	4	5	9(12.8%)
Antibiotics	20	35	55(78.5%)
Zinc	2	1	3(4.2%)
Chi square value	2.15		
Significance 'p' value	0.541	(ns)	

Knowledge regarding the method of preparation of ORS among the caregivers reveals that out of 9 users of ORS, ORS was prepared correctly only among 7 cases. It was not prepared correctly by the rest (Table 6).

Table 6: Method of Preparation of ORS among Persistent Diarrhoea cases.

Preparation of ORS	Number
Correct	7
Incorrect	2

DISCUSSION

The annual global burden of infectious diarrhoea is enormous, involving 3 to 5 billion cases and nearly 2 million deaths, with the later accounting for almost 20% of all deaths in children younger than 5 years. Of these diarrhoea-related deaths, acute watery diarrhoea is responsible for 35%; dysentery for 20% and persistent or chronic diarrhoea 45%. Most deaths are in young children from rural regions of developing countries where there is limited access to safe drinking water, sewage disposal and health care, and reduced opportunities for personal sanitation, hygiene and safe food preparation. In this setting, repeated episodes of enteric infection can contribute to malnutrition by interfering with nutrient

absorption. As these episodes usually occur during the first few years of life, a period critical for physical growth and brain development, they can be followed by impaired linear growth, intellectual function and school performance.³ Persistent infectious diarrhoea is responsible for 30-50 percent of the deaths caused by diarrhoea in developing countries. Prior malnutrition, lack of breast feeding and associated systemic infections increase the risk of death occurring during an episode of persistent diarrhoea.⁴

Awareness about the various risk factors involved in the occurrence of diarrhoea and the steps that can be taken to reduce them mainly depends upon the age and education level of the mothers. Mothers of younger age group and those with a lower education level have a lower understanding of the disease process and the various facilities available to them by the government for the betterment of their children. The children of these families tend to suffer more from such diseases as hygienic practices followed in the homes like hand washing, proper food storage, use of safe drinking water is low and use of health services by these families is also less. Our study reveals that 57.1% mothers were in the age group 20-30 years of age and 25.7% were less than 20 years old. Maximum mothers were illiterate covering about 64.3% of the study population. Employment data from our study reveals that 72.8% mothers were unemployed. Adel A et al, showed a high proportion of mothers who were illiterate and also those neglecting washing their hands or child's hands before feeding.⁵ Similar findings were seen in study done by Lima AAM et al, and Moore S et al,6,7 On the contrary to these findings Seema et al in their study observed no role of maternal literacy in the development of persistent diarrhoea.8 Our study also reveals demographic distribution of fathers wherein 67.1% fathers were between 20-30 years age group, 45.7% were illiterate and 62.8% were laborer. As the head of the family, occupation and income would have an impact on the health seeking behavior of the family. However direct effect of the age, education level and occupation of the head of the family was not significant in any study. Not much studies have been observed emphasizing the father's literacy.

Immunization of children plays a major role in the prevention of many communicable diseases such as measles which decreases the immunity and indirectly increases the incidence of diarrhoea in children. Our study reveals that only 20% children included in the study were completely immunized whereas maximum cases were only partially immunized (62.8%). This result was statistically significant and indicates the direct association between immunization coverage and prevalence of diarrhoea, both acute and persistent. It points towards the failure of complete immunization in the society mostly due to decreased awareness amongst the mothers about the importance of the same. Bazlul Karim ASM et al in their study stated lack of

immunization as a risk factor for persistent diarrhoea.⁹ Madhi et al, in their study in South Africa and Malawi evaluated the efficacy of a live oral rotavirus vaccine in preventing severe rotavirus gastroenteritis and concluded that human rotavirus vaccine significantly reduced the incidence of severe rotavirus gastroenteritis among African infants during first year of life.¹⁰ Also, Michel Hbatu et al, in their study on diarrhoeal diseases in Rwanda observed that children who were not vaccinated for rotavirus were eight times more likely to develop diarrhoeal diseases than to those who were vaccinated. Rotavirus vaccine had resulted in a large decline in diarrhoea mortality and thus vaccinations is the best way to prevent severe rotavirus disease and the deadly dehydration that it causes.¹¹

