

Wasting is associated with stunting in early childhood

Summary of published research¹

Location: Africa, Asia, Latin America

What we know already: Wasting and stunting are respectively short term and longer term conditions of undernutrition that are both multi-factorial. Associations between stunting and wasting in children in cross-sectional studies are not consistent.

What this article adds: Wasting is associated with the process of stunting in children under 2 years. Variability in weight for length z score is a risk factor for stunting. Prevention of wasting could potentially increase attained stature in children.

A recently published study argues that the associations between stunting and wasting in children are not consistently found in analyses using cross-sectional data. This is probably because wasting is a short-term and potentially seasonal phenomenon resulting from a recent insult (infection or food insecurity), whereas stunting results from a longer term multi-factorial process of undernutrition. In addition, wasting may precede linear growth retardation so that cross-sectional data may not demonstrate a concurrent relationship.

The authors conducted a study on the relationship between stunting and wasting in children. They used longitudinal data based on the supposition that instances of wasting or poor weight gain may precede linear growth retardation. The authors analysed longitudinal anthropometric data for 1,599 children from eight cohort studies to determine the effect of wasting [weight-for-length Z-score (WLZ) < -2] and variability in WLZ in the first 17 months on length-for-age Z-score (LAZ) at 18–24 months of age. Data had been collected over a period of two decades and came from Africa, Asia and Latin America. The study used the WHO Multicentre Growth Reference Study (MGRS) programmes to obtain Z-scores for the analysis. In addition, the authors considered the effects of change in WLZ during the previous 6 month period on length at 18 and 24 months.

Key findings showed that wasting at 6–11 or 12–17 months was associated with decreased LAZ. However, children who experienced wasting only at 0–5 months did not suffer any long-term growth deficits compared with children with no wasting during any period. However children with greater WLZ variability (>0.5 SD) in the first 17 months of life were shorter [LAZ = 20.51 SD (95% CI: 20.67, 20.36 SD)] at 18–24 months of age than children with WLZ variability <0.5. Change in WLZ in the previous 6-month period was directly associated with greater attained length at 18 months [0.33 cm (95% CI: 0.11, 0.54 cm)] and 24 months [0.72 cm (95% CI: 0.52, 0.92 cm)]. Children with wasting, highly variable WLZ, or negative changes in WLZ were at a higher risk for linear growth retardation, although instances of wasting may not be the primary cause of stunting in developing countries.

The study team assert that presumably, catchup growth in length was adequate for those children who had their only wasting during the first 6 months of life, whereas time was insufficient for catch-up linear growth in those children with more recent wasting. Alternatively, perhaps catch-up growth in length does not occur as readily in older age groups and if one was to follow these children into their third or fourth year of life, one would find persistent linear deficits. Children with wasting in the first two time periods (0–5 and 6–11 months) did not differ from those children with no wasting in LAZ at 18–24 months, and this could be because of catch-up growth in these 43 children during the 12- to 17- month time period. Wasting in all three time periods appeared to have less of a detrimental effect on LAZ than wasting in the 12- to 17- month time period. The results were similar when the models were run on the subgroups of children who were stunted and non-stunted at baseline. Stunting is

far more common than prevalence of earlier wasting instances can explain. It is likely that the cause of stunting in each country is due to a mixture of exposures, some having more to do with quality of diet or lack of specific micronutrients, others having to do with environmental exposures or access to treatment of infectious diseases, and only some of these potential causes would involve wasting.

Wasting is a short-term condition that is incompletely ascertained through infrequent anthropometric measurements and therefore, the findings from this study are underestimates of the actual relationships. In addition, the definition of wasting is somewhat insensitive due to the binary nature of the WLZ <-2 cut-off. A study with larger sample sizes and comprehensive follow up will allow for a more thorough investigation of the relationship between changes in weight and length in early childhood. The authors suggest that a novel way of looking at undernutrition is to consider the variability in WLZ as a risk factor for stunting. Children who vary considerably in their WLZ are presumably subject to food insecurity and seasonal infections. Thus, swings in WLZ may result in linear growth faltering. Mean LAZ was lower among children who had greater variability in WLZ, suggesting that perturbations in the weight acquisition process can have a lasting impact on linear growth.

The authors conclude that acute malnutrition in the form of wasting is associated with the process of stunting, and prevention of wasting could potentially increase attained stature in children.

¹Richard S et al. Wasting is associated with stunting in early childhood. J. Nutr. 142: pp 1291–1296, 2012.

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