Minimum Dietary Diversity (MDD)

Overview

The minimum dietary diversity (MDD) score for children 6-23 months old is a population-level indicator designed by the World Health Organization (WHO) to assess diet diversity as part of infant and young child feeding (IYCF) practices among children 6-23 months old. This indicator is one of eight IYCF indicators developed by the WHO to provide simple, valid, and reliable metrics for assessing IYCF practices at the population level (WHO, 2008 [1]). The other seven indicators are: early initiation of breastfeeding; exclusive breastfeeding under 6 months; continued breastfeeding at 1 year; introduction of solid, semi-solid, or soft foods; minimum acceptable diet; minimum meal frequency; and consumption of iron-rich or iron-fortified foods. The MDD is also a component of the Minimum Acceptable Diet [2] (MAD) indicator, which is a composite indicator.

Method of Construction

Data are gathered from a questionnaire administered to the child's caregiver, usually as part of the IYCF module. Respondents are asked to indicate whether or not their child consumed any food over the previous 24 hours from each of seven food groups. The seven food groups included in the questionnaire are:

MDD Food Groups

1.	Grains, roots, and tubers
2.	Legumes and nuts
3.	Dairy products
4.	Flesh foods
5.	Eggs
6.	Vitamin A rich fruits and vegetables
7.	Other fruits and vegetables

The total number of food groups consumed is summed. The population-level indicator is calculated based on the following formula:

$$\frac{Children\ 6\text{-}23\ months\ of\ age\ who\ received\ foods\ from\ 4\ food\ groups\ during\ the\ previous\ day}{Total\ number\ of\ children\ 6\text{-}23\ months\ of\ age\ surveyed}$$

For more information on calculating this indicator, refer to the WHO measurement guidelines (WHO, 2010 [3]).

Uses

Child dietary diversity has been shown to be positively associated with mean micronutrient adequacy of the diet (FANTA, 2006

[4]). Thus, the MDD can be useful in capturing a population-level picture of infant and young child diet quality and appropriate complementary feeding practices (FANTA, 2014 [5]). As a simple and easy to interpret indicator, the MDD is appropriate for population-level targeting, monitoring and assessment, and target setting. The MDD only reflects the complementary feeding diet, not breastfeeding status; the MAD should be used if the objective is to measure both breastfeeding status and complementary feeding (WHO, 2008 [1]).

Strengths and Weaknesses

One advantage of the MDD is that it is simple to collect, tabulate, and interpret, and is applicable across sociocultural contexts. In addition, it can be applied to both breastfed and non-breastfed children between 6 and 23 months old (although these scores should not be directly compared to each other), since it is an indicator of complementary feeding and thus breastmilk is excluded from the list of foods. It is also easily disaggregated into smaller age groups, including 6-11 months, 12-17 months, and 18-23 months (WHO, 2008 [6]).

However, this indicator cannot be used to compare populations with different rates of continued breastfeeding, nor can it be used to compare the same population over time if rates of breastfeeding have changed (WHO, 2008 [1]). The indicator, however, has been extensively validated and shown to be associated with micronutrient adequacy of the diet in multiple countries and contexts (Arimond et al., 2010 [7]; Moursi et al., 2008 [8]). Research has shown that the ability of child dietary diversity scores to represent micronutrient adequacy could be improved by either imposing consumption minimums or by assigning different weights to the food groups based on nutrient content (Gewa et al., 2014 [9]).

Data Source

The MDD indicator can be constructed, as other dietary diversity measures [10], from a short Food Frequency Questionnaire [11] (FFQ) style module administered to the child's caretaker, usually as part of the IYCF module. Example questionnaires can be found in the WHO (2008) Indicators for assessing infant and young child feeding practices [3] document, which includes: 1) a household roster, 2) an initiation of breastfeeding module, and 3) an IYCF module. This indicator is also available for many countries in the United Nations International Children's Emergency Fund's (UNICEF) Infant and Young Child Feeding Database (UNICEF [12]), and is collected as part of many Demographic and Health Surveys [13] (DHS).

Links to guidelines

- WHO, (2008). "Indicators for assessing infant and young child feeding practices (Part 1 Definitions)" [1]
- WHO, (2010). "Indicators for assessing infant and young child feeding practices (Part 2 Measurement)" [3]
- WHO/UNICEF (2017). "Global Nutrition Monitoring Framework: Operational guidance for tracking progress in meeting targets for 2025" [14]

Links to validation studies

- FANTA. Working Group on Infant and Young Child Feeding Indicators, (2006). ?Developing and validating simple indicators of dietary quality and energy intake of infants and young children in developing countries? [4]
- FANTA. Working Group on Infant and Young Child Feeding Indicators, (2007). ?Developing and validating simple indicators of dietary quality and energy intake of infants and young children in developing countries: Additional analysis of 10 data sets? [15]

Links to illustrative analyses

- [WHO, (2010). "Indicators for assessing infant and young child feeding practices: Part 3 Country Profiles"](#) [16]
- [United Nations International Children?s Emergency Fund, (2016). "From the first hour of life"](#) [17]
- [Joshi et al., (2011). "Determinants of inappropriate complementary feeding practices in young children in Nepal: Secondary data analysis of Demographic and Health Survey 2006"](#) [18]
- [Jones et al., (2013). "World Health Organization infant and young child feeding indicators and their associations with child anthropometry: A synthesis of recent findings"](#) [19]

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Food Security Dimensions

- [Quality](#) [21]

Data Collection Levels

- [Individual](#) [22]

Data Sources and Methods

- [Dietary Diversity](#)
- [Demographic and Health Surveys (DHS) & Multiple Indicator Cluster Surveys (MICS)](#)
- [Food Frequency Questionnaire (FFQ)](#)

Requires Food Composition Database

- [No](#) [23]