

Q&A Session: Thought-Provoking Perspectives on Stunting - 18th November 2020

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Question	Answer
Should stunting be used in global targets such as the SDG/WHA as an outcome in the future. Considering global stunting decline rates have stagnated and the etiology of stunting is not well understood is it a good marker?	As we discuss in the paper, the prevalence of stunting provides very useful information to track progress, compare countries and regions, etc. So yes, the prevalence of stunting should be used for targets and to track progress towards meeting these targets. The point I was trying to make is, when we then try to address the problems of child development, of insufficient diets, and so on, we should directly address those problems and not go through stunting, to find our way to address the causes of those problems.
By linear growth retardation, you mean growth below OSD, is it right to believe that severe stunting (-3SD) is associated with poor child development, reduced work capacity and so forth?	<p>Linear growth retardation is mostly meaningful at the population level. When seeing that the entire HAZ distribution has shifted to the left (as shown for Burundi), we can conclude that all children in this population suffer from growth retardation.</p> <p>Linear growth retardation and stunting are very strongly associated with child development, with reduced work capacity, but an association is not the same as a causal link. So, it is not because they're strongly associated, that linear growth retardation is causing these problems and that's the point we're trying to make here; association is not causation.</p>
Measuring linear growth in large scale surveys is considerably easier than measuring some of the outcome you just suggested such as early child development, nutrition status and so on. Are these changes you are suggesting feasible?	Linear growth is fairly easy to measure. That is why we are doing it in large scale surveys (Dr. Kaleab was able to use that as well). Our focus on linear growth retardation has slowed us down in thinking through how we can easily measure other outcomes. The good news is there are some important developments for example, in early child development, some initiatives are underway to construct tools that would allow to measure these outcomes in large surveys. It is easier to measure growth but that doesn't mean that we should always fallback on growth as the only thing we measure.
Stunting is used as an outcome measure in many projects and policies have been putting a lot of effort on stunting reduction. How do we achieve the proposed paradigm shift without losing policy makers' and implementers' commitment in nutrition overall?	This will not be easy, but I am hopeful that it can be achieved. Some donors appear to have started changing their thinking around using stunting as a primary outcome. The development of survey-friendly measures of other outcomes will be helpful too. I believe that many implementers are happy to focus on a broader set of nutrition-related outcomes (that is, they do not necessarily like being limited to a stunting focus).
Is it possible that the measures to improve linear growth will apply methods that can address broader development goals?	That is possible, but the message that we are trying to convey is that one should be specific about which problem you are trying to address and then use an effective strategy to directly address that problem.

Dr. Kaleab Baye, Associate Professor at the Center for Food Science and Nutrition, Addis Ababa University

Question	Answer
Have you tried to look at the difference (compare) in dietary intake of children between children living in low land and highland/by altitude?	Yes, altitude can have impact on dietary choices. Unfortunately, this did not come out significantly in our aggregate analyses but may be the case if data from individual countries are analyzed.
Do you think the level of atmospheric oxygen in high land areas is too low to cause hypoxia?	Yes, this becomes even more important during pregnancy because of the increased demand in oxygen.
Should we expect low birthweight at population level for children born in higher altitudes, or what is the perinatal effect of higher altitude on children?	Yes, we would expect an increased risk of low birth weight at higher altitude. This has been document in older yet well designed studies.
Should we be adjusting our population/global levels of numbers of stunted due to altitude? If so any idea by how much?	No, we do not recommend a downward adjustment of the growth standards, because we think that hypoxia-induced growth faltering is likely to be associated with functional deficits. We instead recommend more research to identify interventions as well as health care guidance to support pregnancies at higher altitude.
Is the existing evidence on mechanisms linking altitude and linear growth strong enough to explain the associations seen in this study?	Many studies using animal models justify that chronic hypoxia related to higher altitude pregnancies are associated with IUGR. We also have studies in physiology that looks at oxygen saturation, oxygen supply... to the fetus; but more mechanistic studies oriented towards identifying effective interventions are of course needed.
From program perspective, should there be higher focus to maternal health in higher altitude regions?	Yes, this is right. More focus and support are needed for pregnancies at high altitude. More specific interventions will also be needed, but that is unfortunately going to need more research.
Presumably maternal height is implicated in this finding. Was adjustment made for this variable?	Yes, maternal height was part of the robustness checks made. It is a bit complicated in the sense that if the mother is shorter because of suffering IUGR related to herself being born at higher altitude; that is why we limited this to our sensitivity analyses.
Is there data available for the weight variation in the newborns in altitudes of high >1500m and <1500? which could support your study?	Yes, there is data for weight variation.
In Ethiopia those who are resident in low altitude do not have similar physical growth (such as Gambella, Benishangul, Afar and	Yes, we do share this observation. But, will need data that allows adjusting for common covariates. Of course, remembering that after age 5, other factors including genetics become important.

Metema/Humera). How do you see this also with functional growth in low attitude areas?	
How do you see the impact of global warming on linear growth and functional capacity?	We adjusted for climatic factors by including data on precipitation, temperature, etc. A full list can be found in the supplementary file of our paper. However, we have not looked at the impact of global warming on linear growth.
Why did WHO Child growth study deliberately exclude high altitude settings?	There were inconsistent findings that related altitude and growth. Considering these uncertainties and given that the primary objective was to establish that all children have the same growth potential, some deliberate choices were made.