The Nutrient Deficit Score: A better way of linking food and nutrition security?

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INTRODUCTION

The Nutrient Deficit Score (NDS) was developed as a novel indicator for food and nutrition security, with the aim of improving food production and purchasing decisions and nutrition outcomes (Thornhill et al., 2016). It was used in Tanzania and Mozambique during 2009 and 2010 to assess the nutritional adequacy of diets consumed by households involved in biofuel feedstock production compared to other households in the same localities. A surprising finding was the large number of households with relatively diverse diets that recorded high nutrient deficiencies, due to inadequate volumes consumed (Thornhill et al., 2016).

In other studies, including a subsequent large study of households in Ethiopia and Tanzania, there has often been a poor correlation between dietary diversity indicators and anthropometric outcomes such as stunting, particularly in Tanzania (Kinabo, 2014, Lele and Kinabo, 2015).

WHAT IS THE NUTRIENT DEFICIT SCORE?

The NDS measures an overall assessment of household nutrient consumption in relation to requirements, in order to measure the extent of any significant nutrient deficits (or surpluses). In its simplest form it comprises 4 macro and micro nutrients: calories, protein, iron and vitamin A, weighted to give more prominence to calories (x3) and protein (x2). Survey tools are used to record amounts of purchased and home-grown foods consumed in a typical week, foods eaten less occasionally and shortage periods, including numbers of meals and reduced portion sizes. Nutrient intakes are then calculated using food composition tables for the relevant country and these intakes are then compared with calculated requirements for each household profile using UN guidelines.

An example NDS profile is shown below for a household with an overall Nutrient Deficit Score of 25%, as reflected in the left-hand blue column. The breakdown of this weighted score comprises the other four columns, showing a 45% vitamin A deficiency, 30% iron gap and 34% calorie deficit, whilst protein requirements were largely met.

Fig 1 – Nutrient Deficit Score Breakdown - Example Households

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OBJECTIVES

The original objective of the NDS was to be an alternative measure of food and nutrition security that provided a better link back to food produced and purchased.

The objectives of the 2018 survey in Tanzania were to:
1. Further test the practical application of the NDS metric and methodology in a food insecure locality by a team of researchers and households new to the metric
2. Compare the findings of the NDS metric with other established food security indicators
3. Improve the NDS metric in terms of reporting findings and guiding policy and practice toward improved nutritional outcomes

METHODS

For the 2018 Tanzanian survey, Dodoma was selected as the study area due to its high prevalence of malnutrition, especially stunting, and two villages, Manchali and Bugirgi, were randomly selected as the study sites.

Fig 2 – NDS Focus Groups and Household Survey Work

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RESULTS

For many individual households the contrast was starker. In the example below for a household in Bugirgi, the high HDDS and FCS scores suggest a household that is easily food secure, yet its NDS calculation shows an average 40% nutrient deficiency, due to the low volumes consumed.

Fig 3 – Average Nutrient Gaps by Village and Total

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CONCLUSIONS

This begs the question as to the adequacy of dietary diversity-based indicators such as the HDDS and FCS in measuring food and nutrition security outcomes. Using a cut-off NDS of 5% or more to denote household food insecurity, the FCS (<35) recorded a different outcome in 55% of cases, and the HDDS (<4) in just under 50% of cases. This might also explain why there is a lack of correlation between dietary diversity and anthropometric and other nutrition outcomes in some localities and countries.

Further research on the NDS is required using a larger sample and wider geographical scope. Nevertheless, it is anticipated that the NDS can provide a much clearer picture of food and nutrition security, helping to better guide remedial actions, such as a focused vitamin A programme in the above example in Singida.

The team are now seeking funding to develop the NDS metric and methodology into a platform-based app for self-reporting and guidance feedback, as well as further work on validation. The NDS app could help steer improved food production and purchasing decision-making resulting in better nutrition outcomes.

REFERENCES


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