



Poor usability of predictive models for estimating the burden of wasting in crisis-affected countries

This is a summary of the following paper: *Checchi F, Frison S, Warsame A, Abebe KT, Achen J, Ategbro EA et al (2022) Can we predict the burden of wasting in crisis-affected countries? Findings from Somalia and South Sudan. Research Square.*

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In crisis-affected settings, wasting poses a substantial threat to mortality, health and development as well as being a broader indicator of crisis severity. Information on the burden of child wasting contributes to assessing progress towards national and global targets, identifying appropriate packages of food security and nutritional services, estimating resource needs and monitoring the performance of services as well as detecting changes in crisis severity. Cross-sectional anthropometric surveys among children 6-59 months of age, along with facility-based and programmatic data, are a primary source of nutritional surveillance in crisis settings. However, they are burdensome, have limited geographical coverage and often do not provide adequately timely and granular information.

This article explored the potential of complementing surveys with predictive statistical models of wasting burden in two crisis-affected countries, Somalia and South Sudan. For each country, programmatic datasets collected by humanitarian and government actors on theoretical predictors of wasting (including insecurity, displacement, food insecurity, access to services and epidemic occurrence) were combined with datasets from household anthropometric surveys. The ability of generalised linear models and machine learning random effects forest plots to predict the risk of wasting and severe wasting, based on binary and continuous estimates of weight-for-height and mid-upper-arm circumference (MUAC), was assessed.

In Somalia, livelihood type, measles incidence, vegetation index and water price were identified as important predictors of wasting. In South Sudan, important predictors included livelihood, rainfall and terms of trade (purchasing power). While the predictive accuracy was better for outcomes based on weight-for-height than on MUAC, the overall performance of both statistical methods was low. This may have been contributed to by the range and quality of the data used, with an absence of data on key factors including infant and young child feeding practices, the use of food security coping strategies, dietary diversity, access to water, sanitation and hygiene services and health service utilisation.

At this stage, findings from this article do not support predictive modelling as a viable alternative to ground surveys for estimating the burden of wasting in crisis settings. However, the potential of such an approach warrants further evaluation with larger datasets across multiple settings.



Pregnant women attends an antenatal clinic at a Primary Health Care Centre in Uganda

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Child stunting starts in utero: Growth trajectories and determinants in Ugandan infants

This is a summary of the following paper: *Namirembe G, Ghosh S, Ausman L et al (2022) Child stunting starts in utero: Growth trajectories and determinants in Ugandan infants. Maternal & Child Nutrition, 18, 3 <https://pubmed.ncbi.nlm.nih.gov/35488408/>*

The prevalence of stunting remains a global public health problem – particularly in Africa. In Uganda, the prevalence of stunting among preschool children was estimated to be almost 28% in 2020. Understanding the risk factors for stunting is critical to address this challenge. However, most evidence generated to date has been observational in nature and thus, patterns over time or within group variations cannot be fully examined.

In this study, longitudinal data from the Uganda Birth Cohort Study (n = 4,528) was used to understand the relationship between pre- and post-natal risk factors and observed patterns of growth across different groups of children. The authors argued that the rates of growth and the impacts of associated risk factors are not homogenous at each time point when a young child is measured. Group-based trajectory modelling was used to explore this hypothesis to understand why some children recovered from stunting while others remained stunted in their first year of life.

Multinomial regression modelling was conducted to understand the relationship between the risk factors and the observed patterns across the groups. The risk factors that were explored included maternal education, height, age, distance to a water source, food insecurity, exclusive breastfeeding and a child's diet diversity, preterm birth (gestational age <37 weeks), and birth weight. Sub-analysis also assessed the effects of human immunodeficiency virus (HIV) status, maternal aflatoxin exposure, maternal iron, and maternal vitamin A status.

The study found that the onset of stunting occurred before birth and followed four distinct growth patterns: chronically stunted infants who were born stunted and remained stunted at 12 months of age (Group 1), recovery infants who were born stunted but recovered by the fourth month (Group 2), borderline stunted children who were mildly stunted and remained so (Group 3), and normal children who showed no signs of stunting throughout the first year of life (Group 4). The proportion of children in Groups 1, 2, 3 and 4 was 18%, 10%, 51% and 21%, respectively. The risk factors that increased the likelihood of being in Group 1 or 2 included: increased household distance to a water source, being from a poor household, and being preterm at birth. Increased maternal education and height were protective against being in Group 1 or 2. In all groups, the coexistence of underweight and wasting was observed, with 18% of all the children sampled facing a triple burden (stunting, wasting, and underweight). Compared to other groups, coexistence with underweight was more pronounced in Group 1 with wasting prevalence increasing gradually over time.

Based on these findings, the authors suggest that while all children are responsive to nutrition interventions, a policy and programme focus should be on prioritising those interventions that consider a variety of possible growth trajectories, requiring more nuanced attention to actual rather than assumed mortality risks associated with diverse patterns of malnutrition. Maternal nutrition interventions also remain an important tool in preventing infant malnutrition and programming for adequate growth in utero and beyond.