



# Tackling Child Malnutrition in Tanzania

## Perspectives of Local Actors

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# **Tackling Child Malnutrition in Tanzania Perspectives of Local Actors**

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The aim of this study was to examine the perspectives of the local actors working with child malnutrition prevention and reduction to obtain ideas and discoveries of measures for tackling child malnutrition in Tanzania and other affected countries. The objective was to explore the viewpoints of the local actors on the interventions and programs implemented for reducing and preventing child malnutrition in Tanzania and to understand their views of the current situation and suggestions for the future. The study was implemented in cooperation with Agricultural Non State Actors Forum, ANSAF, in Tanzania.

Child malnutrition is a substantial public health problem, particularly in low- and middle-income countries. About 45% of the deaths amongst children under 5 years of age are connected with undernutrition, mostly in low- and middle-income countries. At the same time, the amount of overweight and obese children increases in these same countries. Double and triple burden of malnutrition are global public health problems, that also pester Tanzania. Notable advancement improving nutrition among children and reducing child malnutrition has been done in Tanzania. However, the prevalence of stunting and anaemia among children persists high and the prevalence of childhood overweight has been rising.

A qualitative approach was applied in this study. One-on-one interviews with open-ended questions were used to collect the data from the local actors working with child malnutrition prevention and reduction in Tanzania. The purposive sampling of informants was used to select the informants and they were recruited with the help of ANSAF workers. Six local actors participated in the study. Inductive contents analysis method was used for data analysis.

The results of the study included six main categories: programs and interventions, optimal maternal, infant, young child, and adolescent nutrition (MIYCAN), political commitment, food security, current situation of child malnutrition in Tanzania and bright and promising future. The local actors brought up interventions and programs regarding social behaviour change communication, school feeding programs, community-based interventions, and nutrition sensitive interventions, and highlighted successful interventions and gave recommendations for future interventions. The optimal MIYCAN and importance of the first 1000 days as well as nutrition education were considered essential for child malnutrition prevention and reduction. Political commitment was accounted crucial. The local actors stated that Tanzania has made huge progress in reducing child malnutrition but were concerned about the triple burden of malnutrition in the country.

The local actors saw a bright and promising future regarding child malnutrition in Tanzania, even though defeating the triple burden of malnutrition still demands a great deal of work. Tackling child malnutrition in Tanzania requires multisectoral approaches. Further research on the perspectives of local actors on the actions and interventions required regionally to prevent and reduce child malnutrition is needed to plan and develop targeted programs and interventions.

Keywords: Child malnutrition, Tanzania, local actors

## Contents

1	Introduction .....	6
2	Nutrition .....	7
2.1	Nutrition and health .....	7
2.2	Healthy diets.....	8
2.3	Nutrition guidelines for infants and young children in Tanzania .....	9
3	Malnutrition .....	10
3.1	Definition of malnutrition and the scope of the problem .....	10
3.2	Child malnutrition in Tanzania .....	12
3.3	The causes of malnutrition .....	14
3.4	Prevention and reduction of malnutrition .....	15
3.5	Prevention and reduction of malnutrition in Tanzania .....	17
4	Local actors and child malnutrition prevention in Tanzania .....	18
5	Goals, objectives and research questions .....	20
6	Methods.....	20
6.1	Qualitative research approach .....	20
6.2	Data collection .....	21
6.3	Data analysis.....	23
7	Results .....	26
7.1	Programs and interventions.....	27
7.1.1	Social behaviour change communication.....	27
7.1.2	School feeding programs .....	27
7.1.3	Community-based interventions.....	28
7.1.4	Nutrition sensitive interventions .....	29
7.1.5	Successful interventions.....	30
7.1.6	Intervention and program recommendations.....	30
7.2	Optimal MIYCAN .....	32
7.2.1	1000 days .....	32
7.2.2	Nutrition education .....	33
7.3	Political commitment.....	33
7.3.1	Funding and advocacy .....	34
7.3.2	Indicators .....	34
7.4	Food security and safety .....	34
7.5	Current situation of child malnutrition in Tanzania.....	35
7.5.1	Food sufficiency, no hunger.....	35
7.5.2	Triple burden of malnutrition.....	35
7.5.3	Structures and policies .....	36

7.5.4	Role of women .....	36
7.5.5	Specialized production.....	37
7.6	Bright and promising future .....	37
8	Discussion.....	38
8.1	Programs and interventions.....	38
8.2	Current situation and the future regarding child malnutrition in Tanzania .....	42
8.3	Ethical considerations .....	45
8.4	Trustworthiness .....	46
8.5	Limitations of the study.....	47
9	Conclusions.....	48
	References.....	50
	Figures .....	64
	Tables .....	64
	Appendices .....	65

## 1 Introduction

Zero Hunger is the goal 2 of United Nations' Sustainable Development Goals, SDGs. This goal aims at ending world hunger and all forms of malnutrition as well as attaining food security and improved nutrition by 2030. (United Nations 2022.) Despite considerable progress during recent decades and a firm global commitment to Sustainable Development Goal 2, poor nutrition remains an enormous problem as some form of malnutrition affects one in three people globally (World Food Program 2022).

Child malnutrition is a substantial public health problem, particularly in low-income and middle-income countries. About 45% of the deaths amongst children under 5 years of age are connected with undernutrition, mostly in low- and middle-income countries. At the same time, the amount of overweight and obese children increases in these same countries. Double and triple burden of malnutrition are global public health problems. (United Nations International Children's Emergency Fund 2019a; Popkin, Corvalan & Grummer-Strawn 2020; Christian & Dake 2021.)

Malnutrition causes grave and long-lasting developmental, medical, social, and economic impacts on individuals, their communities, and countries (United Nations International Children's Emergency Fund 2019b; World Health organization 2021a). The largest burden of all forms of malnutrition is borne by the children and young people from the poorest and most excluded communities, building up poverty over generations (United Nations International Children's Emergency Fund 2019a, 8).

Tanzania, along with many other low- and middle-income countries, has made notable advancement improving nutrition among children and reducing child malnutrition during the past two decades. However, the rate of stunting among children persists high and there are distinct disparities in nutritional status between different regions of the country. (Zhu, Zhu, Sunguya & Huang 2021; United Nations International Children's Emergency Fund 2022b.) Tanzanian government has made many efforts and commitments to tackle child malnutrition. National Nutrition Surveys are conducted to assess the nutritional status of children and women, infant and young child feeding practices, micronutrients interventions, hand washing practices and burden of the anaemia among women of reproductive age. The government launched a comprehensive five-year National Multi-Sectoral Nutrition Action Plan in 2016. This plan is underlining the multisectorality of nutrition work. Local officials and NGOs have a significant role together with the government and international organizations in this work. (United Republic of Tanzania 2016; Rukonge 2022.)

This thesis is implemented in cooperation with Agricultural Non State Actors Forum, ANSAF. ANSAF is a member-led forum formed by umbrella farmer organizations, private companies and national and international NGOs and it operates in Tanzania mainland and Zanzibar

(ANSAF 2021). The aim of this thesis is to study the perspectives of the local actors working with child malnutrition prevention and reduction to obtain the ideas and discoveries of measures for tackling child malnutrition in Tanzania and other affected countries.

## 2 Nutrition

### 2.1 Nutrition and health

Nutrition is an essential part of health and development. Improved nutrition is associated with enhanced infant, child and maternal health, safer pregnancy and delivery, lower risk of non-communicable diseases and longevity. Healthy, well-nourished children have better learning outcomes. People with sufficient nutrition are more productive and able to generate opportunities to defeat the cycles of poverty and hunger. Malnutrition, in every form, menaces human health considerably. (World Health Organization 2023a.)

Unhealthy diets and maternal and child malnutrition are amongst the highest risk factors for the global burden of disease and cause about one quarter of global deaths. Prolific numbers of people of all ages are stricken with diet-related non-communicable diseases. Considerable amounts of food meant for human consumption are lost or wasted each year globally. This causes economic losses for farmers and other stakeholders and inflicts higher prices for consumers and means a major wastage of resources, such as energy, labor, land, and capital used in producing food. Decreasing food losses would considerably promote the supply of available food in low- and middle-income countries, hence contributing to improving food security. (Food and Agriculture Organization of the United Nations and World Health Organization 2018; Ministry of Agriculture 2019.)

Climate change as well as other environmental factors have an impact on food security, nutritional status of people and dietary choices. (Niles, Emery, Wiltshire, Brown, Fisher, & Ricketts 2021). The vulnerable and poor, particularly women and children, are most influenced by the corollaries of the climate change. Inversely, present food systems and dietary choices themselves forward climate change. (Food and Agriculture Organization... 2018).

## 2.2 Healthy diets

Having a healthy diet throughout one's life helps to prevent all forms of malnutrition and many non-communicable diseases. Nowadays many people consume more foods that are high in energy, fats, sugars, and sodium and do not eat adequately fruits, vegetables, and other dietary fibres. The exact composition of healthy and balanced diet varies being dependent on individual characteristics, cultural context, locally obtainable foods, and dietary practices. Nevertheless, the basic principles of a healthy diet remain the same. A variety of fruits, vegetables, legumes, nuts, and whole grains should be consumed daily. A healthy diet includes at least 400 grams of fruit and vegetable every day. Less than 10% of total energy intake should come from sugars. Less than 30% of total energy intake should come from fats and unsaturated fats, such as vegetable oils, fish and nuts, should be preferred. Daily intake of salt should be less than 5 g and iodized salt should be used. (World Health Organization 2023b.) Figure 1 presents the basics of a healthy diet for adults. When preparing plans for the implementation of healthy diet policies, sociocultural, economic, and political contexts need to be acknowledged (Lobczowska et al. 2022).

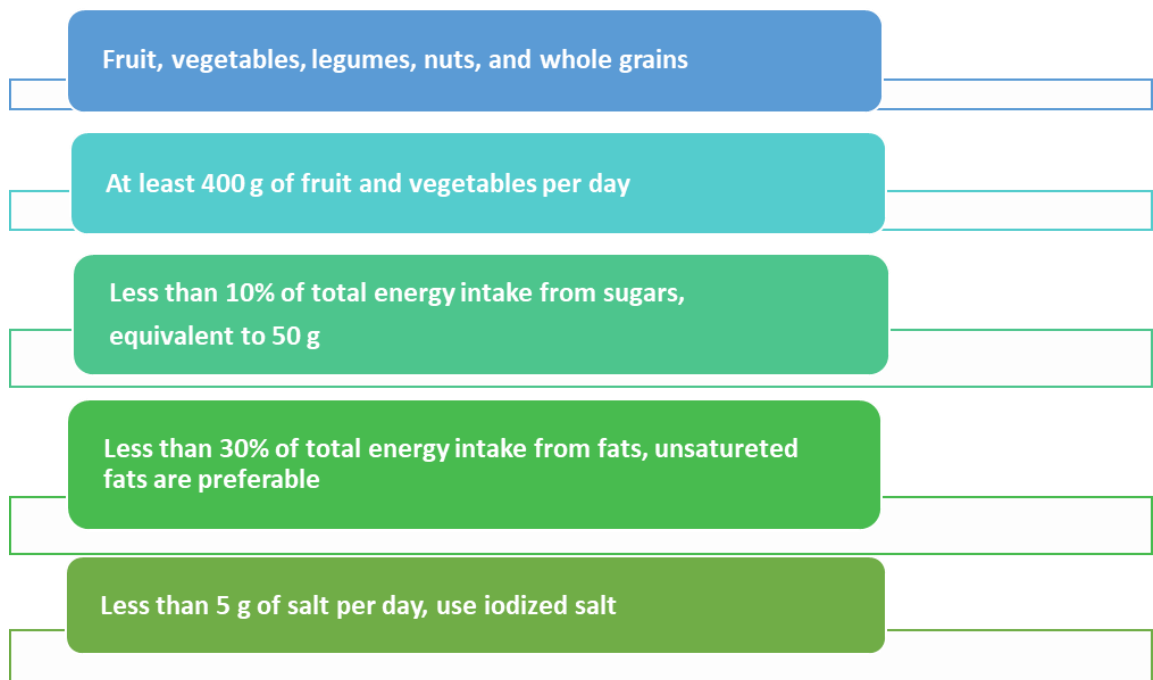


Figure 1: The basics of a healthy diet for adults according to World Health Organization (2023b)



Proper infant and young child feeding is crucial for enhancing child survival and promoting healthy growth and development. The first two years of a child's life, the first 1000 days, are especially essential, as optimal nutrition within this period reduces morbidity and mortality, lowers the risk of non-communicable disease, and promotes development as well as lowers the risk of becoming overweight or obese. A key factor of optimal infant and young child nutrition is the adequate intake of essential macro- and micronutrients. Infants should be breastfed exclusively during the first six months of their lives and breastfeeding should be continued at least until two years of age. From six months of age, complimentary feeding should be started with a variety of adequate, safe, and nutrient-dense foods without added salt and sugars. (World Health Organization 2023b.)

### 2.3 Nutrition guidelines for infants and young children in Tanzania

National guidelines for infant and young child feeding in Tanzania were published by Tanzania Food and Nutrition Centre and Ministry of Health and Social Welfare in 2013. Exclusive breastfeeding of infants is recommended for the first six months of life in Tanzania as well. Breastfeeding initiation is recommended immediately, within the first hour after birth and giving colostrum is recommended. Breastfeeding on demand of the baby is recommended, day and night. A diet meeting a minimum diversity is recommended for children. The minimum dietary diversity means that the children are fed a minimum of five out of eight food groups. The food groups are breastmilk; grains, roots, and tubers; legumes and nuts; dairy products; flesh foods; eggs; vitamin A-rich fruits and vegetables; and other fruits and vegetables. (Tanzania Food and Nutrition Centre 2013; Ministry of Health (MoH) [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS) & ICF 2023.)

