



**REACHING
CHILDREN'S POTENTIAL (RCP) PROGRAM IN
UKWEGA WARD, KILOLO IRINGA
TANZANIA**

Impact Evaluation Report

June, 2023

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OPERATIONAL DEFINITIONS

Stunting (height-for-age) refers to children whose height-for-age z-score is below minus two standard deviations (-2 SD) from the median of the reference population while children who are below minus three standard deviations (-3 SD) are considered severely stunted.

Diarrhea is regarded as a common symptom of gastrointestinal infections caused by pathogens such as bacteria, viruses, or protozoa and characterized by children having loose or watery stools at least three times per day or more.

ABBREVIATIONS

DDS	Dietary Diversity Score
ELCT	Evangelical Lutheran Church in Tanzania
FAO	Food and Agriculture Organization
FGD	Focus Group Discussion
IDs	In-depth Interviews
IYCF	Infant and Young Child Feeding
KII	Key Informant Interviews
MAM	Moderate Acute Malnutrition
NMNAP	National Multi-Sectoral Nutrition Action Plan
NGOs	Non-Governmental Organizations
NIMR	Medical Research of Tanzania
RCP	Reaching Children Potential
TDHS	Tanzania Demographic Health Survey
ToC	Theory of Change
TFNC	Tanzania Food and Nutrition Centre
UNICEF	United Nations Children's Fund
WHO	World Health Organization
SAM	Severe Acute Malnutrition
SPSS	Statistical Package for Social Sciences

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EXECUTIVE SUMMARY

Background Information

Globally, stunting is a major public health concern which is responsible for irreversible physical and mental damage to children below five years. It reflects chronic under-nutrition occurring during the first 1,000 days of life which is the most critical period of growth and development in early life. According to TDHS report of 2021/22, in Tanzania prevalence of stunting amongst children is decreasing steadily. Between 2000 and 2022, stunting prevalence globally declined from 33% to 22.3% whereas in Tanzania, it decreased from 48% to 30%. In the Southern highlands of Tanzania, the prevalence has remained steady (46.2%), with a higher prevalence of 56.9% in Iringa region. Nevertheless, childhood stunting is an effective and consolidated indicator for a healthy population in low and middle-income countries (LMICs) due to its vicious cycle relationship with infectious disease, cognitive & educational development and long-term economic viability at the household and community levels at large. In addition, it is among the most significant impediments to human and economic development. Thus, significant effort is crucial to reach the 2030 target of eliminating the stunting problem in under-fives in the country.

To support the government efforts, the Global Volunteers in collaboration with the Evangelical Lutheran Church in Tanzania (ELCT) through their program, Reaching Children Potential (RCP) undertaken in Ukwega Ward, Kilolo district in Iringa region, aims to reduce the problem of stunting among under-fives through the following pathways: (i) hunger eradication through provision of school and household gardening, child nutrition/feeding, micronutrients supplementation and improved cooking stoves (ii) improve health of a child through provision of nutrition and hygiene education, and systematic deworming (iii) enhance cognition of a child through provision of general education, psychosocial support, potable water and sanitary latrines. The Ward has been benefiting from the program since 2017 to date, and thus Global Volunteers wishes to know the impact of the program in stunting reduction for the past six years. Understanding the key conditions for success for the RCP program in reducing stunting could provide insights in creating or stimulating conditions in other regions of Tanzania and even beyond to replicate the evidence-based approach to improve the nutritional status and well-being

of children. Thus, our report informs other nutritional implementers on the approaches that can reduce stunting prevalence using a holistic approach.

