

Review Article

The influence of feeding practices on under five nutrition status in Mbinga district, Tanzania

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ABSTRACT

This study assessed the influence of feeding practices on less than five nutrition status in Mbinga district, Tanzania. A cross sectional study involved 150 heads of households whose children aged 0-59 months were assessed to determine their anthropometric measurements Weigh for Age Z-scores, Height for Age Z-scores and Weight for Height Z-scores. A structured questionnaire was administered to collect data from heads of the households. Data were coded and analysed by ENA for SMART, Statistical Package for Social Sciences (SPSS) programme and STATA. Results showed that, 42% of the children were stunted, 33% were wasted, and 25% were underweight. Moreover, results of ordered probit regression model showed that exclusive breastfeeding, meal frequency and food dietary diversity were positively influencing the nutrition status while household size was negatively influencing the nutrition status of the under-five. The study concludes that, there are high rates of stunting, wasting and underweight in the study area. Further, poor child feeding practices have positive influence on anthropometric status of the under-five. It was recommended that nutrition education should be provided to community members on appropriate child feeding practices and family planning.

Keywords: Feeding practices, The under-five, Malnutrition, Statistical Package for Social Sciences (SPSS), Under nutrition

INTRODUCTION

Under nutrition is a universal public health problem in both children and adults globally. It is not only a public health concern but it is an impediment to global poverty reduction, productivity and economic growth [1]. The under five children are among the most vulnerable groups although it affects both women, elderly and youth [2].

Globally, in 2020 about 149 million children under 5 were estimated to be stunted (too short for age), 45 million were estimated to be wasted (too thin for height), and 38.9 million were overweight or obese [3].

Thus, around 45% of deaths among children of under five years of age are linked to under nutrition.

These mostly occur in low and middle income countries especially in African and Asia.

At the same time, in these same countries, rates of childhood overweight and obesity are rising.

Africa still experiences a malnutrition burden among children aged less than five years. Sub-Saharan Africa bears one of the highest burdens of under nutrition. In 2016, more than one third of stunted children (38%) and more than one quarter of wasted (27%) children lived in sub-Saharan Africa.

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However, a more detailed look into the distribution of under nutrition within sub-Saharan Africa shows that Eastern Africa (36.7%) has a higher prevalence of stunting compared to Western Africa (21.4%), Central Africa (32.5%), and Southern Africa (28.1%).

While Western Africa (8.5%) has a higher rate of wasting than Central Africa (7.3%), Southern Africa (5.5%), and (6.5%) in Eastern Africa [4].

In Tanzania, the under-five malnutrition remains one of the country's greatest human development challenges. Despite displaying a seemingly 'low' and 'acceptable' rate of acute malnutrition, the burden of undernourished under five children is one of the highest in the East African region [5].

An estimated 450,000 children in Tanzania are acutely malnourished or wasted, with over 100,000 suffering from the most severe form of acute malnutrition/stunting. Tanzania has one of the highest under nutrition burdens in East and Southern Africa, threatening not only individual lives but the next generation's economic advancement, education and opportunities for prosperity [6].

Nutritional interventions have been developed and implemented in Tanzania by the Ministry of Health (MOH) to reduce child under nutrition. Such as (IYCF) protocols, sanitation, deworming, vitamin A supplementation, and health education. Despite these interventions, child under nutrition still remains a developmental challenge.

The causes of under nutrition are multifaceted but failure to adhere to under five feeding practices remain a strong predictor especially in most of area which are food secured in Tanzania [7]. Furthermore, there is a little information regarding the influence of feeding practices on under five nutrition status especially in southern agricultural zones of Tanzania.

Problem statement

Despite national efforts in reduction of under nutrition such as implementation of IYCF protocol, vitamin A supplementation, fortification and health education over the last two decades, the prevalence and the burden of under nutrition remains high in the country. This is evidenced by Tanzania demographic and health survey report which revealed that the prevalence of chronic under nutrition (stunting) was 34.4%, acute malnutrition (wasting) was 4.5%, and underweight was 13.6%. The most affected regions with a prevalence of stunting exceeding 40% are: Ruvuma (41.0%), Iringa (47.1%), Rukwa (47.9%), Kigoma (42.3%), Njombe (53.6%) and Songwe (43.3%). However these regions are among the big food crop producers in Tanzania; such as maize and legumes [8].