Complementary feeding should be started at the age of six months, accompanied with breastfeeding up to the age of two years and beyond. In this age the infant's need for energy and nutrients exceed what is provided from exclusive breastfeeding. Complimentary foods should come from all food groups providing sufficient energy, protein, and micronutrients. They should be safe, referring to hygienic preparation with clean hands and clean utensils. (Tanzania Food and Nutrition Centre 2013.)

Clean and safe water should be given to children for drinking. When needed, the use of fortified complementary foods or vitamin-mineral supplements is recommended. These should contain iron, zinc, vitamin A, calcium, and vitamin B12. The usage of micronutrient powders for children aged 6-23 months is recommended. A high-dose vitamin A supplement is recommended for children aged 6-59 months. (Tanzania Food and Nutrition Centre 2013.)

Studies have shown that inappropriate complimentary feeding practices are common in Tanzania, especially in rural areas, and they can increase the risk of malnutrition. Mamiro, Kolsteren, Roberfroid, Tatala, Opsomer and Van Camp (2005) identified poor complimentary nutrition and diseases as the main factors responsible for health decline in infants in rural Tanzania. Masuke et al. (2021) stated that early initiation of complimentary feeding raises the risk of stunting, wasting and underweight. Low meal frequency and nutrient content, small serving size and limited variety of foods have been reported concerning inappropriate complimentary feeding in Tanzania (Kulwa, Mamiro, Kimanya, Mziray & Kolsteren 2015; Martin et al. 2021; Masuke et al. 2021; Masetta 2022). According to the latest Tanzania Demographic and Health Survey, 64 % of children under six months are exclusively breastfed, 70 % of newborn were breastfed within one hour of birth and 19% of children age 6-23 months had minimum dietary diversity in their nutrition (Ministry of Health (MoH) [Tanzania Mainland et al. 2023).

Vitta, Benjamin, Pries, Champeny, Zehner and Huffman (2016) state that strategies to improve infant and young child feeding practices in Tanzania are needed, especially regarding exclusive and continued breastfeeding, increased dietary diversity and consumption of micronutrient-rich foods. Matare et al. (2019) point out that exclusive breastfeeding promotion is needed and engaging men in these interventions could help alter social norms and ease men's participation in improving breastfeeding practices.

### 3 Malnutrition

#### 3.1 Definition of malnutrition and the scope of the problem

Malnutrition is an umbrella concept that refers to deficiencies, excesses, or lacks of balance in a person's intake of energy and/or nutrients. The concept contains undernutrition including stunting, wasting and underweight, micronutrient-related malnutrition and overweight, obesity and diet-related non communicable diseases. (World Health Organization 2021a.) This study employs the above introduced definition of malnutrition by World Health Organization.

Stunting is the calamitous outcome of poor nutrition in utero and early childhood. Stunted children are too short for their age and may never gain their full height and cognitive potential. Wasting in children is the highly dangerous result of poor nutrient intake and/or diseases. Wasted children have low weight-for-height ratio, impaired immunity, and they are prone to long-term developmental delays and confront an increased risk of death. (United Nations International Children's Emergency Fund, World Health Organization & World Bank 2021.) A child can suffer from both stunting and wasting at the same time (Myatt et al. 2018).

Micronutrient-related malnutrition poses a great threat to the health and development of people globally, especially children and pregnant women in low-income countries. Diet-related non communicable diseases comprise cardiovascular diseases, particular cancers, and diabetes. Globally, poor nutrition and unhealthy diets belong to the top risk factors for these diseases. (World Health Organization 2021a.)

Prevalence of stunting, wasting and overweight among children under 5 years of age and prevalence of anaemia in women of reproductive age are among the indicators for the targets of SDG 2, Zero Hunger (United Nations 2022). According to the estimations of United Nations International Children’s Emergency Fund, World Health Organization and World Bank (2021) stunting affected 149.2 million (22 %) children under 5 and wasting 45.4 million (6.7%) children under 5 globally in 2020. 38.9 million children (5.7%) under 5 were estimated to be affected by overweight globally in 2020. During the past 20 years, the global prevalence of stunting among children under 5 has declined from 33.1% to 22%. The global prevalence of wasting among children under five has remained on the alarming level and the prevalence of overweight among children under 5 has been slowly rising. Figure 2 presents the global trends in prevalence of stunting, wasting and underweight among children under 5 years of age in 2000 and 2020. United Nations International Children’s Emergency Fund, World Health Organization and World Bank (2021) also point out that the impact of COVID-19 pandemic has most likely aggravated the figures and the situation is even worse.

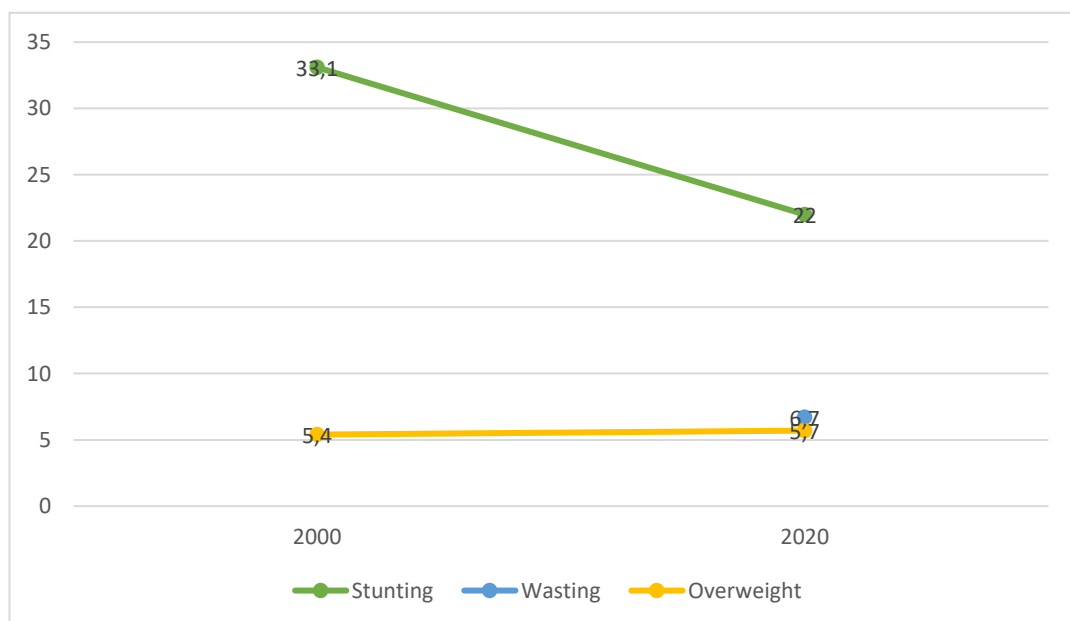


Figure 2: Global prevalence of stunting, wasting and overweight among children under 5 years (United Nations International Children’s Emergency Fund... 2021)

Global anaemia prevalence in women of reproductive age was 29.9% in 2019 and it has been stagnant since the year 2000 (World Health Organization 2021c). Anaemia during pregnancy has adverse effects on maternal and fetal well-being (Black et al. 2008; de Onis & Branca 2016). Iron deficiency during pregnancy has been associated with adverse outcomes in children, such as outcomes on child iron status or hemoglobin and neurodevelopmental outcomes (Quesada-Pinedo et al. 2021).

The consequences of malnutrition are drastic, lifelong, and irrevocable. Malnutrition not only raises the risks of morbidity and mortality but also it weakens the early physical and cognitive development of survivors. About 45% of all preventable child deaths are due to underlying undernutrition that often manifests itself as an infection. The insidious outcomes of malnutrition are an overall increase in vulnerability to infections, the sternness of consequent diseases, and decreased results as regards recovery times and cost of treatment. Impaired physical growth, often combined with lifelong vulnerability to illnesses, lowers economic productivity through declined work productivity or absence from work. Poor childhood nutrition leads to a chain of deteriorations starting with poor cognitive development, belated school attendance and low educational achievements. Poverty and malnutrition often form a vicious circle with each fueling the other. Universally, poor childhood nutrition bears a considerable economic burden to the affected individuals, families, and communities as well as the entire national and global economies. (Raymond, Kassim, Rose, & Agaba, 2018; Suryawan et al. 2022.) Akseer et al. (2022) showed in their study that childhood stunting comes to cost the private sector of low- and middle-income countries billions of dollars in sales and earnings for the workforce annually.

### 3.2 Child malnutrition in Tanzania

Tanzania is East African country, situated just south of the Equator. Most of the land area is in the African mainland, but it also includes the islands of Zanzibar, Pemba and Mafia in the Indian Ocean. The population estimation for 2021 was 63.6 million. In 2018, 33.8% of the population was living in urban areas and 66.2% in rural areas. In 2019, 42.7 % of the population was under 15 years old. The population growth in 2021 was 3%. The biggest religions are Christianity (61.4%) and Muslim (35.2%). Official languages are Swahili and English. Nowadays the country belongs to the lower middle income level group. (Bryceson, Mascarenhas, Chiteji, & Ingham 2023; World Bank 2023a.)

The prevalence of stunting among children under 5 years of age was 30 % in 2022 and the prevalence of wasting among children under 5 was 3% in 2022 in Tanzania. The prevalence of childhood overweight was 4% in 2022. (Ministry of Health (MoH) [Tanzania Mainland] et al. 2023.) The prevalence of anaemia in women of reproductive age concerned 38.9% in 2019

(World Health Organization 2021b). The prevalence of anaemia among children under 5 years was 56,1 % in Tanzania in 2019 (World Health Organization 2023c). The prevalence of stunting has significantly decreased during the past 20 years in Tanzania but is still considerably higher than the global prevalence. Figure 3 presents the trends in prevalence of stunting, wasting, and overweight of children under five in Tanzania. Also, the prevalence of anaemia among the women of reproductive age is alarmingly higher than the global prevalence. (United Nations International Children’s Emergency Fund... 2021). Tanzania is facing the triple burden of child malnutrition; underweight, micronutrient deficiencies and overweight at the same time (Ministry of Health, Community Development, Gender, Elderly and Children et al. 2019).

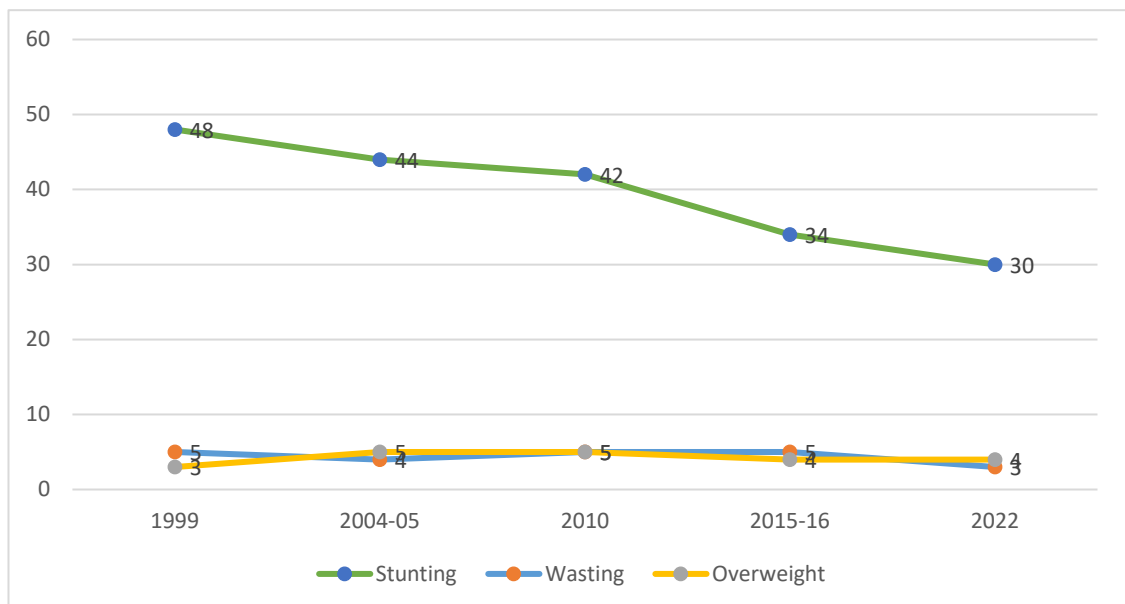


Figure 3: Trends in the nutritional status of under-five children in Tanzania (Ministry of Health (MoH) [Tanzania Mainland] et al. (2023)

According to United Nations International Children’s Emergency Fund (2022a) the nutritional status of children is differing distinctively between different regions, between and within districts and between socioeconomic groups in Tanzania. Kejo et al. (2018) state that the prevalence of different forms of malnutrition is relatively well documented at the regional levels in Tanzania. The burden of stunting among children under 5 in rural areas is reported being notably higher than in urban areas (Zhu et al. 2021; Ekholuenetale, Okonji, Nzoputam & Barrow 2022; Yaya, Oladimeji, Odusina, & Bishwajit, 2022.)