Methodology

The evaluation employed cross sectional design which was guided by the face to face interviews with mothers and caregivers of under-fives followed by anthropometric measurements of the children of the respective mothers using weighing scale and length board. The tools guided data collection to address the following objectives;

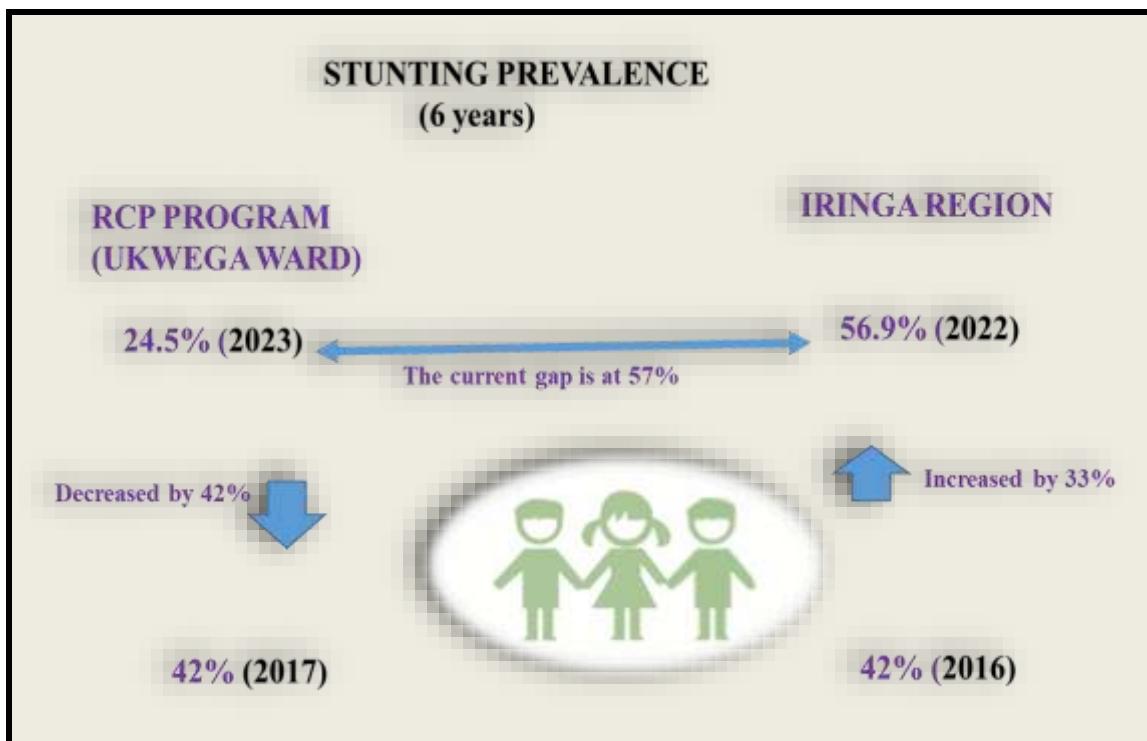
- i. To generate accurate, credible, and usable information on the performance of the RCP program.
- ii. To examine effects of integrated nutrition interventions on reduction of stunting among under-fives.
- iii. To compare the prevalence of stunting among children below five years of age subjected to the RCP program to that of the Iringa region in the TDHS 2022 report.

The scope of the evaluation included: a) holding inception meeting and desk review of the key project documents and existing literatures b) conducting enumerators training on data collection c) gathering, analyzing, interpreting, triangulating and synthesizing both primary and secondary qualitative and quantitative data and information d) sharing preliminary findings of the evaluation and holding in-depth discussion, e) re-working on the preliminary findings and sharing draft evaluation report and f) finalizing the report. The evaluation examined all program aspects using various national indicators to assess relevance, efficiency and effectiveness of the interventions under RCP using a mixed methods approach to gather information.

Key findings

Based on the review of the program documents, literature and interviews with key informants; the evaluators found that the program is fully aligned and consistent with the national aspirations and directions. Prevalence of stunting among children under-five years enrolled in the RCP

program was 24.5 %, where 16.5% were moderately stunted and 8% were severely stunted. The findings revealed further that boys were more stunted (27.2%) than girls (22.1%). Furthermore, prevalence of stunting was higher (34%) among children aged between 12-23 months than those aged < 6 months (15.8%). The current prevalence of stunting in the RCP program is about 50% less than the current prevalence of the Iringa region of 56.9% and slightly less than the national prevalence of 30% indicating good progress towards stunting reduction in the RCP program area. The majority of under-fives were immunized with BCG vaccine (96.5%), DPT vaccination (89.2%), polio (89.2%) and measles vaccination (90.2%), few children who did not receive/or completed immunization schedule for BCG, DPT and polio vaccination were below 6 months of age. Based on the dietary diversity categorization, 66.5% of children had high scores on dietary diversity, 30.3% minimum and 3.5% low dietary diversity. The findings revealed further that; child having diarrhea 2 weeks preceding survey, low birth weight, being a boy, improper child feces disposal practices and children being under medication during evaluation were the major predictors of stunting among under-fives in the study area.



