

Burden and management of persistent diarrhea in low and middle income countries

Dr Tahmeed Ahmed

Senior Director, Nutrition & Clinical Services Division, icddr,b

Professor, Public Health Nutrition

James P. Grant School of Public Health, BRAC University, Bangladesh

The scaling up of oral rehydration salt solution has dramatically reduced mortality due to diarrhea. Yet diarrhea is still one of the most common causes of child death. Most of the episodes of diarrhea are acute and last less than 7 days. When the duration of diarrhea extends to 14 days or more, it is termed as persistent diarrhea (PD). PD is responsible for 32-62% diarrhea associated deaths of young children in low and middle-income countries. It is predominantly a disease of infancy, with 90% of affected children being less than 1 year old. Certain factors predispose to PD; these include young age, malnutrition which is characterized by mucosal injury and delayed repair of mucosal damage, lack of breastfeeding, infection, poor immunity, and inappropriate use of antibiotics. The multi-country study, MAL-ED, showed that the incidence of PD is 4.9% in the first year of life and the pathogens associated with the disease include Enterotoxigenic *E. coli* (both stable and labile toxin producing), *Cryptosporidium* species, *Astrovirus* and *Shigella* species. The incidence is reduced with age and is 1.8% in the second year with *Astrovirus* and *Shigella* species being associated with PD.

In 2012-13 at the icddr Dhaka Hospital, 551 children were treated for PD among 8,638 admitted children (6.4%). One-third of these children had severe acute malnutrition, 10% were never breastfed, and major stool pathogens were *Campylobacter*, *Salmonella* and *Shigella* species. 50% of patients came with severe PD, characterized by the presence of signs of some (46.5%) or severe (3.5%) dehydration. 23% of children developed PD after admission to the hospital for treatment of acute diarrhea. Case fatality rate was low at 2%.

A child with PD should be treated in a hospital if there is a serious systemic infection, signs of dehydration of the age is less than 4 months. Dietary manipulation usually aiming to reduce the lactose load is the key to successful management in a developing country context. Diets should be given with an energy density of ~1 kcal/g. Energy and protein intakes should be ~100 kcal/kg and 2-3 g/kg per day respectively. Children should be supplemented with zinc, folic acid, magnesium, potassium etc.

Proper diagnosis and treatment is warranted for quick recovery and preventing deaths. Higher cost of treatment and high case fatality rate reiterate PD as an important public health problem.

Islam S, Ahmed T, Mahfuz M, Saqeeb N, Alam A, Mostofa I, Sarker SA, Chisti MJ, Alam NH. Management of persistent diarrhea at the Dhaka Hospital of icddr. *Paediatrics & International Child Health* (in press)

Mahfuz M, Alam A, Islam S, Naila NN, Chisti MJ, Alam NH, Sarker SA, Ahmed T. Treatment outcome of children with persistent diarrhoea admitted to an urban hospital, Dhaka during 2012-2013. *BMC Pediatrics* (2017) 17:142