Stunting prevalence in rural areas was 37.8% in 2016, compared with the prevalence of 24.7% in urban areas in 2016 (Ministry of Health, Community Development, Gender, Elderly and

Children et al. 2019). Zhu et al. (2021) also state that the decline of stunting prevalence has been faster in urban areas than in rural areas. Tanzanian National Nutrition Survey 2018 (Ministry of Health, Community Development, Gender, Elderly and Children et al. 2019) indicates that in 15 regions out of 25 in Mainland Tanzania the level of stunting of children under 5 was perceived to be very high ( $\geq 30\%$ ). In the six most affected regions, the prevalence of stunting of children under 5 exceeded 40%. A considerable decrease in the prevalence of stunting was perceived in eight regions.

### 3.3 The causes of malnutrition

The causes for child malnutrition are complex and multifaceted. Malnutrition ensues directly from insufficient dietary intake and communicable diseases, and indirectly from household food insecurity, insufficient maternal and childcare, poor admittance to health services, limited access to clean water and sanitation infrastructure, and an unhealthy environment (United Republic of Tanzania 2011; United Nations International Children's Emergency Fund 2021; United Nations International Children's Emergency Fund 2022b.) Poverty impacts directly on the capacity of individuals, households, communities, and nations to meet their needs and obligations for a healthy life and thus acts as a basic cause for malnutrition (United Republic of Tanzania 2011).

Climate change causing droughts and other weather-related shocks, conflicts, land and crop degradation and population growth are among other underlying causes for child malnutrition (Niles et al. 2021; United Nations International Children's Emergency Fund 2022a). All these factors contribute to malnutrition in Tanzania. According to Bjornlund, Bjornlund and van Rooyen (2022) persisting food insecurity in Sub Saharan Africa is mainly a legacy of the export-oriented colonial agricultural production systems, which yielded scant fertile land, water, and labour to cover the requirements of industries and consumers in the Global North.

Feeding practices are another aspect of the cause of malnutrition. Monotonous, mainly cereal-based diets that have low dietary diversity and nutrient density and poor micronutrient bioavailability are potential causes for malnutrition in low- and middle-income countries (Raymond et al. 2018). Mother's or caregiver's insufficient knowledge of infant and young child feeding practices and nutrition in general can inflict child malnutrition (Nakumbi & Muliira 2015; Ekholuenetale et al. 2022).

According to Khamis, Mwanri, Ntwenya, & Kreppel (2019) poor infant and young child feeding practices have been observed as the main causes for undernutrition in Tanzania. Poor breastfeeding practices, insufficient intake of complementary foods, low nutritional quality of meals, high rates and recurring incidents of diseases, maternal insufficient nutritional

knowledge and household food insecurity have been linked to stunting in Tanzania (Mamiro et al. 2005; Kulwa, Verstraeten, Bouckaert, Mamiro, Kolsteren, & Lachat 2014; Masetta 2022). The nutritional status and feeding practices of the pregnant women are also an important factor contributing to child malnutrition. Studies show that 20% of stunting has its causes originating in the womb, and lasts for life (Sunguya, Zhu, Mpembeni & Huang 2019). Nakumbi and Muliira (2015) state that the knowledge, culture, and social status of the caregiver are still notable elements responsible for child malnutrition, especially in the rural areas of low- and middle- income countries.

### 3.4 Prevention and reduction of malnutrition

Interventions to reduce and prevent malnutrition include nutrition specific interventions and nutrition sensitive approaches. Examples of the interventions are presented in Table 1. Seetha et al. (2020) based on their study on reducing child undernutrition in rural areas of Tanzania suggest interventions that advance food and nutrition security by combining improving diets of the poor and vulnerable, food security and hygiene practices. Nutrition education is considered as an important intervention in many previous studies (Kulwa et al. 2014; Kulwa et al. 2015; Seetha et al. 2020; Gowele, Kinabo, Jumbe, Rybak & Stuetz 2021). Gowele et al. (2021) recommended nutrition and hygiene education incorporated with home and school gardens programs to decrease the multiple burdens of malnutrition.

Studies highlight the use of social behavior change communication (SBCC) in nutrition education and nutrition campaigns (Grant, Ackatia-Armah, Okuku & Kakuhenzire 2020; Beckstead et al. 2022; Mahumud, Uprety, Wali, Renzaho & Chitekwe 2022; Dearden et al. 2023). Grant et al. (2020) studied the connection between monthly involvement in community-level nutrition group gatherings on caregiver health and nutrition knowledge, attitudes and practices in rural Tanzania and emphasized the need for programs using nutrition SBCC to enhance the nutrition status of infants and young children. Beckstead et al. (2022) examined whether SBCC focused on decreasing child undernutrition was associated with enhanced infant and young child feeding practices in Tanzania and found increased knowledge and practices of optimal infant and young child feeding. SBCC using multiple platforms and means has been shown to be effective (Kim et al. 2019; Moffat et al. 2022).

Anaemia reduction and prevention of mothers as well as children is an important part of fight against malnutrition. Micronutrient supplementation, such as iron-folic acid supplementations, infection prevention and water and sanitation interventions are recommended to reduce the burden of anaemia (Black et al. 2008; Gowele et al. 2021; Mrimi, Palmeirim, Minja, Long & Keiser 2022)

Nutrition specific interventions	Nutrition sensitive interventions
Supporting exclusive breastfeeding up to 6 months and continued breastfeeding, together with nutritious complementary food, up to 2 years	Agriculture: Improving nutrition security and availability, supporting small farmers and local production, creating incomes for women and families
Food fortifications	Clean Water and Sanitation: Reduce infections and diseases
Micronutrient supplementation	Education and Employment: Ensuring the possibilities of children for learning and earning sufficiently as adults
Treatment of severe malnutrition	Healthcare: Improved access to services
	Support for Resilience: Stronger and healthier population and sustained wealth to better resist emergencies and conflicts
	Women's Empowerment

Table 1: Nutrition specific and nutrition sensitive interventions (Arnold 2016)

Studies implemented in Sub Saharan Africa indicate that education, especially maternal education is an important factor in child malnutrition. The children with more educated mothers or caregivers have lower tendency to suffer from malnutrition. (Elverud, Størdal, Chiduo & Klingenberg 2020; Kemboi, Mungiria-Mituki, Ramkat, Termote, Covic & Cheserek 2020; Musheiguza et al. 2021; Ekholuenetale et al. 2022; Simwanza, Kalungwe, Karonga, Mtambo, Ekpenyong & Nyashanu 2022; Yaya et al. 2022.) Thus, investing in education also produces investments in child health.

Previous studies also state that multi-sectoral actors and community stakeholders should be engaged to plan and implement locally suitable strategies (Hotz, Pelto, Armar-Klemesu, Ferguson, Chege & Musinguzi 2015; Raymond et al. 2018; Jacob Arriola et al. 2020; Heidkamp et al. 2021; Roothaert, Mpogole, Hunter, Ochieng & Kejo 2021; Zhu et al. 2021). Studies speak for the importance of community-based interventions and community health workers in prevention and reduction of child malnutrition (Das, Salam, Saeed, Kazmi & Bhutta 2020; Wilunda et al. 2021; Doustmohammadian, Mohammadi-Nasrabadi, Keshavarz-Mohammadi, Hajjar, Alibeyk & Hajigholam-Saryazdi 2022).

School-based nutrition programs, home and school garden programs and promoting various traditional vegetables as well as other agricultural interventions are recommended (Larsen & Lilleør 2017; Ochieng, Afari-Sefa, Karanja, Kessy, Rajendran & Samali 2018; Schreinemachers, Yang, Bhattarai, Rai & Ouedraogo 2020; Kyere, Veerman, Lee & Stewart 2020; Rector et al. 2021; Xu, Sawadogo-Lewis, King, Mitchell and Robertson 2021; Wall, Tolar-Peterson, Reeder,



Roberts, Reynolds & Rico Mendez 2022). Ebitu, Fegran, Haraldstad, Johannessen, Chiduo & Hovland (2022) studied the effects of an interesting project in the rural schools of Tanga District in Tanzania. This was “The Banana Project”, which was offering free fruit to the preschool children during five schooldays a week.

Nutrition sensitive agricultural programs and interventions are supported in previous studies (Rosenberg et al. 2018; Ruel, Quisumbing & Balagamwala 2018; Di Prima, Wright, Sharma, Syurina & Broerse 2022). Rosenberg et al. (2018) studied a nutrition-sensitive agricultural program in rural Zambia and concluded that it can raise diversity in agricultural production and access to nutritious foods. Also, mobile health interventions are suggested, for example solutions to improve maternal and neonatal health (Saronga, Burrows, Collins, Ashman & Rollo 2019). Mobile health technology and interventions could be helpful, effective, and affordable when planning and implementing other types of interventions as well.

### 3.5 Prevention and reduction of malnutrition in Tanzania

te Lintelo and Lakshman (2015) underline that political commitment is an integral component for raising food and nutrition security onto policy agendas. According to Azomahou, Boucekkine, Kazianga, Korir and Ndung'u (2022) agricultural, food and nutrition policies have the prospect to alleviate food inaccessibility, insecurity, and malnutrition. Tanzanian government, with support from the international community, has worked hard to reduce and prevent malnutrition and is committed to the UN's Sustainable Development Goals (te Lintelo, Page, Kaganda & Esau, 2020). The government has agreed to repeat the National Nutrition Surveys every four years (Ministry of Health, Community Development, Gender, Elderly and Children et al. 2019). Ministry of Health released a comprehensive national nutrition policy, the Food and Nutrition Policy for Tanzania, in 1992 (Ministry of Health of United Republic of Tanzania 1992). The government initiated the National Nutrition Strategy (2011-2016) to reform the implementation of the Food and Nutrition Policy. The National Nutrition Strategy formed multisectoral nutrition steering committees (MSCN) at each level of government that have provided a forum to make sure costed nutrition plans and actions are in line with national policy and monitoring the use of resources (te Lintelo et al. 2020).

The Tanzanian government launched a comprehensive five-year National Multi-Sectoral Nutrition Action Plan (NMNAP) in 2016 which is the implementation plan for the National Food and Nutrition Policy. NMNAP is an evidence-based multisectoral action plan focusing on the elevated levels of malnutrition in Tanzania. (United Republic of Tanzania 2016). The second National Multi-Sectoral Nutrition Action Plan was launched in the end of 2021. NMNAP II is following the implementation of the NMNAP I and builds on the success, restrictions, and possibilities from the previous five years. (United Republic of Tanzania 2021.) The annual

Joint Multi-Sectoral Nutrition Review (JMNR) invites a broad range of partners from ministries, agencies, development partners, the private sector and research institutions, members of parliament, district and regional nutrition officers and civil society representatives to discuss the cross-sectoral implementation of the NMNAP by using the latest data (te Lintelo et al. 2020).

A Nutrition Compact was issued to support the implementation of NMNAP in late 2017. A directive from the government through the President's Office, Regional Administration and Local Government to councils was issued to develop their annual budget based on the number of children under 5 years in the respective council. For financial year 2019/20, the councils were presumed to allocate Tshs 1,000 per child under 5 years in their annual budget to serve nutrition-specific interventions. The national nutrition scorecards are used to monitor progress. The compact has cascaded to the ward and village levels. (te Lintelo et al. 2020; Global Nutrition Report 2022.)

Moreover, Tanzania has presented a scorecard instrument, national nutrition scorecard, that pursues to offer organized, regular data updates on nutrition-specific and nutrition-sensitive activities, outputs, and outcomes at subnational level. A multisectoral nutrition scorecard (MNS) aiming to reinforce accountability by measuring efforts to improve nutrition outcomes at the district level has also been put in place by the government in 2015. (Bhagawati, te Lintelo, Msuya and Mikindo 2021; te Lintelo et al. 2020.) Tanzania is also actively contributing to Scaling Up Nutrition (SUN). SUN is a global movement of 65 countries to end malnutrition in all its forms (SUN Movement 2015; Arnold 2016).

#### 4 Local actors and child malnutrition prevention in Tanzania

Nutrition work is multisectoral and requires participants and stakeholders from many areas. Implementing multisectoral solutions to child malnutrition calls for actors at all levels to cooperate, from operators at the community level to researchers and advocates at the national and international level. Regional and district nutrition officers at the community level in Tanzania are an example of translating multisectoral nutrition policy into community practice. (Klemm, Kayandam, Kazoba, McCann, Nnally & Dickin 2022.)

Zhu et al. (2021) state that tackling the child stunting problem in Tanzania requires multisectoral nutrition intervention strategies. Actors of private sector and organizations have been acknowledged increasingly as crucial stakeholders in striving to attain the Sustainable Development Goals, through investments in the place of work, community, and economic market. The private sector has notable potential to be involved in providing nutrition specific

interventions, for example micronutrient supplements, and nutrition sensitive interventions, for example technological innovations in agriculture, health, or education. (Akseer et al. 2022; Durotoye, Yusufali, Ajieroh & Ezekannagha 2022.) te Lintelo et al. (2020) stress that adapting national visions and leadership to sufficient funding and local action profiting communities is often a great challenge, and this is the case for Tanzania as well.

Canavan, Graybill, Fawzi & Kinabo (2016) underline that child malnutrition is an urgent and complicated question and presumes integrated approaches across agriculture, nutrition, and health. In Tanzania, agriculture is the principal source of livelihood for most households (Ochieng et al. 2018). 65 % of the total employment of Tanzania was in agriculture in 2019 (World Bank 2022). Tanzania's agricultural practices are dominated by smallholder farmers as about 60% of the population employed in the sector are categorized as smallholder producers (ANSAF 2021). In Sub-Saharan Africa, smallholder farmers are responsible for 80% of food production, women representing half of the agricultural workforce. Therefore, interventions and approaches linking agriculture, nutrition, and health at the community level are recommended. (Canavan et al. 2016.) Grindatto, McArdle & Voitzwinkle (2018) state that agriculture has a critical role in ensuring food systems are efficiently working to deliver healthy, nutritious, and diverse diets, which are among the most sustainable and comprehensive options to prevent malnutrition.