Conclusion and Recommendations

Despite decreasing national trends, stunting is still widely prevalent in the southern Tanzania highlands. Stunting grew by 35% between 2016 and 2022 in the Iringa region but in Ukwega ward it decreased by 57%. The evaluation team recommends the following; replication and scale up of the interventions under the RCP program to accelerate efforts towards reduction of stunting among children below five years of age across the country and even beyond, reinforcement of WASH intervention to reduce incidences of diarrhea and other illnesses associated with poor WASH among children, consider addressing the problem of overweight and obesity in children to tackle the triple burden of malnutrition, reinforcing collaboration with government institutions such as Tanzania Food and Nutrition Centre (TFNC), and other stakeholders working on maternal health and nutrition to enable beneficiaries gain technical support and increase visibility and sustainability of the RCP program in future, strengthening of monitoring and evaluation processes of the program including mid-term reviews for early identification of the program progress, gaps and proposed areas for improvements and to consider conducting a landscape analysis study (baseline study) when introducing the program for the first time to enable effective gauging of the program performance and outcome in future.

1. CHAPTER ONE

1. 0. INTRODUCTION

1.1. Background Information

Reducing the prevalence of childhood stunting is a key global health goal due to the existing links between stunting and its adverse health outcomes across life cycle¹. Between 2000 and 2022, stunting prevalence globally declined from 33% to 22.3% whereas in Tanzania, it decreased from 48% to 30% between 1999 and 2022 ^{2 3}. Childhood stunting is an effective and consolidated indicator for population health in low and middle-income countries (LMICs) due to the intertwined cycles of malnutrition with infectious disease, cognitive and educational development, and long-term economic viability at the household and community levels ⁴. In addition, stunting is one of the most significant impediments to human and economic development.

Although over 20 years, Tanzania has made little progress towards eliminating stunting, pockets with high rates of stunting remain, such as in the southern highlands (46.2%)⁵, where Iringa has a higher prevalence of 56.9% ⁶. Thus, significant progress is crucial to reach the 2030 target of eliminating the stunting problem in under-fives. Currently the government nutrition attempts focus on the promotion of sufficient Infant and Young Child Feeding (IYCF), nutrition education and counseling, growth monitoring and promotion, and multi-sectoral collaboration to prevent malnutrition in young children. Fig. 1 below shows the National trend of triple forms of malnutrition including stunting for the past twenty years as per TDHS report of 2023.

