Just Too Small? The Heavy Toll of a Low Dietary Diversity in Children: Exploration of Cultural Influencing Factors in Madagascar's Central Highland

Background: Stunting denotes growth failure in children – due to chronic malnutrition – which makes them too small for their age (de Onis et al. 2018). The consequences for children go far beyond not reaching their full potential height and can last throughout the life-course (Prendergast and Humphrey 2014). Every second child in Madagascar is affected by stunting (Global Nutrition Report 2020). Hardly any rates of change were recorded during the last decades (ibid.; Kinyoki et al. 2020). A low dietary diversity was identified as a determinant of stunting (Rakotomanana et al. 2017). Despite the fact that diverse crops were planted in the Vakinankaratra region (WFP and UNICEF 2011), the highest stunting prevalence was found there (INSTAT and ONN 2013). Cultural traditions and beliefs are important in this region, though data on its influence on dietary diversity are scarce. Therefore, the aim of this thesis was to find what impact cultural practices have on the dietary diversity of children between 6 to 59 months of age in the Vakinankaratra region of the central highlands in Madagascar.

Methods: A mixed-method approach was used to find out more about cultural influences and the current nutrition of the children. Qualitative data was collected within three different data collection techniques; transect walks, focus group discussions, and personal interviews. Quantitative data was additionally surveyed to assess the actual diet given to children. Data was collected in November 2019 in three communities, Behenjy, Ibity, and Ankazomiriotra. Transect walks were conducted with a semi structured questionnaire to acquire an overview of which crops are produced where, when and by whom. Focus group discussions with four to seven participants were intended to analyze specific cultural issues, such as special events, which may affect the diet of children. Personal interviews were conducted with caregivers who were caring for minimum one child between the age of six months and five years. Questions around dietary habits of children's diet, food sources and culturally influencing factors were within the focus of the semi-structured questionnaire. Quantified questions related to the indicators; minimum meal frequency, minimum dietary diversity, minimum acceptable diet, and the consumption of an iron-rich food were embedded in the personal interviews to receive information about the children's diet.

Results: In total, sixty conversations were carried out either individually or in groups. Subsistence farming with diverse crops – rice above all – and livestock was a common practice. Availability of food and money were factors with a great impact on a child's diet. Meats, dairy products, fruits, vegetables, and legumes were highlighted as being healthy and important for the child's development. Despite this knowledge, many people cannot afford to provide enough of these foods for their children due to their financial constraints. Moreover, the availability of food was not always given.

Food restrictions for children due to taboos and rumors were most commonly present in Ibity. Yet, also in Ankazomiriotra and Behenjy some rumors were mentioned. The aspect, that the results were different in all three locations justifies that it is a very context dependent factor which may have an influence on dietary diversity. Though when considering the very low consumptions of eggs in all three regions even though rumors around its consumption were most prominent in Ibity, it does not verify that the reason for its low consumption was only due to the rumor.

In some families, the effects of annual events on the dietary diversity of the children last about one month. The negative impact on food habits due to famadihana, a ritual of reburial ceremonies of the dead, were present in more families and over an expanded time span, such as one year. The connection was due to financial expenditure, which resulted in a reduced budget for food procurement.

Sixty children were included in the quantitative survey. A summary of the results of the feeding assessment is present in table 1 below. A minimal meal frequency was achieved by 78% of children but differences were seen between the age groups; 96% in children 6 to 23 months of age and 68% in children 24 to 59 months of age. In total 45% of children received a minimum dietary diversity (figure 1 provides an insight of the food groups consumed). Forty percent reached a minimum acceptable diet. However, considerable differences were seen between the communities; 35% in Behenjy, 25% in Ibity, and 60% in Ankazomiriotra.