This study is done together with Agricultural Non State Actors Forum (ANSAF) in Tanzania. Agricultural Non State Actors Forum (ANSAF) is a member-led forum formed by umbrella farmer organizations, private companies and national and international NGOs operating in all regions of Tanzania Mainland and Zanzibar. The goal of all ANSAF members is to achieve inclusive agricultural transformation through increased public accountability. The activities of ANSAF are funded through different arrangements, including members, vertical projects, and core funding. (ANSAF 2021).

ANSAF is aiming at sharing and promoting learning among agricultural sector actors on what works and what does not. ANSAF advances proven and innovative practices within the sector for broader understanding and consideration by farmers, policy makers, duty bearers and other stakeholders. ANSAF strives for developing a collective understanding of the challenges, threats and opportunities facing the sector. ANSAF also aims at generating shared positions and joint actions toward influencing policies and practices impeding development of the agricultural sector. (ANSAF 2021).

ANSAF Strategic Plan (2018-2022) has identified nutrition as one of the focus areas. ANSAF interventions are directed towards achieving two outcomes of the National Multi-Sectoral Nutrition Action Plan: nutrition sensitive interventions and multi-sectoral nutrition governance. The vision of ANSAF is to achieve improved nutrition and healthy population that contributes

to the economy of the households and the country. Their mission is to promote nutrition sensitive agriculture through adequate budget allocation for supporting nutrition programmes and social behaviour change at the local and national level. (ANSAF 2018).

In this study, the local actors refer to any workers or members of local organizations or companies, entrepreneurs or local or national officials who are working with child malnutrition reduction and prevention.

## 5 Goals, objectives and research questions

This study aims at gaining and examining the viewpoints of the local actors working with child malnutrition prevention and reduction to obtain the ideas and discoveries of measures for tackling child malnutrition in Tanzania and other affected countries. The objective of this study is to explore the perspectives of the local actors on the interventions and programs implemented for reducing and preventing child malnutrition in Tanzania and to understand their views of the current situation and suggestions for the future.

This study is seeking answers to the following research question:

1. What are the perspectives of the local actors on the interventions and programs implemented to reduce and prevent child malnutrition in Tanzania?
2. How do the local actors see the current situation of child malnutrition in Tanzania?
3. What do the local actors think of the future regarding the child malnutrition in Tanzania?

## 6 Methods

### 6.1 Qualitative research approach

This study used a qualitative research approach in exploring the perspectives of local actors on reducing and preventing child malnutrition in Tanzania. According to Mohajan (2018) qualitative research is a type of social science research that gathers and works with non-numerical data that pursues to interpret meaning from these data. In qualitative research, the interest lies in the belief, experience, and meaning systems of the people from the perspective of the people. The purpose of qualitative research is to depict and construe

questions or phenomena systematically from the perspective of the individual or population being studied, and to construct new concepts and theories.

In qualitative research, the interest lies in knowing how people understand and experience their world at a specific point in time and in a specific context. Examining how individuals witness and interact with their social world, and the meaning it has for them, is rested on an interpretive perspective built-in qualitative approach. (Merriam & Grennier 2019.) Qualitative research seeks to describe a phenomenon or occurrence, to understand a certain action, or to give theoretically meaningful interpretation of a phenomenon (Tuomi & Sarajärvi 2018, 94). The qualitative research approach was chosen for this study because the research subject was the perspectives of the local actors in Tanzania.

Interviews enable receiving information about the subject directly from the people most involved and being able to inquire them for in-depth information (Kananen 2011, 147). Tuomi and Sarajärvi (2018, 81) state that the advantage of interviews is flexibility. The interviewer can repeat the questions, clear up misunderstandings, clarify expressions and discuss with informants. According to Brinkman (2013, 21) semi-structured interviews are the most widespread interviews in the human and social sciences. Kumar (2014) notes that when using open-ended questions, the participants can express themselves freely and this allows variety and depth in their answers.

Appendix 1 presents the questions that were gone through during the semi-structured interviews of data collection. The questions were formed based on the research questions for this thesis, and they were meant to guide the discussion during the interviews. The informants were allowed to answer the questions without restrictions, to permit them to bring out their viewpoints and perceptions freely and profoundly.

The interviews for this thesis were implemented in Dar es Salaam, Tanzania, in co-operation with ANSAF. The informants were local actors either working in many or in all the regions of Tanzania. Many local NGOs, companies and institutions have their headquarters or premises in Dar es Salaam, making it a good location to contact and interview the informants.

## 6.2 Data collection

The purposive sampling of informants was used to select the informants for this study. According to Patton (2015) purposive sampling is a technique extensively used in qualitative research for the recognition and choice of information-rich cases for the most efficient use of limited resources. This involves recognition and choice of the individuals or groups that have enough knowledge and experiences on phenomenon of interest. It is also important that the

informants are willing to participate in the research. Also, Tuomi and Sarajärvi (2018, 94) point out that in qualitative research it is important that the informants have as much information or experience as possible about the studied phenomenon.

The informants were recruited with the help of ANSAF workers. The informants were workers or members of the local organizations, companies or local officials who are working with child malnutrition reduction and prevention, thus having information and experience in the research subject. Other inclusion criteria for the informants were that they were willing to participate in the study, to sign the paper consent form and to speak English. The informants were first contacted by the ANSAF workers, and they were shortly informed about the study subject. After having the informants' agreement to participate in the study, they were sent the participant information form (Appendix 2) and participant consent form (Appendix 3) for reading. The interview date and time were agreed with the informants. Before implementing the interviews, the informants had still possibilities to ask for more information about the study and to discuss freely with the author. The informants also signed the participants consent forms before the interviews.

Before the interviews, the interview questions were gone through with an ANSAF worker to test them, and necessary defining was made to ensure the relevancy of the questions. The data collection was carried out at the premises of the informants in Dar es Salaam. One-on-one interviews were held with the informants by the author. Semi-structured questions presented in Appendix 1 were sieved through during the interviews. Each interview took approximately 40-60 minutes. The author's own digital recorder was used to record the interview sessions. Recording allows the interviewer to concentrate on the interview rather than writing down the answers (Kananen 2011, 56). The author wrote down notes during the interviews. The informants were given a number code according to the interview order, "informant 1" for the first interview, "informant 2" for the second and so forth. These number codes were used instead of the informants' real names to protect their anonymity.

The study had six informants. Three of the informants were workers of local NGOs, two of them were workers of national institutions and one of them was an entrepreneur. Brinkman (2013, 58) states, that if thorough thought is given to informant selection, a small number of interviews may be sufficient to answer the research question. Saturation is another way to examine the sufficiency of data. Saturation of the data means the situation where the data starts to repeat itself and the informants do not bring new information from the perspective of the research question (Tuomi & Sarajärvi 2018, 95). Data saturation for this study was achieved after six interviews.

### 6.3 Data analysis

Inductive content analysis was employed to analyse the data of this study. According to Elo and Kyngäs (2008) qualitative content analysis can be used to analyse written, verbal, or visual communication messages and is a systematic and objective tool of relating phenomena. Using content analysis aims at organizing the data into concise and clear form without losing the information it contains (Tuomi & Sarajärvi 2018, 118). In inductive content analysis, the categories are arising from the data and the data analysis process moves from the specific to the general. Inductive content analysis can be used when there are no preceding studies exploring the phenomenon (Elo & Kyngäs 2008).

According to Elo and Kyngäs (2008) the content analysis process has three main phases: preparation, organizing and reporting. In the preparation phase, the unit of analysis is selected. It can be a word or a theme. Then the researcher should make the sense of the data to reach a sense of whole. The organizing phase of the process includes open coding, grouping, creating categories and abstraction. The last phase is reporting the analysis process and the results. The data analysis process of this study followed the phases described by Elo and Kyngäs (2008) and presented in Figure 4.

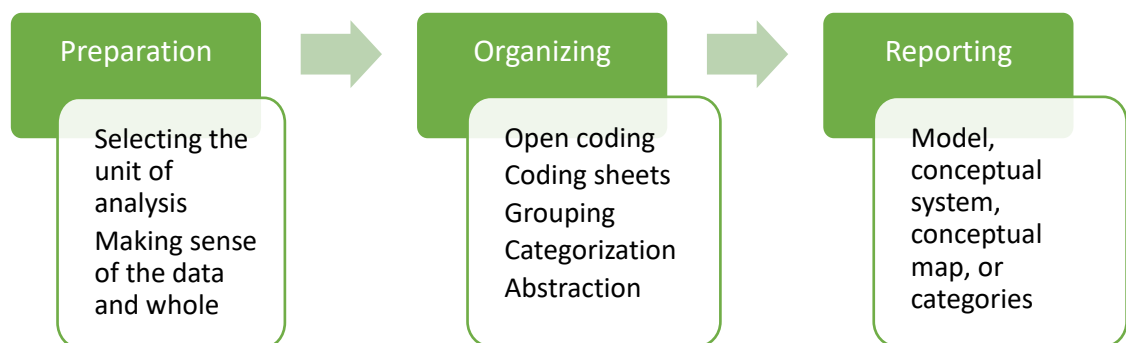


Figure 4: Phases of content analysis according to Elo and Kyngäs (2008)

After the data collection was completed, the transcription process was started. McLellan, MacQueen and Neidig (2003) note that transcription is an important data preparation step before qualitative data analysis, and before the transcription process the researcher must decide what is transcribed. For this thesis, a verbatim transcription was chosen, because the interest was in the manifest content of the interviews (Knott, Rao, Summers & Teeger 2022). The author listened to the interviews multiple times and transcribed the interviews in separate Microsoft Word files word for word. The transcription process was started already during the data collection process and finished soon after the data collection was completed,

in order for the author to have clear conception of the interviews and to benefit experiences and ideas during the following interviews. Subsequent to the transcription process, the transcribed data was printed. The hard copies were used for the next phases of the inductive data analysis.

The preparation phase of the data analysis started already during the transcription process as the author was listening and reading through the interview data multiple times, making sense of the data and the whole at the same time. The unit of analysis was also chosen in this phase, and it was a single word or combination of few words. After printing the hard copies of the data, the author continued to familiarize the data and make preliminary notes to the data.

In the second, organizing phase of the data analysis open coding was implemented by reading through the data and marking all the arising notes and headings to the text according to the research questions. The data was gone through again carefully, writing the initial codes in the margins. After this, coding sheets were created by collecting all the initial codes from the margins according to each research question. Altogether 103 initials codes were collected to the coding sheets. According to Tuomi and Sarajärvi (2018, 110) it is essential that all the initial codes are marked and collected. Table 2 presents examples of initial codes.

Original expression	Initial code
“The interventions should focus in the needs of the target area” (Informant 2)	Targeted programs and interventions
“Stunted children of today will be the decision makers of tomorrow” (Informant 2)	Including leaders and decision makers
“Where production is more specialized in few crops, the situation with nutrition problems is very high” (Informant 1)	Specialized production
“So as said, not only one sector can fight malnutrition, but it is multisectoral” (Informant 5)	Multisectorality

Table 2: Examples of the initial codes



The initial codes were grouped and categorized under 16 sub-categories and six main categories by searching similarities and distinctions between initial codes. Table 3 displays the 16 sub-categories and six main categories according to each research question. Elo and Kyngäs (2018) point out that grouping the data aims at reducing the number of categories by collapsing those that are similar or dissimilar into broader higher order categories. Forming the categories is a critical phase of the analysis because the researcher is deciding on which basis the codes belong to the same or different categories (Tuomi & Sarajärvi 2018, 111). Elo and Kyngäs (2008) state that the aim of creating categories is to offer a means of describing the phenomenon. Figure 5 presents an example of the data analysis process and categorization.