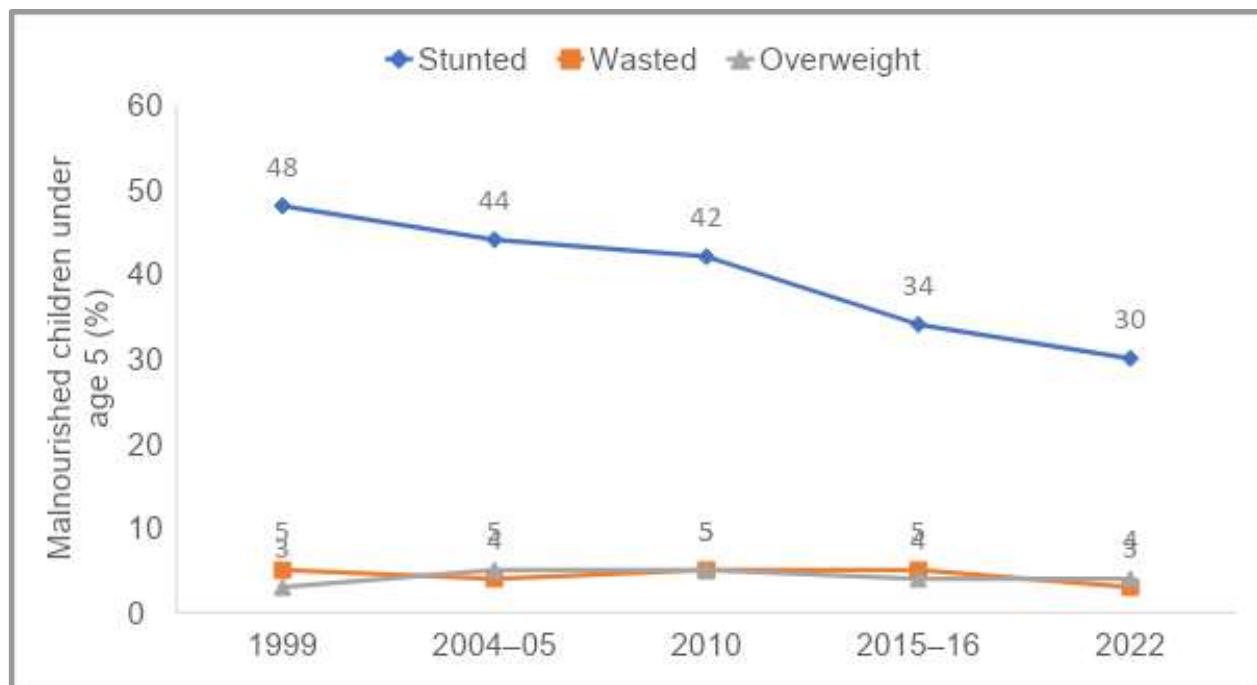


Figure 1: Trends in nutritional status of children below five years of age. Source TDHS-MIS 2023

Complementing to the government efforts, the Reaching Children Potential (RCP) Program in Ukwega aimed to improve nutritional status of children below five years of age through the following pathways: (i) hunger eradication through provision of school and household gardening, child nutrition/feeding, micronutrients supplementation and improved cooking stoves (ii) improve health of a child through provision of nutrition and hygiene education, and systematic deworming (iii) enhance cognition of a child through provision of general education, psychosocial support, potable water and sanitary latrines. Interventions targeting nutrition, economic sustainability, hygiene, and healthcare that are assessed through metrics of stunting are to be seen of high value in raising the health and quality of life of a given population. Therefore, understanding the key conditions for success for the RCP program in reducing stunting could provide insights into creating or stimulating conditions in other regions of Tanzania and even beyond to replicate the evidence-based approach to improve the nutritional status and well-being of children. Thus, the report informs other nutritional implementers on the approaches through which the prevalence of stunting can be reduced using a holistic approach.

1.2. Description of the existing interventions under RCP

The government of Tanzania aims to eliminate stunting which is a significant public health problem, by 2030 ⁷. As part of several initiatives, the RCP program with the aim of reducing stunting in children under-five years of age was implemented in Ukwega ward, Kilolo District, in Iringa region starting from 2017 to date by the non-profit organization known as Global Volunteers, in partnership with the Evangelical Lutheran Church in Tanzania (ELCT). Its long-term vision is to implement the 12 Essential Services throughout Tanzania, across Africa, and around the world beginning in Ukwega Ward with the goal of reducing stunting, improving nutritional status and wellbeing of the children recruited in the program. The RCP program is currently implemented in 5 villages namely; Ipalamwa, Makungu, Lulindi, Ukwega and Mkalanga with the intention of extending further into other villages. The interventions focus on the first 1,000 days of life, and continue through the 18th birthday of a child. The core project activities include parent workshops on nutrition and health, household food production and WASH topics, home visits with trained local staff members, health-care services in a state-of-the-art clinic, and improved quality of education in primary & secondary schools (Figure 2).



Figure 2: School feeding program at Ipalamwa primary school & expecting mother at Ipalamwa maternal waiting home/clinic

Other interventions under the RCP program include home gardening, and application of simple technologies such as hand washing stations. A unique aspect to this development project is short-term volunteers, both skilled and unskilled, who work under the direction of local leaders and hand-in-hand with local people to deliver essential services and support to the community. Figure 3 below shows some of the interventions under the RCP program being carried out in the beneficiaries' households.