Table 1: Summarized Results of Infant's & Young Children's Feeding Assessment

Infant & Young Child Feeding Assessment Indicator (WHO 2010a)	Age Groups 6-23 months > 23 months All	Behenjy n = 9 n =11 n =20	Ibity n = 8 n = 12 n = 20	Ankazomiriotra n = 6 n = 14 n = 20	TOTAL n = 23 n = 37 n = 60
Minimum Meal Frequency	6-23 months >23 months All	8 (88.9%) 7 (63.7%) 15 (75%)	8 (100%) 9 (75%) 17 (85%)	6 (100%) 9 (64.3%) 15 (75%)	22 (95.7%) 25 (67.6%) 47 (78.3%)
Minimum Dietary Diversity	6-23 months >23 months All	4 (44.4%) 5 (45.5%) 9 (45%)	3 (37.5%) 2 (16.7%) 5 (25%)	3 (50%) 10 (71.4%) 13 (65%)	10 (43.5%) 17 (45.9%) 27 (45%)
Minimum Acceptable Diet	6-23 months >23 months All	4 (44.4%) 3 (27.3%) 7 (35%)	3 (37.5%) 2 (16.7%) 5 (25%)	3 (50%) 9 (64.3%) 12 (60%)	10 (43.5%) 14 (37.9%) 24 (40%)
Consumption of Iron-Rich or Iron-Fortified Food	6-23 months >23 months All	6 (66.7%) 3 (27.3%) 9 (45%)	4 (50%) 1 (8.3%) 5 (25%)	2 (33.3%) 6 (42.9%) 8 (40%)	12 (52.2%) 10 (27%) 22 (36.7%)

Children are split into two age groups 6-23 months (which includes the three age groups: 6-11 months; 12-17 months; 18-23 months) and 23-59 months.

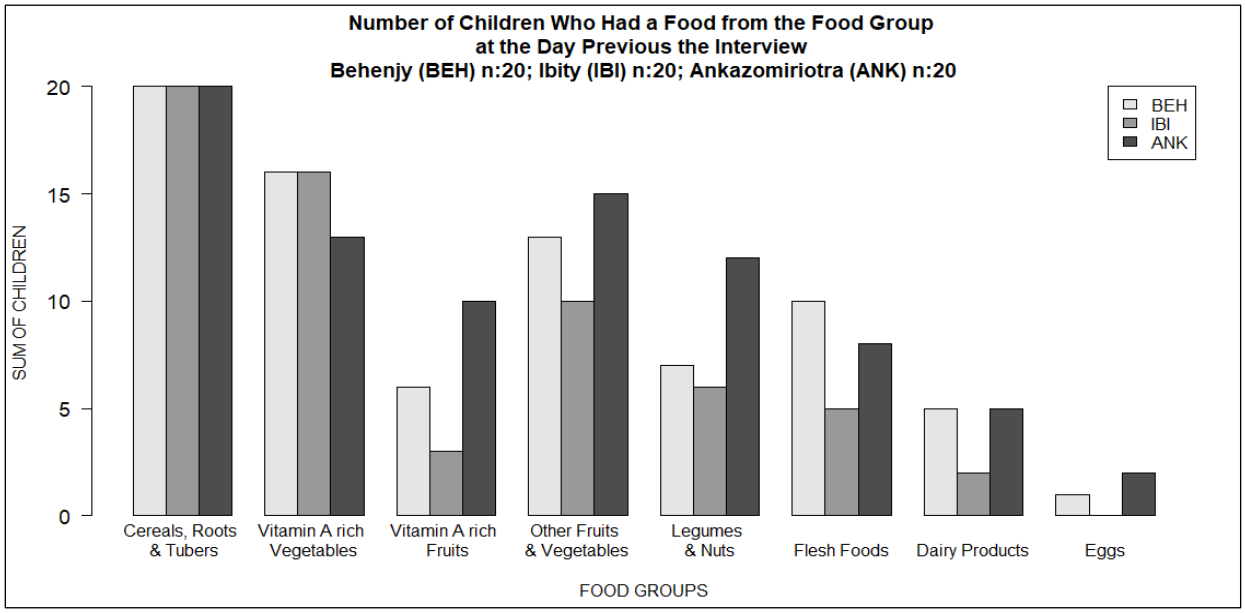

Figure 1: Consumed Food Groups Split by Location
Results from all included children.

Conclusions: As stunting is a multifactorial problem, the results only illuminated some cultural aspects. Most people knew which foods are positive for the child's development, though these were often not affordable or available. The impact concerning special events was very family dependent and mostly linked to monetary issues. Famadihana was highlighted as having a negative impact on children's diet and food availability in specific households. This aspect should not be neglected when considering the dietary diversity in children in the Vakinankaratra region.

This thesis confirmed the importance of rice. Combined with the fact that animals are of great cultural importance the role of fish farming within rice paddies seems a great chance for improving the dietary diversity in the population of the Vakinankaratra region. Further research and projects should consider barriers and promoters for such a change in agricultural activities. Dietary diversity scores were similar in children below and above two years of age. Though specifically older children, who were not breastfed anymore, were prone to not reaching a minimum meal frequency. The development of reliable indicators for children above the age of two years, is important for further research and assessments.

Keywords: Dietary Diversity, Stunting, Cultural Aspects, Famadihana, Madagascar

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