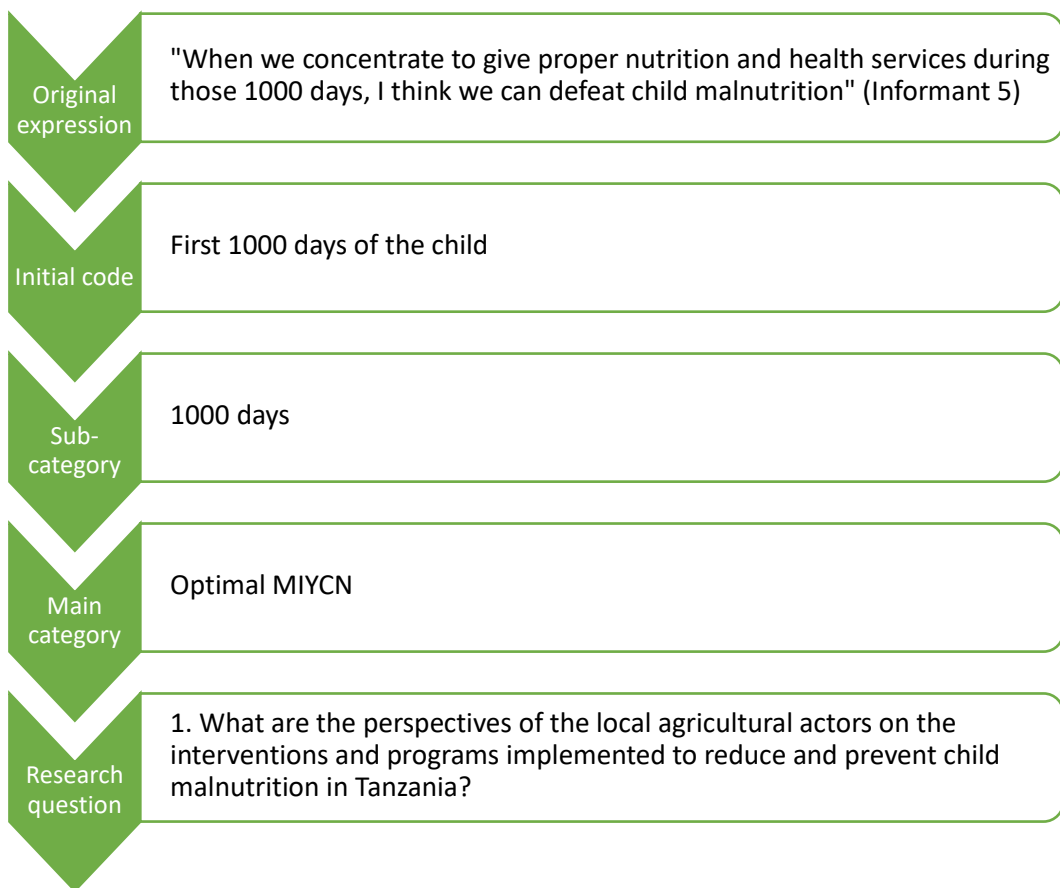


Figure 5: Example of the inductive content analysis process of this study

Subcategory	Main category	Research question
Social behavior change communication	Programs and interventions	Perspectives of the local actors on interventions and programs implemented to prevent and reduce child malnutrition in Tanzania
School feeding programs		
Community-based interventions		
Nutrition sensitive interventions		
Successful interventions		
Intervention recommendations		
1000 days	Optimal MIYCAN	
Nutrition education		
Funding	Political commitment	
Advocacy		
Indicators		
	Food security and safety	
Food sufficiency, no hunger	Current situation	How do the local actors see the current situation of child malnutrition in Tanzania
Triple burden of malnutrition		
Structures and policies		
Role of women		
Specialized production		
	Bright and promising future	What do the local actors think of the future regarding child malnutrition in Tanzania

Table 3: The sub-categories and main categories grouped according to the research questions

## 7 Results

The results of this study are presented following the six main categories and 16 sub-categories that arose from the data analysis. Original expressions of the informants are included to illustrate the contents of the data.

## 7.1 Programs and interventions

### 7.1.1 Social behaviour change communication

Many of the informants of the study highlighted social behavior changing programs and interventions to be essential for tackling child malnutrition in Tanzania. They underlined the importance of nutrition awareness creation and development.

The consumer awareness development so that the demand can stimulate production of various types of products. Like vegetables and fruits consumption and importance. (Informant 1)

Creating and using social behavior change communication materials was considered important, for example posters and brochures. Using TV and radio programs were recommended for social behavior change communication, particularly community radios were highlighted. Also, the modern ways of communication, like social media, was thought to enable reaching a lot of people.

We need to formulate well the use of social behavior change communication materials, radio, TV, brochures, posters. The problem is that people don't want to read, so that why we are using electronic material; tv, social media nowadays. To use the modern way of communication to reach a lot of people. (Informant 5)

### 7.1.2 School feeding programs

Most of the informants of this study were demanding school feeding programs. Clear guidelines for national school feeding programs were called for. School gardens were suggested, as well. One of the informants suggested involvement of the parents or caregivers to the school feeding programs for enabling meals during the school days. School feeding programs enable better learning possibilities for the children and improve the prospects for the better future consequently.

The school feeding programs introduced by the government and it should be done in collaboration with the parents. That parents should contribute whatever they produce and the school can add so that the children could eat at least one meal at school. (Informant 2)

School gardens can help to provide school lunches and to increase nutrition value of school food. School gardens can also provide practical, activity-based learning outside the classrooms. The school children can learn by doing when starting and taking care of school gardens.

So having a garden cub is also good for them to see what is really happening to the plants. To start a garden from the beginning, to see how the plants grow and eventually cook them at school and eat them. (Informant 3)

Nutrition teaching at schools was considered focal. Nutrition teaching should be focused on the students as well as on the teachers. One informant endorsed nutrition clubs at schools. The clubs include nutrition education, cooking demonstrations and meal preparations. Joining the clubs should be free of charge and as far as possible realized by volunteers. The knowledge of nutrition and education experts should be used to plan the contents and activities of the nutrition clubs. These nutrition clubs are founded on the participation of children.

This kind of initiatives like we are doing, which are targeting participation with the kids, having them as part of the solution, are important. (Informant 3)

Since many schools in Tanzania do not have school feeding programs and offer school lunches, there are vendors of a different kind at schools selling small snacks to school children. They are mostly women who make some small things to sell at schools to get small incomes. One of the informants suggested education for these vendors, so that they could offer more nutritious meals to children.

### 7.1.3 Community-based interventions

Community-based interventions were highlighted in the answers of the informants. The key to behavior change and increased awareness is thought to lie in the community response.

When speaking of nutrition, it is mostly about community and family. Successful interventions are mostly community-based interventions. (Informant 2)

In order for the interventions and programs to succeed they need to be targeted to an area or region and subject. In fight against child malnutrition in Tanzania this often means focusing in rural areas.

The interventions should focus in the needs of the target area. They should understand the context of that particular area and intervene accordingly. (Informant 2)

Village Health and Nutrition Days was an intervention mentioned as an example of a successful community-based intervention. It was reputed to change people's ideas of nutrition and improve child nutrition for example in Mbeya region in Tanzania. This event conducts nutrition assessment every quarter of the year locally and can support the regions to reduce child malnutrition rates.

When conducting the nutrition assessment, the results are being discussed. This is helping the community to understand the impact of malnutrition in the area and how the situation in the area is being solved. (Informant 4)

Community health workers working in the villages were considered crucial local actors, since they are the ones to communicate the nutrition interventions at the community level. Emphasis should be put to the training and placement of the community health workers nationally, in order to have them in every region of the country. Also, funding is needed for having community health workers in every region.

We are now also insisting the use of community health workers. They are the ones that go to the community level and identify the malnourished children. They are supporting nurses, health workers to give vaccines and they provide also nutrition education. So we can see that the regions who have community health workers, their performance is good. (Informant 6)

#### 7.1.4 Nutrition sensitive interventions

Nutrition sensitive interventions and agriculture are perceived as an integral part of the solution to tackling child malnutrition in Tanzania. Multisectoral nutrition sensitive interventions were called for by the informants of this study.

Agriculture, nutrition sensitive agriculture is very important and should be in the focus. (Informant 1)

We need programs and interventions which link very closely nutrition and agriculture and animal keeping. So, if we have such intervention or program, I think we can defeat child malnutrition. Of course, together with education. (Informant 5)

Promoting crop diversity and complimentary crops for nutrition as well as creating awareness on nutrition sensitive agriculture were stressed by the informants. Different, nutritionally important value chains should be advocated. The interventions should utilize locally available and cost-effective foods and crops. Infection prevention and vaccinations are also important interventions in the fight against child malnutrition.

There are complimentary crops just for nutrition. If they focus only on one crop, to make sure that other value chains are also supported to ensure nutrition and diversification of household incomes. (Informant 1)

And the other aspect that we do is to see how well we diversify crops to have nutrient dense crops that can be used as part of the meal to start to improve the nutritional status of the household. (Informant 2)

When we use locally available foods, it is something the people can afford and know how to use. (Informant 2)

### 7.1.5 Successful interventions

The informants of this study came up with many successful interventions that have been implemented in Tanzania to prevent and reduce child malnutrition. Many fortification programs are considered successful. Vitamin A supplementation program and reduction of iodine deficiency disorder (IDD) by using iodized salt were mentioned.

In the nineties the households that used iodized salt was below 50%, but now above 90% of the households are consuming iodized salt. We have done well in the reduction of IDD. (Informant 5)

We have a campaign twice a year, when we distribute Vitamin A capsules to children, in June and December. The participation of children to this campaign has increased and is now above 90%. (Informant 5)

Stunting reduction in Tanzania was accounted successful overall and the trend is decreasing. Also, the trends of underweight and wasting are decreasing. Stunting reduction program in the Southern Highlands of Tanzania was particularly mentioned by one informant.

Stunting reduction program in Southern Highlands. In 5 years, the stunting prevalence decreased up to 33%, so the program was well implemented. (Informant 4)

Integrated management of acute malnutrition (IMAM) and programs that were concerned with breastfeeding and complimentary feeding were counted as successful interventions. One informant emphasized again community-based interventions to have possibilities to be successful, particularly the interventions that address women in the community.

### 7.1.6 Intervention and program recommendations

The informants of this study brought up many recommendations for interventions and programs that could be carried through to prevent and reduce child malnutrition in Tanzania. Market driven nutrition campaigns creating awareness was suggested. Increasing nutrition awareness all in all was considered essential. Nutrition awareness is increasing in rural areas and other nutrition programs targeted to rural areas were proposed. Also, focusing on prevention was considered vital.

Targeted interventions and programs were recommended broadly. Locally constructed guidelines and including local leaders in planning and decision making were highlighted by one of the informants, as well as learning from the examples of other countries.

I would encourage that we have different perspectives from other countries what they do, to learn how they are increasing their nutritional levels. By

learning what others have done, could be good opportunity for us to see what to do. We could see what is not working, what is simple etc. (Informant 2)

Intervention and programs that involve men were proposed. In Tanzania, in many areas food and cooking are thought to belong to women, as well as taking care of the children for the most part. Men need to be involved in the interventions, in order to increase their nutrition awareness and understanding about the situation so that they can support their wives and families in nutrition issues. One of the informants also demanded more interventions addressed to the adolescent. The adolescents are on the threshold of adulthood and have more freedom to decide what to eat and what not to eat. The eating habits and other habits formed in this age can direct the habits later in life.

Multisectoral interventions were recommended and called for. Private sector engagement in child malnutrition prevention and reduction was demanded. Interventions emphasizing nutrition education were highlighted by many informants. One informant suggested that Village Health and Nutrition Days should be arranged in every region. The number of nutritionists was recommended to be increased by the government of Tanzania at district level to coordinate the nutrition interventions at the community level. The continuity of the interventions and programs was called for as well.

We insist on the engagement of everyone because nutrition is multisectoral. Government is insisting on the multisectoral nature of the interventions. Everyone should work for that. (Informant 6)

To defeat the malnutrition is not an overnight intervention, it is long work. New mothers are coming all the time, so nutrition education is very important at the community level. (Informant 6)

Figure 6 summarizes the programs and interventions that were mentioned and recommended by the study informants.

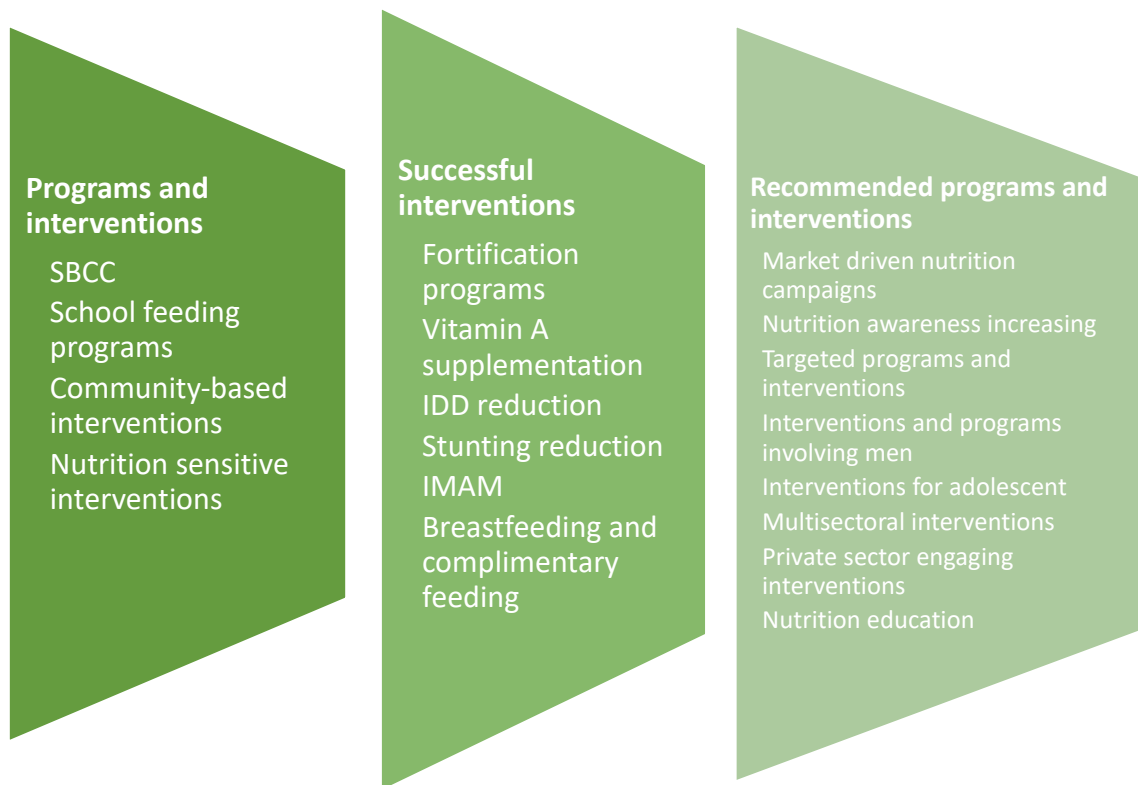


Figure 6: The programs and interventions mentioned and recommended by the interviewed local actors

## 7.2 Optimal MIYCAN

Optimal maternal, infant, young child, and adolescent nutrition (MIYCAN) was another main category arising from the interviews with the study informants. This category covers the optimal feeding of the mother, infant, young child as well as adolescent. According to one informant there are many myths around the topics of what an infant or a child should or should not eat, what a pregnant mother or nursing mother should eat, when to start complimentary feeding and so forth. These myths should be corrected with nutrition education.