The under-five malnutrition reduces life expectancy, causes poverty, impaired physical and mental growth leading to poor brain and school development hence affecting community and national development.

Previously, studies have been conducted in Tanzania regarding under nutrition for instance.

However, these focused more on the institutional determinants, nutritional status and food security at household level. It is not clear as to what extent feeding practices can contribute in addressing the under-five nutrition status in Mbinga district, Tanzania.

LITERATURE REVIEW

Early initiation of breastfeeding

Early breastfeeding practices determine the successful establishment and duration of breastfeeding. It is recommended by WHO and UNICEF that children be put to the breast immediately or within one hour after birth. The practice of giving pre lacteal feeds and late initiation of breastfeeding especially after one hour of birth is discouraged because it limits the frequency of suckling by the infant, deprives the child of the valuable nutrients, protection and exposes the newborn to the risk of infection. However, many mothers are not aware of such information as a result they do not value the importance of giving colostrum to their new born babies [9].

Exclusive breastfeeding

UNICEF and WHO recommend that children be exclusively breastfed (*i.e.* feed only breast milk with no other liquids including water or food) on demand for the first 6 months of life. Exclusive breastfeeding is associated with a lower risk of HIV transmission. Early introduction of foods and other liquids reduce breast milk intake, decreases the full absorption of nutrients from breast milk, and increases the risk of diarrhea. Therefore, an optimal breastfeeding practice, especially exclusive breastfeeding up to 6 months of age, has the single greatest potential impact on child survival.

Extended breastfeeding

Optimal infant and young child feeding practices include continued on demand, frequent breastfeeding for children aged between 6-23 months and beyond. After the initial period of exclusive breastfeeding during the first six months of life, breast milk continues to be an important source of energy, protein, and micronutrients for older infants and young children, in addition to the nutrients they get from complementary foods. Breast feeding provides half or more of the child's nutritional needs, and at least one third of their nutritional needs of children aged between 12-24 months; provide protection to the child against many illnesses and provides closeness and contact that helps psychological development [10].

Complementary feeding

Appropriate complementary foods can be readily consumed and digested by the young child from six months onwards and

provide nutrients (energy, protein, fat and vitamins and minerals) to help meet the growing child's needs in addition to breast milk.

Breastfeeding alone is not adequate to meet a child's nutritional needs after the first six months of life. In the transition to eating the family diet, children from the age of about 6 months are fed small quantities of solid and semi-solid foods throughout the day. During this transition period (ages 6-23 months), the prevalence of malnutrition increases substantially in many countries because of increased infections and poor feeding practices.

Minimum dietary diversity and meal frequency

The quality of complementary food introduced to infants should be improved in order to improve child nutrition. Nutrient and energy dense food is required during introduction of new foods at six months. To achieve this, dietary diversity should be given attention. To measure the quality of dietary diversity, seven food groups namely

- Grains, roots and tubers.
- Legumes and nuts.
- Milk and dairy products.
- Flesh foods.
- Eggs.
- Vitamin A rich fruits.
- Other fruits and vegetables.

Are used to calculate the Minimum Dietary Diversity (MDD). To meet the MDD the child should consume four food groups out of seven groups in the previous day. Apart from MDD, the complementary food should meet the minimum meal frequency recommended by WHO. The WHO proposed that, children between 6-8 months should be fed 2-3 times a day while 9 - 24 months children should be fed 3-4 times a day with addition of 1-2 nutritious. To reduce the risk of under nutrition for the under-five children, the complementary foods introduced should meet the minimum dietary diversity and the minimum meal frequency per day [11].

METHODOLOGY

The study area

This study was conducted in Mbinga district, one of the six districts in Ruvuma region, namely: Nyasa, Mbinga, Songea Urban, Tunduru, Songea Rural and Namtumbo districts. The district is bordered by Njombe region to the North, Songea Rural district and Songea Urban district to the East, Mozambique to the South and Nyasa district to the West. The district has an area of 4,839.78 km² with a total of approximately 353,683 people that form a population density of 73.1 inhabitants per square kilometer. Mbinga was strategically selected for this study from a number of reasons, among others, are; It is found within the regions which are highly affected by

under nutrition of the under-five with the stunting rate of 41% in Tanzania and

- It is important and occupies the largest area for growing food crops such as maize, beans, cassava, millet and potatoes in Ruvuma region however childhood under nutrition is not yet controlled.

