Apart from the physical suffering and deaths that they cause at the individual and family level, diarrhoeal diseases also play a negative role in national development.

by Leonardo Mata

Today, diarrhoeal diseases are considered the commonest and most important single health problem in the developing countries of the world, as well as one of the major contributors to malnutrition, poor health and inadequate performance of children. Many do not survive its devastating effects.

Diarrhoea affects host nutrition and health through reduction in food consumption, alterations in digestion and absorption, impaired utilisation of nutrients and disturbances in metabolism. When it occurs repeatedly in children, it is a common phenomenon in most less developed countries—their nutrition, health and development are impaired. Due to the debilitating and incapacitating nature of the disease, children become detached from the family nucleus, while adults may be affected in their work attendance and performance.

Impaired food intake is one of the obvious manifestations of diarrhoea, particularly among infants and small children. Those who have experienced severe attacks would recognise its usual clinical manifestations: lack of appetite (anorexia), vomiting, fever and loss of fluids through the intestines and weakness.

The anorexia may be worsened by cultural traditions, beliefs or taboos resulting in food being withheld for days or weeks since this is thought to benefit the child. Anorexia and vomiting may result in a reduction of 20 to 30 per cent in food intake. Anorexia may persist for days or weeks regardless of the kind or amount of stimulation provided. As much as 20 per cent of the expected food intake in traditional populations may be lost due to diarrhoea alone.

Impaired digestion and absorption in infectious diarrhoea result in a small part from the accelerated transit of food through the intestine, but mostly from the direct action of agents on the mucus lining the intestinal mucosa. Various agents of the disease (viruses, bacteria, protozoa, worms and fungi) affect directly or indirectly the integrity and performance of the intestinal mucosa and sometimes its underlying layers. Some agents multiply or live in the intestinal lumen without causing overt lesions, but they liberate toxins, enzymes or products that impair digestion, or diminish absorption, or increase secretion into the lumen. Other microorganisms actually attach to the mucosal surface and in this manner cause harm. One protozoan adheres to the surface of epithelial cells without invading them (Cryptosporidium). Others (rotaviruses) invade epithelial cells, multiply, and destroy them, thus affecting digestive and absorptive functions.

Certain invading bacteria (Shigella) have the capacity to multiply epithelial cells and in deeper layers, resulting in inflammation, severe loss of blood, nutrients and cells, profound alterations in intestinal function. Still other bacteria (Salmonella) may traverse the intestinal barrier to fall into the lymph and blood, and in this manner create bone marrow necrosis and sles in organs such as the brain. A person with diarrhoea may lose as much as 10 per cent of the body weight in a matter of hours, with danger to his or her life. Weight loss not corrected by proper rehydration and feeding, persists for weeks or months. The nutritional consequences may persist for as long or longer if the disease becomes chronic.

As regards altered metabolic functions, it is believed that enteric infections, like other infections, induce release of mediators (cytokines) and macrophages, which trigger a variety of responses in many different organs. The most obvious are anorexia and fever, which so commonly accompanies persons with infections. Another alteration in the metabolic response is the best
Proper protection from diarrhoea helps to ensure normal healthy growth in babies.

Photo WHO/J. Mohr

Malnutrition

It is clear that children who suffer from several attacks of diarrhoea eventually become malnourished. Restriction in food intake, losses of fluid, nitrogen and other nutrients, and altered digestion, absorption and metabolism induce progressive wasting and stunting. The effect of diarrhoea on nutritional status is accentuated when the child has experienced malnutrition in utero. Children who have suffered from intrauterine growth retardation, and who have an impaired immune function, are more prone to severe clinical manifestations of infection and malnutrition.

Malnourished children in turn are more likely to develop severe protein-energy malnutrition when stricken by an acute infection—whether diarrhoea itself, measles, whooping-cough or another common communicable disease. Thus, in regions where lack of food is not the primary factor (that is, in most of the developing world), diarrhoea may be regarded as the main inducer of progressive wasting and stunting of the child population. It is also a cause of diminished productivity and wellbeing, and of absenteeism from work by the adult population.

One additional reason why it is more threatening than other infectious diseases is its higher frequency and greater complexity, particularly in small children. The incidence may be as high as six to 12 episodes per child per year in most developing countries.
Egypt: social marketing approach

by Hosny A. Tammam

In the recommendation of WHO, the Ministry of Health of Egypt started to advocate the use of oral rehydration therapy for diarrhoeal diseases in 1961. Five years later, when the Ministry published a booklet offering guidelines on maternal and child health, a formula for oral rehydration salts was included.

Distribution to health centres of ORS packets supplied by UNICEF was instituted in the following decade, and since 1982 the packets have been manufactured in Egypt by the Chemical Industries Development Company.

Meantime, a study conducted in a project on “Strengthening of Rural Health Delivery Services” provided ample evidence that diarrhoea mortality in children could be reduced by ORT. The government signed a grant agreement with the United States using the mass media—including television, radio, printed materials, posters and billboards—to reach a maximum number of people with uniform messages. Public events with the added attraction of well-known entertainment personalities have also played their part.

More than 70 per cent of Egypt’s population have regular access to television, and more than 90 per cent listen to the radio. Consequently educational messages reach a majority of the population within a very short time. There have now been three annual television campaigns to drive home the message about oral rehydration. That in 1985, for instance, used 11 “spots” of either one minute or 30 seconds, each rotated on a two-week cycle. The messages included how to recognise dehydration in children, the proper use of ORS, the importance of breastfeeding and continued nutrition during illness, and preventing diarrhoea through personal hygiene. These messages also find their way into materials used for training health workers.

In less than three years, the death rates from diarrhoea in children aged under two years have been reduced throughout Egypt from 130,000 deaths annually to about 40,000. In terms of infant mortality, the reduction has been from about 91 per thousand to 44 per thousand.

Use of ORS has increased from one per cent of diarrhoea episodes to 70 per cent. Some 3,000 rehydration centres have opened in primary health care facilities ranging from hospitals to rural units, and in 1984 nearly one million children attended these centres. Over 12,000 health workers have learned rehydration techniques, and the annual production of ORS is now around 15 million litres.

So the NCDDP has succeeded, in just under three years, in mobilising the public and private sectors in a co-ordinated campaign to lower infant and young child mortality from diarrhoeal diseases.