### 7.2.1 1000 days

The first 1000 days refers to the life of a child from the moment of conception until two years of age. This is the window of opportunity when the child is developing and growing significantly, and it is also easier to prevent child malnutrition with right nutrition. Optimal



maternal feeding, optimal breastfeeding and optimal complimentary feeding are the cornerstones of the first 1000 days.

So that the women is eating well during the pregnancy. And the baby is exclusively breastfed for the first 6 months and after that the complimentary foods together with the breast milk until the baby is 2 years old. This 1000 days period is very critical. So, if we want to intervene child malnutrition, we need to concentrate on that 1000 days period. (Informant 5)

### 7.2.2 Nutrition education

Nutrition education was considered a key to the prevention and reduction of child malnutrition by the informants of this study. The informants suggested community-based centers for nutrition education, where parents could discuss nutrition issues. Also, nutrition education at the antenatal care was called for.

I insist on nutrition education on the antenatal care, at the clinic. The mothers should be given education on how to breastfeed and give nutritious food to the children in the clinics. People have to be educated at the community level. (Informant 6)

One important starting point for nutrition education should be balanced diets. People around Tanzania should know how to create balanced diets from the available foods. Also, increasing the awareness of the significance of vegetables and fruits consumption was mentioned by many.

If you want to accelerate quickly reduction of child malnutrition, we should start from improving the family level diets. If the diets are improved on family level, it will be easy to improve the diet of the child as well. The interventions should be improving the nutritional status on family level. (Informant 4)

There are areas in Tanzania where they don't eat fruits. And in many cases, they don't give children any vegetables, which are very good sources of iron. (Informant 2)

### 7.3 Political commitment

The informants of this study considered political commitment as a prerequisite for the prevention and reduction of child malnutrition in Tanzania. Many of the informants brought forward their satisfaction of current political commitment to fight against child malnutrition. They highlighted that the president and government are committed to prevent and reduce child malnutrition. The informants called the decision makers for guidelines, policy documents, strategies, and action plans for fighting against child malnutrition.

Because currently we have seen commitment from the government officials, political commitment. The decision makers are committed ensuring that the country is fighting against child malnutrition. (Informant 4)

### 7.3.1 Funding and advocacy

The informants concurred with the need for increased and steady allocation of funding for the prevention and reduction of child malnutrition in Tanzania. Tanzanian government is striving to increase the national budget for nutritional issues, but international assistance is also needed.

Allocation for funds, that the government would be able to allocate funds for implementation of interventions for reduction of child malnutrition on country level and regional level. (Informant 4)

Advocating for nutritional issues and awareness was brought up by the informants. Advocacy is considered an essential political element of the prevention and reduction of child malnutrition in Tanzania. One informant mentioned advocacy for reducing crop taxation.

The other aspect is advocacy. How do we change the perceptions of decision makers from the village level to the national level to make them to understand that nutrition is very fundamental for the next generation. (Informant 2)

### 7.3.2 Indicators

The informants of this study agreed on the significance of the different indicators for the prevention and reduction of child malnutrition in Tanzania. The indicators help to assess the situation and the progress. The informants mentioned National Nutrition Surveys (TNNS) and Demographic and Health Surveys (TDHS) for instance. The informants were eagerly waiting for the results of the TDHS 2022 to see the outcomes of the hard work and input put in the fight against child malnutrition. The key indicators report for TDHS was published in January 2023.

We have TNNS Tanzanian national nutrition survey, TDHS which is going on this year, and we are waiting for the results because a lot has been done. (Informant 6)

## 7.4 Food security and safety

Food security was accounted crucial by the informants of the study. Food security was understood to mean adequate food at the national and at the household level. The safety of the food was counted as element of food security as well.

People they need to have food in their households, that we call food security. (Informant 6)

National food reserves were highlighted by the informants. It was considered to be very important that the country has food storages in case of shortage in food production. Also, household food reserves were mentioned. Households selling all their food was worrying some of the informants.

So, they have to keep food for their families. Most of them they used to sell everything, they don't keep a reserve of food. (Informant 6)

The informants stated that storing of the food must be done right in order for food to be safe for consumption. If the food is not stored carefully, issues with food toxins can arise, and they can constitute in child malnutrition.

## 7.5 Current situation of child malnutrition in Tanzania

### 7.5.1 Food sufficiency, no hunger

The informant of the study stated that Tanzania has managed to fight its way out of hunger. The trends of stunting, wasting and underweight prevalences have been decreasing, as well as the prevalences of iodine deficiency syndrome and vitamin A deficiency. The food production in Tanzania is sufficient and it could be enough to feed the population, but the food is not distributed evenly. There is more child malnutrition in the rural areas of the country. Also, paradoxically in the areas where they produce large part of the food, there is more malnutrition.

As a country Tanzania has gained food sufficiency. You can see that food import to Tanzania is not much and the country is producing a lot. What is so amazing is that the areas where they produce a lot, have high levels of malnutrition. (Informant 1)

### 7.5.2 Triple burden of malnutrition

The triple burden of malnutrition was concerning the informants of the study. Even many indicators have been having decreasing trends for years, the stunting prevalence among children is still high and other forms of undernutrition appear as well. The prevalence of micronutrient-related malnutrition, especially anaemia in children, is at alarming level. A

newer problem related to child malnutrition in Tanzania is the overweight and the informants noted that it has been even surprising to them. Balanced diets are considered a challenge as well.

The child malnutrition situation currently actually...for many years we have been trying to address the undernutrition, but it is too unfortunate that now we have triple burden. We had a lot of focus in undernutrition and as a result of that the overnutrition came as a surprise to us. (Informant 2)

What we haven't done well, especially about micronutrients, is anaemia of children. The prevalence at the moment is above 50%. (Informant 5)

### 7.5.3 Structures and policies

The informants note that Tanzania has improved the structures and policies related to nutrition. Many interventions are under way. There have been joint efforts of various actors to tackle the child malnutrition. Also, the policy level support helps to reach the goals. One of the informants brought up the scaling up nutrition, SUN, movement and Tanzania's early commitment to it. The nutrition compact and its important role was also mentioned.

The performance of the contract (Nutrition compact) is always measured every 6 months. And every year is normally measured to see which region did well. So that has also raised accountability among political leaders. (Informant 2)

### 7.5.4 Role of women

The informants of the study looked on the role of women in agriculture and nutrition as critical. In many parts of Tanzania, especially in rural areas, women are the producers. Women are the labor in agriculture, the ones that go to the fields and farms. Often, women are also in charge of producing and preparing food for the family. Spending long days at the farms can impede feeding the children.

In agriculture women are the one who also provide much of the labor force. So, who takes care of the children when women are working in the farms. (Informant 1)

One informant stated that most of the Tanzanian tribes are patriarchal and that the patriarchal family system is one of the biggest hinders to the prevention and reduction of child malnutrition in Tanzania. Men are the heads of the households and decide the budgets for buying food and what is grown in the fields and farms, and women should get along with what they are getting without expressing their opinions.

### 7.5.5 Specialized production

The informants of the study stated that specialized production can be a threat to proper nutrition and contribute to the increase in child malnutrition. Focusing on few crops and value chains is narrowing the production and raising the risk for malnutrition. In many areas of Tanzania, the farmers are focusing to produce few crops for sales, and they may not buy other crops to complement the nutrition. These strategic, priority crops are highly commercialized and meant for selling. One informant described the role of the strategic crops and value chains related to child malnutrition.

Once when they are commercialized the farmers do sell everything and they remain with very few things. So, in an area they focus in few crops, in the district level. Most districts have two to four value chains to focus on. For example, they have cashew nut as first focus crop and second is simsim, sesame and third maize and fourth poultry or livestock. So, you can see that there is no horticulture here and so there is no balance. So, when most of the support from the government comes to this district, it focuses on these selected value chains and forget about others. That is also affecting nutrition adversely. (Informant 1)

### 7.6 Bright and promising future

Nevertheless, the informants see a bright and promising future regarding child malnutrition in Tanzania. Tanzania has seen a huge improvement in child malnutrition prevention and reduction. A lot of input has been put and there is a strong political commitment. The country has many interventions and programs happening and research and the national surveys are conducted. The awareness on the importance of nutrition is increasing.

Very promising. Because the government is very committed now fighting child malnutrition and malnutrition in general. (Informant 5)

The awareness of nutrition is increasing among leaders, but even at community level. I believe that we are moving to better direction. I am very much waiting for the results of this years Tanzanian demographic and health surveys. There is a lot of effort that has been implemented during the past 10 years, so I see a brighter side as far as the nutrition is considered. (Informant 2)

## 8 Discussion

The aim of this study was to gain and explore the viewpoints of the local actors working with child malnutrition prevention and reduction to obtain the ideas and discoveries of measures for tackling child malnutrition in Tanzania. The objective of this study was to explore the perspectives of the local actors on the interventions and programs implemented for reducing and preventing child malnutrition in Tanzania and to understand their views of the current situation and suggestions for the future. This chapter discusses the results of the data analysis according to the research questions for this study. The results reflect the previous research on the topic. After the discussion about the results, the ethical considerations of the thesis process, trustworthiness and the limitations of the study are discussed.

### 8.1 Programs and interventions

Different interventions and programs are the key factors of child malnutrition prevention and reduction. The interviewed local actors highlighted the use of social behavior change communication (SBCC) in the programs and interventions to prevent and reduce child malnutrition in Tanzania. Grant et al. (2020) stated that nutrition SBCC programs at community level improve caregivers' health and nutrition knowledge, attitude and practices and can consequently improve the nutritional status of children. Also, the results of the study from Dearden et al. (2023) supported large SBCC interventions. Exposure to SBCC in Tanzania has been associated with increased knowledge of optimal infant and young child feeding practices and practicing optimal infant and young child feeding behaviors (Beckstead et al. 2022). The review study of Mahumud et al. (2022) showed the effectiveness of nutrition social behavior change communication in improving children's nutritional status during the first 1000 days. Jacob Arriola et al. (2020) and Kemboi et al. (2020) concluded that SBCC interventions aiming to improve child nutrition should be context specific. The local actors stressed the importance of targeted interventions as well.

The informants recommended using different SBCC materials and various ways of communication. According to Kim et al. (2019) SBCC using multiple platforms is viable and effective in improving child feeding practices and nutritional status. Both mass media and interpersonal communication has been reported to be important in large scale communication campaigns (Moffat et al. 2022).

School feeding programs and school gardens were recommended for the prevention and reduction of child malnutrition in Tanzania by the interviewed local actors. Rector et al. (2021) stressed that integrated and policy-mandated school-based nutrition interventions are needed in Tanzania. In the above-mentioned study the interviewed teachers expressed that

the nutrition education in their area is very theoretical and does not allow the students to practice the knowledge and skills they have learned. One of the informants of this study highlighted participatory nutrition clubs that allow the children to use the learned skills in practice in school gardens. According to Schreinemachers et al. (2020) school garden interventions notably improved children's knowledge about food and agriculture and awareness of fruits and vegetables. Xu et al. (2021) stressed a need for well-integrated, culturally appropriate nutrition and health education into the school curriculums in low- and middle-income countries with parental and community engagement as a cornerstone for program sustainability and success. Ebitu et al. (2022) concluded that free school fruit schemes that are adapted to local conditions, are beneficial to children, their families, and the communities, as well as being simple, cost-effective, and sustainable health promotion programs. Simple and cost-effective programs of this kind could be implemented for example in day care settings, preschools, and schools and they could help fight against child nutrition and increasing nutrition awareness and improve learning outcomes.

One informant of the study suggested involvement of the parents or caregivers to the school feeding programs for enabling meals during the school days. Roothaert et al. (2021) recommended home-grown school feeding programs in Tanzania. This model provides mechanisms to enhance diversity of meals and their nutritional value, increase participation of communities and participation of students. In this model, parents will be responsible for the largest part of food supplies, but the model also insist participation of multiple stakeholders.

Studies have shown that school feeding programs have positive influence in learning outcomes and nutrition knowledge of school children in Sub Saharan Africa, but direct effects to nutritional status of school children do not have enough evidence (Kyere et al. 2020; Mostert 2021; Wall et al. 2022). By enabling better educational outcomes, school feeding programs can also affect the nutritional status of children, because improved education can relieve poverty, and hence improve nutritional status of children in the long term. School feeding programs can also address the nutrition awareness and knowledge of adolescents. One of the study informants demanded more interventions and programs targeted to adolescent. Nowadays adolescent in Tanzania, as their contemporaries in higher income countries, are exposed to poor feeding practices advertised in mass media for instance and need nutrition education and awareness increasing on the threshold of adulthood.