Figure 3: Home box gardening and home visits activities in Ukwega Ward

The program also facilitates the formation of small groups among women for income generation activities at village level with each having a maximum of 10 members. The purpose of the groups is to strengthen income through various projects such as keeping chicken and pigs, sewing and small business. This report evaluates the progress of the RCP program in reducing stunting based on the interventions implemented for the past six years. Figure 4 below shows mothers in Ukwega Ward sewing and keeping pigs as one of the activities under the RCP program.



Figure 4: Some income generating activities done by women under RCP program

1.1. The Context of Evaluation

The nutritional status of children in the Iringa region denotes both a chronic and long-term problem, a large proportion of children are stunted, which represents an estimated 56.9% of regional prevalence as compared to national prevalence of 30%. It is noteworthy that the percentage of stunting increased from 41.6% in 2015/16 to 56.9% in 2022, still above the average of 30%, for Africa thus falling within the category of “high” in public health significance ⁶. The high burden of under-nutrition has vast economic consequences in the form of 50% of child deaths annually, low educational attainment, reduced labor productivity, increased risks of NCDs and a high burden to the health system [UNICEF, 2012]. As a result, in Tanzania total expenditure in health services grew by an average of 5.2% between 2010 and 2017 ⁸.

Iringa region is among the potential regions in the top food basket regions in Tanzania and a home to varieties of fruits and domestic animals, including dairy cattle. The area is also famous in timber production and a big supplier of timber across the country. Surprisingly, many of its people including under-five children are affected by chronic malnutrition (stunting). In addition, around 70% of its population lives in rural areas where agriculture is their main economic activity.

Given the fact that childhood stunting happens due to multiple factors including maternal and inadequate dietary intake; (inadequate infant and young child feeding practices, micronutrients deficiencies), repeated bouts of infections and/or combination of both during the first 1000 days of life, from conception till age of two years, interventions targeting on the multiple factors such as nutrition, economic sustainability, WASH, and healthcare services are of high value in reducing stunting and improving quality of life of a given population. Figure 5 is a conceptual framework of malnutrition highlighting causes of maternal and child under-nutrition in children below five years of age.