Research design

The author employed non-experimental design particularly cross sectional research design to collect both qualitative and quantitative data where primary data were collected from household heads in the field using questionnaires structured with couple of questions also the key informants interviewed using checklist containing relevant questions. Also accessed potential secondary data by reviewing relevant documents including strategic plan, journals, and water research reports and published papers.

Data collection, processing, analysis and presentation

The research data were collected from the field. The data were then edited, compiled, classified and summarized. This process was conducted using ENA for SMART and IBM-SPSS through which the author applied descriptive statistics and inferential statistics where by ordered probit regression model was used to identify the existing influence of feeding practices on under five nutrition status, which is an ordinal variable. The analyzed data results have been presented by using graphs, charts and tables to convey a meaningful interpretation and discussion of the findings.

RESULTS AND DISCUSSION

Characteristics of respondents

The study involved 150 heads of households from three wards of Mbinga district. The study was conducted in a manner that both men and women having different age, sex, education, occupation and economic status were involved [12].

Prevalence of under nutrition among the under five in the study area

The nutritional status of the under five children was determined in Mbinga district. Figure 1 shows the distribution of stunted, underweight, normal and wasted children. Out of 150 children who were studied, 42% were stunted, 33% were wasted, and 25% were underweight. Similar results were also revealed during the interview with district nutrition officer who asserted that;

“...Childhood under nutrition involving stunting is perceived normal as one of the processes in child growth and development. It is sometimes perceived as a result of witchcraft from wicked people...”.

Generally, the prevalence of under nutrition in the studied sample was higher than the national prevalence rate which is 31.8% for stunted, 13.7% for underweight and 4.5% for wasting.

Similarly, under nutrition was also higher than that reported in Africa. Agho, et al. observed that, 30.7% of the children in

Africa were stunted, 14.4% were underweight while 5.4% were wasted. In West Africa, 31.8% of the children were stunted, 20.1% were underweight while 10% were wasted. In Southern Africa, 30.6% of the children were stunted, 10.7% were underweight while 4.1% were wasted. In Central Africa, 28.8% of the children were stunted, 12.8% were underweight while 6.7% were wasted.

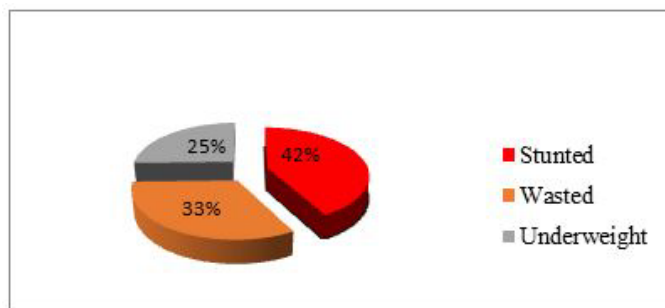


Figure 1. Distribution of stunted, underweight and waste children (n=150).

Determinants of feeding practices on under five nutrition status

Furthermore, the ordinal probit regression was used to analyse the determinants of the under-five nutrition status which is shown in Table 1. The signs of coefficients from ordinal probit regression analysis were used to discuss the direction of the relationship (positive/negative) between independent variables

and the dependent variable. As specified in the model, the dependent variable was under five nutrition status while the independent variables were age of a child, sex of a child, household size, early initial breastfeeding, exclusive breastfeeding, extended breastfeeding, complementary feeding, and types of complementary foods, food dietary diversity and meal frequency.