The interviewed local actors highlighted community-based interventions for the prevention and reduction of child malnutrition in Tanzania. Community-based interventions to manage acute malnutrition in children under 5 years in low- and middle-income countries have been shown effective (Das et al. 2020). Doustmohammadian et al. (2022) implemented a systematic review of community-based interventions to improve food security. They came up

with two main groups for utilized strategies; agricultural and nutrition strategies and concluded both strategies to improve food security and its dimensions. Community health workers have an important role in recognizing malnourished children, improving nutrition awareness in the communities, and implementing programs and interventions. As the informants for the study insisted, great emphasis should be put to their education and distribution to every region in Tanzania. Screening and treatment of the children with acute malnutrition by the community health workers in Tanzania has been shown effective as well (Wilunda et al. 2021).

The informants of the study brought up the significance of nutrition sensitive interventions and nutrition sensitive agriculture especially in prevention and reduction of child malnutrition in Tanzania. According to Ruel et al. (2018) nutrition sensitive agricultural programs enhance a variety of nutrition outcomes in both mothers and children, and they are more efficient when they combine nutrition, social behavior change communication and women's empowerment interventions. Larger effects on child nutritional status can be reached when programs also incorporate health and water, sanitation and hygiene interventions and micronutrient-fortified products. Di Prima et al. (2022) noted in their systematic review study that in order to be successful, nutrition sensitive agriculture programs should learn from past successes and failures, highlight context knowledge, strengthen local structures, empower communities and increase resilience and support policy and governance.

Rosenberg et al. (2018) underlined that child malnutrition is caused by a complex of factors and nutrition interventions must consequently address multiple potential causes to be effective. In order for nutrition sensitive agricultural programs to address the health and development challenges, agriculture must be connected to diets. Nutrition sensitive agricultural programs need to liven up agriculture and food access, and make sure that gains are transposed downstream to diet quality, especially for young children and their mothers. In the light of the previous studies, it seems that nutrition sensitive interventions are more effective when many perspectives and approaches are combined.

The informants brought forward the need for involving the men in the interventions when inquired for intervention and program suggestions for preventing and reducing child malnutrition in Tanzania. The study of Martin et al. (2021) on engaging fathers to improve complementary feeding in Tanzania highlighted the significance of collecting data from fathers and encouraging them to offer input and experiences with mothers about child nutrition. Matare et al. (2019) also highlighted engaging fathers in nutrition interventions.

The interviewed local actors recommended and called for multisectoral interventions for tackling child malnutrition in Tanzania. Also, private sector engagement was demanded. Klemm et al. 2022 stated that effective local implementation of multisectoral nutrition policy



demands country-level commitment together with local leadership and capacity building and community engagement. According to Jacob Arriola et al. (2020) there is a need for a multi-sectoral, integrated approach that incorporates contextually meaningful behavior change theories with the experiential knowledge collected from stakeholders into the design of interventions that strive for reducing child malnutrition. The private sector is a crucial partner in large scale food fortification interventions addressing child malnutrition (Durotoye et al. 2022).

Many of the interviewed local actors emphasized the importance of the first 1000 days for the health and development of the child. That is considered a critical period for intervening and preventing child malnutrition. Research evidence affirms the significance of the first 1000 days for addressing malnutrition and the importance for interventions and actions targeting this age window (Heidkamp et al. 2021).

The importance of nutrition education was highlighted by the informants of this study. The informants suggested community-based approach to nutrition education. Kulwa et al. (2014) implemented a study of nutrition education package in enhancing feeding practices, dietary sufficiency, and infant and young children growth in rural settings in Tanzania and provided evidence of efficacy of the nutrition education package in community settings. Seetha et al. (2020) combined dietary diversification, food safety and hygiene interventions in nutrition education in rural Tanzania and resulted in positive outcomes on children's nutritional outcomes. Gowele et al. (2021) suggested integrating nutrition and hygiene education with home and school garden programs to reduce child malnutrition.

Political commitment to malnutrition prevention and reduction was considered essential by the interviewed local actors. The local actors brought up their satisfaction of current political commitment in Tanzania but demanded the allocation of funding for the prevention and reduction of malnutrition and advocacy for nutrition issues and awareness. Azomahou et al. (2022) called for evidence-based policy development and implementation to alleviate malnutrition.

Te Lintelo and Laksman (2015) stated that in Tanzania, among other high-burden countries, political commitment to hunger reduction exceeds nutrition commitment and this may hinder the prevention and reduction of malnutrition and achievement of global or regional nutrition goals. Nevertheless, te Lintelo et al. (2020) note that Tanzania has entered significant policy innovation and institutional progress, transmitting prominent promise to hasten nutrition improvements.

The informants of the study highlighted the importance of indicators for measuring progress of nutrition work. The government has agreed to repeat the National Nutrition Survey every four years (Ministry of Health, Community Development, Gender, Elderly and Children et al.

2019). Key results of the latest Demographic and Health Survey were just released (Ministry of Health (MoH) [Tanzania Mainland] et al. 2023). National nutrition scorecards provide up-to-date insights on local efforts and nutrition outcomes and have notable potential to evoke communities to make the government of greater account for nutrition (te Lintelo et al. 2020).

The informants brought out food security and food reserves and the importance of storing food at both household and national levels. Tanzania has National Food Reserve which purpose is to guarantee national food security. The National Food reserve has a capacity expansion project going on. (National Food Reserve Agency 2023.) The interviewed local actors spoke about household food reserves and safe ways to store food. According to Bjornlund et al. (2022) achieving food security in Sub Saharan Africa calls for farmers and rural communities to be incorporated into income generating activities for them to be able to purchase the food and services they need. The agricultural and rural development policies should be sustainable and economically feasible so that they would be better in service for food security and social needs. The study of Seetha et al. (2020) demonstrated the significance of food safety to nutrition outcomes of children.

## 8.2 Current situation and the future regarding child malnutrition in Tanzania

The informants of this study thought that Tanzania has managed to fight its way out of hunger and there is enough food production in the country, but the food is not distributed evenly. Statistics and studies show that Tanzania has made considerable progress related to the prevention and reduction of child malnutrition. The Tanzania Demographic and Health Survey of 2022 showed that both childhood stunting and wasting have descending trends. The childhood overweight trend on the other hand is slightly ascending. (Ministry of Health (MoH) [Tanzania Mainland] et al. 2023.) Sunguya et al. (2019) stated that the burden of stunting has declined by 30% during the past 25 years, but it still remains high and varies between different regions of Tanzania. Improvement in wasting and underweight has been significant. Efficient and focused nutrition-sensitive and specific interventions employing multisectoral approaches should be developed and implemented.

Vitamin- A supplementation programs and iodine deficiency syndrome reduction were considered successful by the study informants. In 2021 96 % of children aged 6-59 months received two high-dose vitamin A supplements in Tanzania (United Nations International Children's Emergency Fund 2023a). 76 % of households consumed salt with iodine in Tanzania in 2021. (United Nations International Children's Emergency Fund 2023b.)

The interviewed local actors stated that there are distinctive differences in nutritional status of children between different regions of Tanzania. Zhu et al. (2021) pointed out that even

though the stunting prevalence of children is decreasing in Tanzania, the urban-rural divergence has widened since the decrease was slower in the rural area. 66% of the population of Tanzania lives in the rural areas though. Ekholuenetale et al. 2022 showed that rural residents have higher stunting prevalence everywhere in Africa.

According to Ministry of Agriculture (2019) the domestic food production is adequate to meet national food demands in Tanzania. However, one of the most considerable challenges in the agricultural sector in Tanzania, are the substantial pre- and postharvest losses. Post-harvest losses are estimated to be 30 - 40% for cereals and even higher for perishable crops, such as fruits, vegetables, roots, and tubers. Post-harvest losses have an effect on household food security and weaken profit by lowering marketable volumes for actors. The government of Tanzania, in collaboration with other stakeholders, has developed the National Post-harvest Management Strategy (NPHMS). NPHMS contemplates providing notable interventions to decrease post-harvest losses and level out this food shortage. Mitigating food losses between harvest and consumption provides an immense opportunity to reduce hunger.

The double and triple burden of malnutrition are global public health problems (United Nations International Children's Emergency Fund 2019a). The informants of this study were concerned about the triple burden of malnutrition in Tanzania and particularly about the fairly new problem, the overweight and obesity of children. The informants worried about the alarming levels of anaemia in children. One of the informants stated that since the nutrition work in Tanzania focused mainly on undernutrition for a long time, the increasing levels of child overweight and obesity came as a surprise. Perhaps this has been the case in many other Sub Saharan African and other low- and middle-income countries.

Christian and Dake (2022) stated that the double and triple burden of malnutrition is of public health concern in Sub Saharan Africa and nutrition and health interventions should also address overweight, obesity and anaemia. They noted that anaemia is a persistent problem in Sub Saharan Africa. The informants of this study brought out childhood and maternal anaemia as well. The prevalence of anaemia in children under five was 56% in 2019 in Tanzania (World Bank 2023). According to Christian and Dake (2021) tackling double and triple burden of malnutrition is essential because undernourished children are under risk of resulting in overweight or obesity in later adult years, and women suffering from undernutrition are likely to give birth to underweight children who again have a risk of overweight and obesity later in life.

The structures and policies related to nutrition are an essential part in the fight against child malnutrition. The interviewed local actors noted that Tanzania has improved these structures and policies and there are many interventions on the way. The policy level support helps to reach the goals related to the prevention and reduction of child malnutrition. According to te

Lintelo et al. (2020) Tanzania has been having an enabling environment for nutrition actions during the past years and Tanzania has begun significant policy innovation and institutional development, undertaking considerable promise to speed up nutrition improvements, permitting communities to hold the government responsible for its performance fighting malnutrition. Bhagawati et al. (2021) stated that Tanzanian government has positioned committed nutrition officers in all districts, has formulated a separate budget line for nutrition through all the layers of government to simplify more substantial spending transparency, has standardized annual multisectoral strategic policy review procedures and has launched performance contracts that make subnational-level officials personally more liable for advancement on nutrition in their territories. Te Lintelo et al. (2020) also pointed out that nutrition compact is Tanzania's potentially remarkable innovation as for incentives to senior officials.

Role of women in agriculture and nutrition in Tanzania was highlighted by the informants of this study. Particularly in rural areas of Tanzania, women are the labor in agriculture. Women tend also to be in charge of obtaining and preparing food for the family. One informant stated that most of the Tanzanian tribes have patriarchal family system, and this is one of the biggest hinders to the prevention and reduction of child malnutrition. Traditional gender roles are common in Tanzania and social norms make women accountable for household tasks and caregiving (Matare et al. 2019; Martin et al. 2021). In rural areas of Tanzania women's heavy workload is a common barrier to exclusive breastfeeding (Matare et al 2019). Workload of rural women in Tanzania must also affect their ability to prepare food for their families. Especially in rural areas, women are not able to make decisions for instance about their own health or major household purchases (Martin et al. 2021). According to Tanzanian Demographic and Health Survey 2015-16, 56% of women age 15-49 are employed in agriculture in entire Tanzania. In rural areas 76% of women work in agriculture. 49% of the women working in agriculture work for a family member and 48% are self-employed. 24% of women working in agriculture received cash payment. (Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC) [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS) & ICF 2016).

Specialized production was thought to be a possible threat to proper nutrition by the interviewed local actors. By special production they referred to focusing on a few crops and value chains for the markets. Rosenberg et al. (2018) noted that low diversity in agricultural production is a potential cause of child malnutrition. In rural households of Tanzania starchy staples mainly cereals, afford more than 70% of calorie intake with low consumption of vegetables and fruits (Ochieng et al. 2018). Thus, agricultural production is focusing on those cereals, such as maize. Chegere and Stage (2020) stated that diversifying a household's agricultural production considerably grows diversity in that household's diet, but the positive

nutritional impacts are little. Diversity in agricultural production can improve admittance to diverse diets through own consumption or by delivering to the markets.

Diversifying diets requires nutrition awareness increase so that people know that they should consume, for example more vegetables and fruits. In case they produce mainly cereal, they should use part of the income to buy vegetables, fruits and other foods needed to improve diversity of their diets. Larsen and Lilleør (2017) concluded that introducing farmers agricultural technologies based on local resources, such as crop diversification, conservation agriculture, enhanced livestock farming and land use management, has improved drought resilience among farmers and can improve nutritional status of children of these farmers. Agricultural interventions can be very efficient in mitigating malnutrition. One informant suggested interventions that integrate nutrition, agriculture and animal keeping.

The local actors see a bright and promising future regarding child malnutrition in Tanzania. There has been a huge improvement in child malnutrition prevention and reduction, a great deal of input has been put and the political commitment is strong. Most recently published Demographic and Health Surveys shows descending trends in the malnutrition indicators. Only childhood overweight prevalence is slightly ascending. (Ministry of Health (MoH) [Tanzania Mainland] et al. 2023.) Te Lintelo et al. (2020) highlighted that the government of Tanzania has demonstrated notable initiative indicating political commitment to fight malnutrition.

### 8.3 Ethical considerations

This thesis project applied guidelines for the responsible conduct of research. The author followed the principles of integrity, meticulousness, and accuracy when carrying through the research, recording, presenting, and evaluating the results. Scientific criteria were followed during data collection, analysis and interpretation and ethical sustainability acknowledged. The results were reported in an open and responsible fashion. The work and achievements of other researchers were taken into account by appropriately citing their publications. (Finnish Advisory Board on Research Integrity 2012; Tuomi & Sarajärvi 2018, 146.) The author was aware that the thesis is a public document.

An ethical review was not required for this study, because it is not medical research, does not include research on vulnerable groups or minors or cause threat, mental harm nor involve physical interventions (ARENE 2019). The potential informants were provided with written participant information form and consent form (Appendix 2 and 3) prior to the interviews, and they were given time to familiarize them. The informants were also explained the title of the thesis, aims, objectives, and data collection method before the interviews and given possibilities to ask questions or withdraw their participation. The informants were asked to

sign the paper consent form before the interview started. The information and consent forms included the contact information of the author, duration of data storage and information on data access.

