Mortality and morbidity from diarrhoea in India: An opportunity to overcome the perennial health challenge

Diarrhoal disease is the second leading cause of death in children under 5 years of age, contributing to nearly 17% of the mortality in this age group. Globally, each year diarrhoea kills around 760,000 children under 5 years of age. In India, the situation is worse. According to the Registrar General of India, 24% of deaths in children 1–4 years of age, and 17% of deaths in children 5–14 years of age are due to diarrhoal illnesses.

In terms of morbidity, the median incidence of diarrhoea for under-5 children is 3.2 episodes per child-year with the maximum incidence at 6–12 months (4.8 episodes per child-year). With point prevalence ranging from 9% to 20%, the disease is associated with a considerable economic burden on the family (about 5.8% of the annual family income). Since these diseases are also associated with under-development, household poverty, and lack of access to basic health services, they pose a challenge to child survival among those at the bottom of the pyramid.

Given that diarrhoea is both a preventable and treatable ailment, and that effective and easily implementable interventions are available, such a preventable mortality should be unacceptable. Development of oral rehydration solution (ORS), which was pioneered in India and hailed universally as ‘potentially the most important medical advance of this century’ in the late 1970s, was and still remains a prime example of use of appropriate technology and sophisticated research to resolve the health problems of developing countries. As a mainstay of the WHO programme for the control of diarrhoeal disease which began in 1978, the main emphasis was on the management of clinical diarrhoeal illness with ORS solution or home mixtures of sugar and salt, with continued feeding to prevent a diarrhoea–malnutrition cycle. Based on recommendations of an expert committee, the Government of India in 2006 added in the national programme the use of zinc as an adjunct to low osmolality ORS in the management of diarrhoea for children more than 3 months old. In the 1990s, India adopted integrated management of childhood illness (IMCI) as a central strategy for child health and survival.

At present, some important issues are undermining the progress towards control of diarrhoeal diseases in India. There is a need to focus on a community-based approach for prevention of both mortality as well as morbidity. While mortality has shown some decline over the years, morbidity remains high contributing to malnutrition and learning disabilities. According to WHO, during the 1980s, mortality due to diarrhoeal diseases in developing countries declined from 13.6 (1982) to 5.6 (1992) and thereafter to 4.9 children (2000) per 1000 per year. However, the median incidence of diarrhoeal diseases in under-5 children in developing countries has not changed much since the early 1990s—it was 3.5 episodes per child-year in 1997 and 3.2 episodes per child-year in 2003. This is because the risk factors for diarrhoeal diseases such as inadequate and poor quality drinking water and poor sanitation continue to remain, as 39% of diarrhoeal diseases are attributed to water, sanitation and hygiene-related risk factors.

Diarrhoeal diseases contribute significantly to under-5 mortality, which in India is 49 (SRS 2013), against the Millennium Development Goal (MDG) target of <42/1000 live-births to be achieved by the end of 2015. Only 11 states have achieved MDG 4 in reducing under-5 mortality. The infant mortality rate (IMR) at present is 40/1000 live-births (SRS 2013), against the MDG target of 29/1000 live-births by 2015. However, much needs to be done in achieving the MDG 4 goal in its entirety.
As we move to the post-2015 scenario of Sustainable Development Goals (SDGs), control of diarrhoea should remain a clear and unambiguous indicator of India’s progress. Targeting important determinants outside the health sector that influence child mortality is crucial to attain this goal. For instance, environmental factors including clean water and sanitation, augmenting immunization services, and public education and raising awareness can play a key role in controlling diarrhoeal diseases in children.

Therefore, focusing on primary prevention such as water and sanitation must be a top priority and a long-term strategy. The Government of India has launched the Swachh Bharat Abhiyan, a campaign intended to achieve a ‘Clean India’ by 2019. This provides a unique opportunity to the diarrhoea control programme as key elements of the 7-point diarrhoea prevention package envisaged by WHO UNICEF12: promotion of hand washing with soap, improved quantity and quality of water supply, including treatment and safe storage of household water and promotion of community-wide sanitation.

Second, although effective interventions for prevention and management of diarrhoea are available, these must be scaled up in coverage and their access to the vulnerable populations who need it the most. Unfortunately, the uptake of ORS over the years has stagnated globally around 30% from 1995 to 2010, which is very low.6 This is also true for India (ORS use rate, National Family Health Survey [NFHS 1–3], 26%) despite an increase in knowledge about ORS from NFHS 1 (43%) to NFHS 3 (74%) indicating a reversal in the gains of the 1980s in management practices related to diarrhoea in the community. This in part may have resulted from training being focused on front-line workers and health professionals rather than engaging the community.

Critical components for control of diarrhoea such as community-based promotion of breastfeeding, hygiene and sanitation, and the provision of low osmolarity ORS and zinc to children with diarrhoea need to be looked into. Funding for the diarrhoea control programme also declined in the 1990s worldwide with advocacy gaining momentum for other diseases such as malaria and AIDS (which result in fewer deaths than diarrhoea in children younger than 5 years) further reducing visibility of diarrhoea control for policymakers. This hampered the scale up of a comprehensive set of effective interventions and addition of extra components such as new vaccines.

Third, building human resource capacity particularly at the community level is an issue. In any disease control programme, the staff plays a critical role. In a paper published in JAMA Pediatrics, only 3.5% of healthcare workers in rural Bihar offered ORS for treatment of diarrhoea.13 Observation of the treatment given showed that no one offered the correct treatment for diarrhoea. The study highlights the urgent need for health workers to be trained in the promotion and use of ORS as they do not seem to be properly equipped to treat diarrhoea.

Effective control of diarrhoea also calls for strengthening the existing public health systems to deliver quality services and better case management. The National Health Mission as part of the 12th Five-Year Plan aims to do this and mechanisms should be put in place to ensure this is achieved. Real-time data and their use for developing evidence-based interventions—such as the findings of the recent global enteric multicentre study (GEMS) in sub-Saharan Africa and South Asia14 and the multisite birth cohort study (MAL-ED)15 for targeting commonly circulating pathogens in the health programme—can contribute to reducing the burden of moderate to severe diarrhoea substantially and increase programme effectiveness. Such data can help priority setting, planning and evaluating the impact of various interventions.

In April 2009, WHO recommended introduction of the rotavirus vaccine in all national immunization programmes, based on preliminary results from safety and efficacy studies. On the recommendations of the National Technical Advisory Group on Immunization (NTAGI), the Government of India has launched the rotavirus vaccine in a phased manner as part of the 12th Five-Year Plan.16,17 This is one of four new vaccines being introduced against preventable diseases. An indigenous monovalent human bovine (116E) rotavirus vaccine and a new generation oral cholera vaccine has been developed by an effective public–private partnership.15 This is a welcome step. Continued advocacy regarding provision of rotavirus and cholera vaccines where appropriate will not only prevent severe diarrhoea and dehydration among children, but also help to strengthen other aspects of control of diarrhoea.

Moreover, it is important to ensure accountability—that the health workers motivate mothers regarding the need for vaccination, mothers accept and get their children vaccinated, and health workers accurately report figures for vaccination coverage.
In conclusion, despite having a diarrhoea control programme for over three decades, India continues to suffer from a disproportionately high morbidity and mortality from this preventable condition. Prioritizing diarrhoeal disease control interventions in the child health programme is urgently needed. This is best addressed with a comprehensive package of prevention and case management interventions at the community level, implemented and scaled up, using an intersectoral approach.

REFERENCES

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