Predictor	Coef.	Std. Err.	z	P>z
Household size (in number)	-0.396	0.214	1.86	0.063
Early initial breastfeeding (1=within 1 hr)	0.041	0.433	0.09	0.925
Exclusive breastfeeding (1=6 months and above)	0.925	0.424	2.18	0.029
Extended breastfeeding (1=within 2 years)	-0.375	0.719	-0.52	0.602
Complementary food (1=Yes)	-0.279	0.497	-0.56	0.575
Complementary food types (1=Recommended type)	0.41	0.703	0.58	0.56
Food dietary diversity (1=recommended groups)	1.009	0.574	-1.76	0.079
Meal frequency in number per day (1=4 meals and above)	0.585	0.306	1.91	0.056
Number of observation	149			
Log likelihood	-94.451			
LR χ^2 (10)	20.19			
Prob> χ^2	0.027			
Pseudo R ²	0.097			

Table 1. Ordered probit regression results on the determinants of U/5 nutrition.

The results from this study shows that exclusive breastfeeding was statistically significant at $p < 0.05$ level and positively influenced the under-five nutrition status (Table 1). This designates that exclusively breastfed children were more likely

to have good nutrition status while non-exclusively breastfed children were more likely to be stunted, wasted and underweight. These findings coincide with Chipungahelo who found that the most undernourished children were those who

had never exclusively breastfed.

Results from Table 1 show that meal frequency was statistically significant at $p < 0.1$ level and positively influenced the under-five nutrition status. This implies that children who consumed four meals and above per day were more likely to have good nutrition status while those who were taking less than four meals per day were more likely to be stunted, wasted and underweight. These findings are supported by Megersa, et al., who found that under five nutrition status in Borana, Southern Ethiopia were positively associated with meal frequency consumed by fewer than five children per day.

Household size was statistically significant at $p < 0.1$ level and negatively influenced the under-five nutrition status (Table 1). This indicates that increase of members of household decrease the likelihood of children to be stunted, wasted and underweight. These findings imply that size of the household determines food availability and ability of caregivers to ensure appropriate feeding of the under five children. These finding are supported by Minja, et al. who found that the risk of a child to be undernourished increases significantly with increasing number of own siblings within the household.

Food dietary diversity is a measure of food consumption that reflects household access to a variety of foods, and is also a proxy for nutrient adequacy of the diet of the under five children. Table 6 shows that food dietary diversity was statistically significant at $p < 0.1$ level and positively influenced the under-five nutrition status.

This indicates that consumption of a diverse diet was significantly associated with a reduction of stunting, wasting and being underweight in children. The likelihood of being stunted, wasted and underweight was found to decrease as the number of food groups consumed increased in the study area. The study findings concur with Khamis, et al., who found that children who did not receive the MDD had a significantly higher likelihood of being stunted and underweight.

Therefore, from these findings, we reject the null hypothesis which stated that, there is no relationship between feeding practices and under five nutrition status and accept the alternative hypothesis that there is positive relationship between feeding practices and under five nutrition status.

CONCLUSION

The prevalence rate of stunting, wasting and underweight was high in the study area. Poor child feeding practices have positive influence on anthropometric status while family size has negative influence on anthropometric status of the under-five. The findings show that exclusive breastfeeding, meal frequency and food dietary diversity were positively influencing the nutrition status while household size was negatively influencing the nutrition status of the under-five.

RECOMMENDATIONS

It is recommended by the author that: Tanzania's ministry of health and other stakeholders should formulate strategies for educating mothers both in the health facility and in the community on the importance of adhering to the recommended age of introduction of complementary feeding, meal frequency, and dietary diversity. Also, health care providers should be informed on the low proportion of adherence to the recommended complementary feeding practices so that they can discuss with mothers/caregivers the importance of optimal complementary feeding practices during ANC, delivery, postnatal visit and also during child growth monitoring and vaccination visits.

Likewise, community members should be empowered economically so that they can be able to achieve minimum dietary diversity, diverse complementary foods and sufficient meal frequency for the under five children at household level.

In addition, lactating mothers, husbands or any other caregivers should adhere to exclusive breastfeeding for the under-five within the recommended six months of birth and start giving complementary foods after six months, observe a continued breastfeeding within two years of birth and improve dietary diversity and meal frequency in order to improve under five nutrition status. Moreover, there is a need to educate community members on the use of family methods in order to control household size. It is because this study found that increase of the household size increases the likelihood of under five children to be stunted, wasted or underweight.

DISCLAIMER

The products used for this research are commonly and predominantly use products in my area of research and country. There is absolutely no conflict of interest between the author and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the author.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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