Characteristics of global data on adolescents' dietary intake

This is a summary of the following paper: *Demmler K, Beal T, Ghadirian M et al (2024) Characteristics of global data on adolescent's dietary intake: A systematic scoping review. Current Developments in Nutrition, 8, 1, 102054.* **https://doi.org/10.1016/j.cdnut.2023.102054**

Despite data on adolescents' dietary intake being essential to improve nutrition status, the availability of high-quality disaggregated data remains limited and with large global differences. These knowledge gaps hinder the assessment of adolescent diets and the development of evidence-based interventions to improve adolescent health and that of future generations.

A systematic scoping review was conducted to investigate the availability, characteristics, and gaps in global adolescent dietary data. This included peer-reviewed and grey literature articles (from 2010 onwards) on the dietary intake of male and female adolescents aged 10–24 years. Studies from all countries and languages were included, incorporating any information related to types of food consumed, diet composition, dietary diversity, or meal patterns. Studies with insufficient methodological information, sample sizes less than 25, school-based data sets containing less than six schools, and studies that focused on pregnant or unhealthy study populations were excluded. Data, including year(s) of data collection, age, gender, sample size, dietary assessment methods, number of food items/groups, study design, location, and representativeness, were extracted. Of the 722 articles that were included, 677 (94%) were peer reviewed, representing 1,223 data sets, and 45 (6%) were grey literature, representing 98 data sets. Half of all data sets were from high-income countries. Most of the data was collected in cross-sectional surveys and over half of the data sets (57%) were from national representative surveys.

The literature search revealed that there was no dietary data for adolescents in over one-third of countries globally. Most of these countries were in Sub-Saharan Africa. Furthermore, 14% of all countries (n=22) – primarily in Sub-Saharan Africa, and Europe and Central Asia – lacked nationally representative dietary data. The review identified a limited amount of detailed dietary information. In many countries, data on adolescent diets was available for fewer than seven food items/groups, which did not allow for quantification of intake. In the absence of a validated dietary diversity score for adolescents, assumptions were based on the Minimum Dietary Diversity score for children aged 6–23 months. Despite the existence of the validated Minimum Dietary Diversity for Women (ages 15–49 years, assessing 10 food groups), a seven-food group count was chosen as a threshold. This was assumed to provide a meaningful characterisation of adolescent dietary intake. A significant limitation of this review was that only peer-reviewed journals from one database (PubMed) were included.

The study highlights the critical significance of addressing adolescent nutrition, emphasising the pressing need for enhanced, accessible, and comprehensive data on adolescents' dietary intake to support effective nutritional interventions.

Finding the most vulnerable: How to identify malnourished infants

This is a summary of the following paper: *Mahmud I, Guesdon B, Kerac M et al (2024) Mortality risk in infants receiving therapeutic care for malnutrition: A secondary analysis. Maternal & Child Nutrition, e13635.* **https://pubmed.ncbi.nlm.nih.gov/38433606/**

This secondary analysis investigated inpatient therapeutic care data for 3,692 infants (aged under six months) across 34 field sites, between 2002 and 2008, from 12 countries: Afghanistan, Burundi, the Democratic Republic of Congo, Ethiopia, Kenya, Liberia, Myanmar, Niger, Somalia, Sudan, Tajikistan, and Uganda. Admittance criteria was comprised of 1) infant too weak to suckle effectively, 2) not gaining weight at home, 3) weight-for-length z-score <-3, and/or 4) presence of bilateral pitting oedema. Multiple variables were collected at admission and discharge, with death at discharge being the outcome of interest in this analysis. Logistic regression was used to examine the association of various anthropometric deficits and mortality.

In this admitted population, 95.8% were underweight, 82.8% wasted, and 77.8% stunted (figure 1). When applying the Composite Index of Anthropometric Failure (CIAF) – which combines underweight, wasted, and stunted into a single indicator of anthropometric deficits – 96.8% of children fell under this classification. Infants with multiple anthropometric deficits were often more severely wasted, stunted, and underweight than those with a single anthropometric deficit. This underscores the urgent need for targeted interventions to address the specific needs of these vulnerable infants.

A total of 141 infants died during inpatient therapeutic care, of which 116 were severely wasted and 138 were severely underweight. Severely wasted infants had double the odds of mortality (OR 2.1, 95% CI 1.2-2.7, p=0.009) compared to anthropometrically normal infants. Severely underweight infants had over triple the odds of mortality (OR 3.3, 95% CI 0.8-13.6, p=0.09), although this was not a significant finding due to the broad confidence interval observed. Notably, weight had fewer missing values and flagged data, making this assessment more practical. Sex differences were observed, where boys had greater odds of inpatient mortality than girls (OR 1.40, 95% CI 1.02-1.92, p=0.03). In this analysis, the only infants to die were those with multiple anthropometric deficits, although their odds of mortality were not significant due to the broad confidence intervals observed.

The study excluded participants with missing data and/or outlier data based on predetermined guidelines, which may increase our confidence in the statistical analysis, but may also introduce selection bias into the sample. As this study took place across multiple sites, variation in measurements taken by different staff may have introduced measurement bias. However, the inclusion of multiple sites increases both the sample size and the generalisability of the findings. Seasonality may also affect our interpretation, as measurements were taken at different time points in different locations. This analysis lacked data on participants' co-morbidities, congenital anomalies, prenatal and birth history, or breastfeeding practices. These factors could potentially influence the observed associations between anthropometric deficits and mortality.

These results are not generalisable beyond this inpatient setting – which is a subgroup of already malnourished children – so the findings should be interpreted with caution. This analysis does reinforce existing knowledge that there are sex differences in malnutrition-related mortality and that children with concurrent forms of malnutrition face the greatest mortality risk. Using more comprehensive indicators, such as CIAF, offers a more holistic understanding of undernutrition and risk of infant mortality. Yet, more research is needed to determine the added benefit of CIAF whilst balancing its additional burden/complexity for programme staff. Wasting and underweight appear to correlate more strongly with mortality compared to stunting in this setting.

Figure 1 Prevalence and overlap of different anthropometric deficits and mortality