

Assessing the non-fatal burden of childhood diarrhea including malnutrition, physical Growth, and cognitive development

Ibrahim Abdel-Messih Khalil

Institute for Health Metrics and Evaluation, University of Washington, USA

The global burden of childhood diarrhea is substantial, but a tremendous decline has occurred in the last several decades, but the morbidity impact of diarrheal diseases and enteric infections, especially in early childhood, remains a concern. The Global Burden of Disease Study (GBD), a systematic, scientific effort to quantify the comparative magnitude of health loss by age, sex, and population over time, quantifies diseases using disability adjusted life years (DALYs) lost where DALYs are the sum of mortality and morbidity. Traditionally, the DALYs from diarrhea have been dominated by childhood deaths, but this may underestimate the full picture of diarrhea DALYs. We have conducted a systematic review of published and unpublished data and performed separate meta-analyses of the impact of childhood diarrhea on physical growth and on cognitive development. Our results show that days of diarrhea significantly increase the risk of long term effects, like subsequent physical growth stunting. Each day of diarrhea is associated with a decrease in height-for-age z-score of 0.003 and with weight-for-age z-score of 0.006. Further, physical growth is significantly associated with cognitive development as each unit increase in height-for-age z-score increases standardized intelligence scores by 0.08. However, diarrhea is not significantly associated with cognitive development in our analysis suggesting that malnutrition may be a modifier in this relationship. Our findings call for including long-term sequelae in GBD and other analyses and better quantifying the non-fatal consequences of childhood diarrhea for a more complete understanding of the burden of diarrhea. Lifelong impairment of cognition and lack of physical development due to diarrheal diseases may be greater than previously estimated by GBD. Our research also calls for the acceleration of effective programs to prevent diarrheal diseases and enteric infections in developing countries to secure a healthy and productive life for future generations.

Biography:

Ibrahim had his medical training and training in Clinical Pediatrics at Cairo University. He has clinical experience at the Embaba Fever Hospital, the major infectious diseases hospital in Egypt where he was managing the Diarrheal diseases department. He started his medical research career after joining the staff of the U.S. Navy Medical Research Unit (NAMRU-3) in Cairo where, as a Clinical Epidemiologist, he participated in a number of enteric disease and diarrhea vaccine studies and co-directed the U.S. Military Tropical Medicine Course. During his twelve years at NAMRU-3, Ibrahim also served as a co-chair of the Institutional review Board (IRB). Ibrahim also participated in many Outbreak Investigations through the collaboration of US NAMRU-3 and the Egyptian Ministry of Health. Ibrahim has also served as a consultant to the WHO Enterics Program. In 2008, Ibrahim joined Novartis Vaccines and Diagnostics in Siena, Italy, then he joined the Faculty of University of Washington, at the Institute For Health Metrics and Evaluation (IHME).