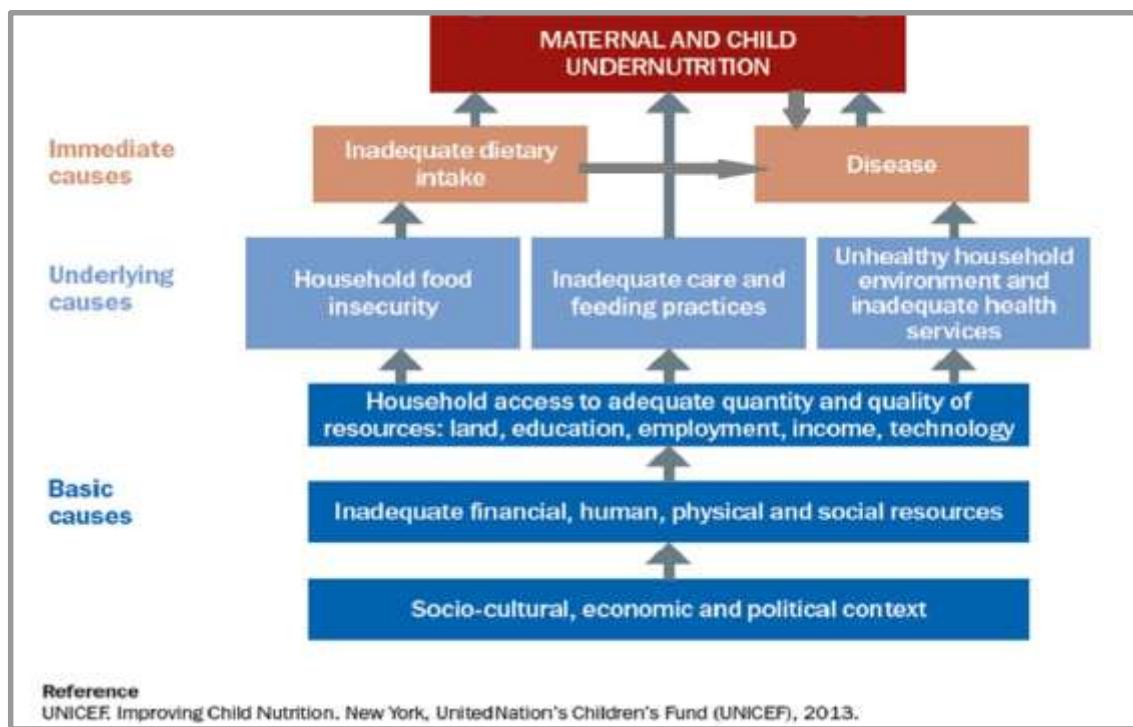


Figure 5: Conceptual framework of under-nutrition causes among under-fives

The purpose of this evaluation is to provide reliable evidence of the program's impact on stunting reduction based on various interventions implemented under the program. The findings can be used by the program implementing agencies to further plan for expansion of similar interventions within Kilolo district and Iringa region and in similar settings. The findings from the evaluation are also expected to generate transferable learning for a wider audience, including donor agencies, governments, policy-makers and other stakeholders working on assignments like

the subject matter. The report follows the ongoing RCP program that has been implemented for six years, starting from 2017 to date.

1.3.1. The RCP Program theory of change and assumptions

It was envisaged that linking children to quality of health and nutrition care; access to early childhood care and provision of maternal education to caregivers would improve the overall growth and developmental status of children in Ukwega ward, Kilolo district. The program also hypothesized that by providing high quality complementary foods, micronutrients supplements and encouraging the caregivers to establish home gardens and practice good WASH, sustainably would improve health of the child and hence stunting reduction in the program areas. This child-focused, parent-driven, community-led, and volunteer-supported comprehensive approach was assumed to influence children's caregivers and community to adopt improved child health care and maternal nutrition, in their households. Many of those benefiting will be infants and children who are the future productive work force of Tanzania and ultimately break the poverty cycle.

1.1 Evaluation Purpose, Objectives and Scope

1.4.1 Evaluation Purpose

The evaluation aimed to assess the effects of the integrated nutrition intervention on reducing prevalence of stunting as well as to gather evidence-based learning on how to design and implement such integrated programs in the program area and elsewhere in future. The evaluation is expected to support advocacy purposes among nutrition implementers for an integrated approach towards stunting reduction. Moreover, the evaluation will contribute to improving the design and implementation as well as monitoring and evaluation of future integrated nutrition interventions within and beyond the country. The primary expected users of this evaluation are Kilolo District Council, Iringa region, the government of Tanzania, donors, NGOs, academicians, researchers and other stakeholders in the nutrition and health sectors. Indirectly, the learning from this evaluation will also support women, children, families, communities, health care providers and policy makers as secondary audiences of this evaluation. In addition, the evaluation findings are also expected to influence changes in the country by creating an

enabling environment to support the implementation of evidence-based integrated interventions to reduce stunting.

1.4.2. Evaluation Objectives

- i. To generate accurate, credible, and usable information on the performance of the RCP program.
- ii. To examine effects of integrated nutrition interventions on reduction of stunting among under-fives.
- iii. To compare the prevalence of stunting among children below five years of age subjected to the RCP program to that of the Iringa region in the TDHS 2022 report.

1.4.3. Evaluation scope

The evaluation covered the program implementation period between 2017 and May 2023 in the targeted ward of Ukwega. The evaluation scope of work included: a) holding inception meeting and desk review of the key project documents and existing literatures b) conducting enumerators training on data collection c) gathering, analyzing, interpreting, triangulating and synthesizing both primary and secondary qualitative and quantitative data and information d) sharing preliminary findings of the evaluation and holding in-depth discussion, e) re-working on the preliminary findings and sharing draft evaluation report and f) finalizing the report. The evaluation examined all program aspects. The evaluation team used various national indicators to assess relevance, efficiency and effectiveness of the interventions under RCP using a mixed methods approach to gather information.