The informants' contact details were not collected or recorded for privacy. During the data collection process, the informants were given a number code according to the interview order and these codes were used instead of informants' names during the rest of the thesis process to protect informants' anonymity. Hard copies of the data and the consent forms will be destroyed securely immediately after the thesis report has been accepted. The electronic, anonymous data will be stored on the researcher's personal computer with password access and will be destroyed six months after the thesis has been approved.

No conflict of interest has been recognized. Laurea University of Applied Sciences awarded a small grant to the author for doing practical training abroad. The thesis project did not receive other funding. The author funded travelling to Tanzania and her stay there herself.

#### 8.4 Trustworthiness

Systematic evaluation of a qualitative study includes observing the overall design of the study, as well as the thoroughness with which the study was implemented. Qualitative research is designed to find the meanings and in-depth understandings people create about a certain phenomenon. Explaining the methods of the study forms an audit trail. Thoroughness of this trail, transparency of methods, can be used to evaluate the reliability of the study. (Merriam & Grennier 2019, 20.)

Merriam and Grennier (2019) state that credibility, dependability, and transferability must be met to ensure rigor and trustworthiness of a qualitative study. These criteria were employed during this thesis process.

Credibility poses the question: how consistent are one's findings with reality? In qualitative research, the comprehension of reality is the researcher's construction of participant's interpretation of the phenomenon of interest. It is recommended for the researcher to be pledged in the data collection phase long enough to assure profound understanding of the phenomenon to achieve saturation. (Merriam & Grennier 2019, 20.) Even though the number of informants for this study was fairly low, similarity of their experiences and perceptions could be deduced, and data saturation achieved. Credibility was ascertained by using relevant and recent research articles for the study. Using purposive sampling method to select the study informants assured that the informants with adequate knowledge related to the

research questions were interviewed. The thesis process has been overseen by the supervisor to assure credibility.

Dependability refers to the scope to which research findings can be repeated and whether the results are coherent with the data collected. Observing the thoroughness of the audit trail can be used to evaluate dependability of the study. (Merriam & Grennier 2019, 27.) To ensure dependability of this study process, the process was stored and defined accurately. The audio-recordings of the data collection and the notes written down during the interviews were used during the data analysis to ensure the accuracy of the analysis. The thesis process aimed for affording a logical and dependable report.

Providing abundant and intensive description is an important strategy to ensure for transferability in qualitative research. This includes offering a sufficient database, adequately depiction and information for readers to be able to elect how closely their situations equal, and hence whether findings can be transferred, corresponding to reader transferability. To ease the reader transferring outcomes from a study to their current situation, the researcher must afford adequate detail of the study's context in order that comparisons can be made. (Merriam & Grennier 2019, 29.) This study has strived for offering a detailed depiction of both the research setting and context as well as data collection and analysis phase to confirm the possibility to evaluate the transferability of the findings.

#### 8.5 Limitations of the study

Restricted time was a possible limitation in this study. The author had less than three weeks of time in Tanzania and this time included the recruitment of the informants, agreeing the interview times, and conducting the interviews. With some of the informants agreeing time for the interview had some challenges, since the informants had to squeeze the interviews to their already tight timetables. Some of the informants were talking about off-topic subjects when answering open-ended interview questions. This consumed precious data collection time. If the author had more time in Tanzania, more interviews could have been implemented. With valuable help from the ANSAF workers six interviews were conducted and eventually this was enough to reach data saturation.

The sample of six informants may be too limited for generalizing the study findings to the wide group of local actors in Tanzania. The interviews only took place in Dar es Salaam, which can set limitations to the findings as well. Nevertheless, the informants represented different groups of local actors, entrepreneurs, members of local organizations and local officials. The organizations, companies, and institutions they represented were also either working everywhere in Tanzania or in many regions at least, not only locally in Dar es Salaam.

## 9 Conclusions

The results of this thesis demonstrated that the local actors working with child malnutrition prevention and reduction see a bright and promising future regarding child malnutrition in Tanzania. They stated that significant progress and an important contribution has been made. The local actors brought out many successful interventions and programs implemented to prevent and reduce child malnutrition in Tanzania. However, the current situation of double and triple burden of malnutrition in Tanzania worried the local actors. They highlighted the importance of stunting and anaemia reduction particularly and were very worried about the newer child malnutrition problem in Tanzania, the overweight and obesity of children. The first 1000 days of the child were considered as a window of opportunity, offering the best opportunity for addressing malnutrition.

Policies, strategies, interventions, and programs addressing the double and triple burden of malnutrition in Tanzania were insisted by the local actors. Defeating double and triple malnutrition is substantial. Undernourished children have a higher risk of overweight or obesity later in life, and women suffering from undernutrition are likely to give birth to underweight children who again have a risk of overweight and obesity later in life. This can create a vicious circle together with poverty causing deprivation over generations.

The local actors commended the political commitment to tackle child malnutrition in Tanzania, but at the same time demanded allocation of funding for the prevention and reduction of malnutrition and advocacy for nutrition issues and awareness. The political environment in Tanzania was considered to be enabling for nutrition actions. The important role of nutrition compact was acknowledged as it permits communities to hold the government responsible for its performances to fight child malnutrition. The local actors recognized the relevance of the indicators in measuring the progress and brought forward Demographic Health Surveys, National Nutrition Surveys and the national nutrition scorecards.

Nutrition and food safety were discussed by the local actors, both at household and national levels. The national food production could be enough to meet food demands in Tanzania, but the food is not distributed evenly. The child malnutrition rates are higher in rural areas. Diversifying agricultural production can increase diet diversity and improve nutritional outcomes and food security consequently. Achieving food security demands connecting the farmers with income generating activities so that they are able to buy food and services they need. The role of women in agriculture and in general was emerging. Women's empowerment is needed, and women need to generate incomes from their work in agriculture.

Nutrition sensitive interventions and agriculture were highlighted by the local actors. Interventions combining many approaches and perspectives, such as nutrition, agriculture, social behavior change communication, women's empowerment and hygiene can be more



effective in tackling child malnutrition. Since child malnutrition is caused by complex factors, the nutrition interventions should also address multiple causes to be effective. The interventions and programs ought to be context specific, targeted and empowering communities. Planning and implementing such multifaceted and combined interventions and programs calls for multisectoral approaches. The local actors stated unanimously that nutrition work is multisectoral and multisectoral actions are essential for prevention and reduction of child malnutrition in Tanzania.

This study offers insights to the perceptions of the local actors working with child malnutrition prevention and reduction on the measures for tackling child malnutrition in Tanzania. The study provides the examples of the interventions and programs that have been implemented successfully to prevent and reduce child malnutrition in Tanzania. It also presents ideas and discoveries of feasible and recommended interventions and programs for Tanzanian context and other affected countries. For Agricultural Non State Actors Forum, the study offers viewpoints from their members and stakeholders on the actions, interventions and programs that they recommend for reducing and preventing child malnutrition in Tanzania.

Further research could be focused on the perspectives of local actors on what are the actions and interventions needed regionally to prevent and reduce child malnutrition, so that targeted programs and interventions could be developed and implemented. Research on the viewpoints and ideas of the farmers and agricultural producers could provide innovations for diversifying agricultural production and increasing food security. Studying the perspectives and experiences of community health workers on prevention and reduction of child malnutrition could give important viewpoints and ideas for community-based interventions.

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## Figures

Figure 1: The basics of a healthy diet for adults according to World Health Organization (2023b) .....	8
Figure 2: Global prevalence of stunting, wasting and overweight among children under 5 years (United Nations International Children’s Emergency Fund... 2021) .....	11
Figure 3: Trends in the nutritional status of under-five children in Tanzania (Ministry of Health (MoH) [Tanzania Mainland] et al. (2023) .....	13
Figure 4: Phases of content analysis according to Elo and Kyngäs (2008) .....	23
Figure 5: Example of the inductive content analysis process of this study.....	25
Figure 6: The programs and interventions mentioned and recommended by the interviewed local actors .....	32

## Tables

Table 1: Nutrition specific and nutrition sensitive interventions (Arnold 2016) .....	16
Table 2: Examples of the initial codes .....	24
Table 3: The sub-categories and main categories grouped according to the research questions .....	26



## Appendices

Appendix 1: Interview questions .....	66
Appendix 2: Participant information form .....	67
Appendix 3: Participant consent form .....	70

#### Appendix 1: Interview questions

1. Can you describe your work in the field of child malnutrition prevention and reduction in Tanzania
2. How long have you worked in the field?
3. How do you see the situation of child malnutrition in Tanzania today?
4. How has Tanzania succeeded in tackling child malnutrition?
5. Which interventions and programs have been implemented successfully?
6. What should be developed?
7. What is the most important issue to concentrate on to defeat child malnutrition?
8. Do you have suggestions for intervention and programs?
9. How do you see the future regarding child malnutrition in Tanzania?

## Appendix 2: Participant information form

### Study title:

Tackling Child Malnutrition in Tanzania. Perspectives of Local Actors.

### Invitation to participate in the research study

You are invited to take part in this study about the perspectives of the local actors on tackling child malnutrition in Tanzania. Please take time to read the following information about the study carefully so that you understand why and how the research is done.

### Voluntary nature of the participation

The participation in this study is voluntary. You can withdraw from the study at any time without giving any reason and without there being any negative consequences. If You withdraw from the study or withdraw Your consent, any data collected from You before the withdrawal can be included as a part of the research data.

### Purpose of the study

The objective of the study is to explore the perspectives of the local actors on the interventions and programs implemented for reducing and preventing child malnutrition in Tanzania and to understand their views of the current situation and suggestions for the future. This study aims at gaining and examining the viewpoints of the local actors working with child malnutrition prevention and reduction to obtain the ideas and discoveries of measures for tackling child malnutrition in Tanzania and other affected countries.

### Who is organizing and funding the study?

The study is conducted by Aira Muhiya, registered nurse and Master's degree student in Global Health and Crisis Management at Laurea University of Applied Sciences in Finland. The study is part of the thesis project of Aira Muhiya. The supervisor of the study is senior lecturer [REDACTED] at Laurea University of Applied Sciences. The partner organisation in Tanzania is Agricultural Non State Actors Forum ANSAF.

There is no identified bias or affiliation between the researcher and the study setting.

No outside funding for the research is required.

### **What will the participation involve?**

The data collection for the study will be done with face-to-face interviews in Tanzania. The interviews will be audio recorded by the researcher. The researcher will also write down notes during the interviews only for the purpose of analyzing data for the research. The researcher will recruit the participants and conduct the interviews while doing an internship with ANSAF in Tanzania. The researcher will transcribe the interviews into electronic files.

### **Data management**

Information about the participants will not be shared to anyone. The collected data will be kept private. The researcher will use code numbers instead of participants names when interviewing them and processing the data to secure the privacy of the participants. The personal data will be processed according to the European Union General Data Protection Regulation (GDPR) (2016/679).

Hard copies of the data and the consent forms will be stored securely by the researcher, with only researcher's access to them and will be destroyed immediately after the thesis report has been accepted. The electronic, anonymous data will be stored on the researcher's personal computer with password access. The supervisor of the thesis can have access to the anonymous data through the researcher, in order to ensure reliability of the study. The electronic, anonymous data will be destroyed six months after the thesis has been approved, to ensure possibility for potential research integrity assessments.

### **Possible benefits of taking part**

The participants will not receive any direct payment for taking part in the study, but they will offer their contribution to find ideas and discoveries of measures for tackling child malnutrition in Tanzania and other affected countries.

**Possible disadvantages and risks of taking part**

There are no major risks involved in this study. Participating the study will be voluntary and conscious. The privacy of the participant will be respected.

**Informing about the research results**

The results of the study and the thesis will be published by March 2023. The thesis will be accessible online free of charge for everyone. The thesis will be found in the open access Theseus archive ([www.theseus.fi](http://www.theseus.fi)).

**Further information**

Further information related to the study can be requested directly from the researcher or supervisor of the study.

**Who to contact**

Master's thesis researcher Aira Muhiya

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Telephone number: + [REDACTED]

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Thesis supervisor [REDACTED]

Laurea University of Applied Sciences, Helsinki, Finland

Email: [REDACTED]

Appendix 3: Participant consent form

**Study title:**

Tackling Child Malnutrition in Tanzania. Perspectives of Local Actors.

**Author:** Aira Muhiya, Telephone number: + [REDACTED],  
Master's Degree student in Global Health and Crisis Management, Laurea University of Applied  
Sciences, Helsinki, Finland

**Supervisor:** [REDACTED],  
Laurea University of Applied Sciences, Helsinki, Finland

I have read and understood the written participant information form. I have had the opportunity to ask questions about the study and any questions that I have asked, have been answered to my satisfaction. The information form has provided me adequate information about the study, the purpose and execution of the study, about my rights as well as about the benefits and risks involved in it.

I voluntarily consent to participate in this study. I have not been pressurized or persuaded into participation.

I give my consent to the processing of my personal data as described to me in the Data Management Description. I understand that my participation is entirely voluntary and that I am free to withdraw my consent at any time. I am conscious that if I withdraw from the study or withdraw my consent, any data collected from me before my withdrawal can be included as part of the research data.

Name of participant \_\_\_\_\_

Signature of participant \_\_\_\_\_

Date \_\_\_\_\_