The significance of source of drinking water and its treatment before use as a risk factor for diarrhoea is beyond doubt. Worldwide, 780 million individuals lack access to safe drinking water. Through our study we found maximum use of tap water for drinking purposes which accounted for 62.8% cases. Also, most families did not treat the water and used it as it is. The share of such families was 72.8% as compared to 11.4% who boiled water and 15.7% families who used water filters. Lima AAM et al, in their study showed 48% homes using piped city-water as the main source of drinking water.⁶ Durairaj P et al, and Mittal et al, also showed association of unsafe drinking water with occurrence of persistent diarrhoea. 12,13 Feeding habits are also an important risk factor in the occurrence and prevalence of diarrhoea in the society. These are more important in children less than three years as feeding is well established by this time and most children start having three times a day meal from the family pot. One of the previous studies on children less than two years had showed that bottle and mixed feeding constituted 77% cases of persistent diarrhoea in their hospital.⁵ Aqeel Abbas Naoman did a study on hospitalized infants aged 1-12 months and showed that 50.6% of patients with diarrhoea, whether acute or chronic, received bottle feeding and 17.6% cases received mixed feeding (breast milk + top milk).¹⁴ Similar results were observed by Seema et al in their study where an increased relative risk of persistent diarrhoea with top milk (both diluted and undiluted).8 Introduction of bottles increase chance of faeco-oral transmission of infective agents whereas top milk negates the immunity provided by breast milk. Moreover, diluting milk using water decreases the nutritional value of the milk and also promotes entry of infectious agents via the unsafe water used for the same. Our study revealed similar results wherein 41.9% patients were given milk via bottles and 70.9% mothers diluted the milk.

Sanitation and other hygienic practices also play an important role in the incidence and prevalence of diarrhoea. Improper garbage disposal, open field defaecation and other sources of contamination promote growth of infectious agents and flies that increase the rate of infection and transmission of the same in the

community. Out of the 70 cases studied, 65.7% used open fields for toilet and defecation and only 15.7% had inhouse latrines. In the study done by Lima AAM et al, incidence of persistent diarrhoea was higher in children with no toilet in home. Also, use of freshly prepared food eliminates the risk of contamination with flies or bacterial growth. 81.4% cases in our study however did not have access to freshly prepared food. This can be due to the fact that maximum parents were daily wage laborer's and had to be out the whole day to earn bread and butter for the family.

Treatment taken for acute diarrhoea acts as a major prognostic factor for the occurrence of persistent diarrhoea. Many studies had shown that prior use of antibiotics is an important risk factor for persistent diarrhoea. 12,15,16 Lins et al, concluded that the risk of persistent diarrhoea is higher for children taking antibiotics prior to hospital admission. ¹⁷ Our study reveals 20% cases were previously admitted in a hospital before reaching our hospital. Of the total, 78.5% cases had antibiotic usage, 12.8% cases used ORS and 4.2% cases each used zinc and home-made fluids. Antibiotic use not only increases resistance against microorganisms but also damages the gut flora and villous lining of the gut thus promoting the prolongation of acute diarrhoea into a chronic one. This study also showed that only 4.2% of the cases used zinc. Zinc supplementation has a marked effect on reducing prolonged episodes of diarrhoea and reducing the rate of treatment failure and death in persistent diarrhoea. Amongst those using ORS, preparation of the solution was asked and categorized into correct and incorrect preparation. ORS is the single most important rehydration solution in cases of diarrhoea. Correct preparation and usage of ORS is important to achieve its full benefit. Use of ORS which is incorrectly prepared neither would improve the hydration status of the patient nor would it correct the electrolyte imbalance caused. Instead it would cause a further deterioration in the same. In our study, of the 9 patients who used ORS before reaching our hospital, 7 explained its correct preparation and usage. Mahor GR et al in his study at Bhopal found that only 40% of the interviewed mothers knew correct methods of preparation of ORS.¹⁸ In a study from Rajasthan, Gupta RK et al found that 15% of the interviewed mothers knew that one pack should be dissolved in one liter of water.¹⁹ This shows that we still need to make people aware about the importance of ORS along with its proper preparation.

CONCLUSION

Persistent diarrhoea is still prevalent in India and there is paucity of recent data on persistent diarrhoea and there is an urgent need for well-designed epidemiological and outcome studies. Promotion of exclusive breastfeeding in early infancy, safe complementary feeding practices access to safe drinking water and scientific management of acute diarrhoea can significantly reduce the incidence of persistent diarrhoea.

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Institutional Ethics Committee

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