2. CHAPTER TWO

2. 0. EVALUATION METHODOLOGY

2.1. Placement and training of enumerators

The evaluation team recruited enumerators to implement the field work under the close supervision of the evaluation team. The recruited enumerators were familiar with the study area, understood the cultural context and some spoke the local language. They had a research background and experience on health, nutrition, and worked with the community through Global Volunteers for a long time. The evaluators conducted a training which covered various aspects and scope of the evaluation and thereafter, grouped enumerators into three groups for easy data collection. Figure 6 below shows one of the evaluators training enumerators for anthropometric data collection at Global Volunteers` Center in Ipalamwa Village.



Figure 6: Enumerators being oriented on length measurements for infants

2.2. Sampling approach and field work

Sample size was chosen purposively (criteria-based) within the sampled population at various levels covering five villages. Considering the complexity of the evaluation, the respondents were selected deliberately based on the major criteria of being program beneficiaries. Close supervision of the survey teams was ensured in the field whilst collecting data to ensure quality of the data. In addition, enumerators were debriefed on a daily basis after their return from the field. In the debrief sessions, the team discussed experiences in the field, identified missing information in the collected data, reviewed the recorded information, discussed challenges, sought solution and plan for the next day including measures to minimize the data collection bias and errors.

2.3. Analytical approaches & quality assurance

To gather relevant information, desk review, key informant interviews and face-to-face questionnaire interviews were used. For the case of desk review, relevant project documents such as baseline survey report, and mid evaluation report were among the documents reviewed. Key informant interviews mainly involved the RCP program Country Director in Iringa, and child health care providers at Ipalamwa general clinic. The evaluation assessed the program against set criteria, including program design, program reports, ToC, result framework, and data used for monitoring performance and attainment of the results. Additionally, the evaluators used qualitative and quantitative data including scoping literature review to draw inferences against the set criteria. In order to operationalize the evaluation findings, the evaluators developed an evaluation matrix that served as a guide to gather and analyze the data/information to answer the evaluation questions. The evaluation matrix specified indicators, data collection methods and sources of information to answer the questions under each criterion. The key aspects of the analytical approaches and quality assurance included: a) analysis of quantitative data, b) management and analysis of qualitative data, c) program data and secondary sources of information. Since the baseline survey involved only three villages, the sample was drawn to enable a counterfactual evaluation of the impact of the program interventions. In addition, comparison of data from the baseline survey with those obtained from the midterm evaluation, focus group discussions (FGDs) and interviews with Key Informants (KIs) was employed.

2.4. Data collection methods

The Evaluation team used mixed evaluation methods by employing both qualitative and quantitative methods including literature review, Focus Group Discussions (FGDs), (In-Depth Interviews (IDIs), Key Informant Interviews (KII) and direct observations in the field.

2.4.1. Assessment of child's nutritional status

Anthropometric measurements of height and weight were taken from each child by qualified and well-trained enumerators from Global Volunteers under close supervision of professional nutritionists (evaluators) from Tanzania Food and Nutrition Centre (TFNC) Figure 7. The length of each child aged 0 - 23 months was measured using a UNICEF length board and weight was measured using a hanging weight scale (SecaTM Model 881). For children aged 24 to 59 months, a UNICEF height board and a stand-weighing scale were used to measure their height and weight, respectively. Age was recorded from the children's clinic cards. All information was recorded in tablets and submitted directly to TFNC saver every evening under the management of a professional statistician. The same information was documented in hard copies on an anthropometric sheet as a backup. World Health Organization (WHO) z-score indices were used as reference where z-score of < -3 , between < -2 to ≥ -3 were regarded as severe and moderate under-nutrition, respectively and ≥ -2 was regarded as normal⁹.



Figure 7: One of enumerator measuring height under supervision

2.4.2. Assessment of dietary practices

Dietary Diversity Score (DDS) was estimated using dietary information collected from the 24-hour dietary recall, using a scale of twelve food groups as per the Food and Agriculture Organization (FAO) (FAO & 360, 2016). Assessment of dietary diversity was done based on the number of food groups consumed by children over the past 24 hours. These food groups include: cereals, roots and tubers, legumes, nuts and seeds, fruits, meat, fish and sea foods, vegetables, eggs, milk and milk products, oil and fats, spices, condiments and beverages. To each food group consumed over a reference period, a point was given, and then, the DDS was calculated as a summation of all points scored. Dietary diversity categories were derived from 11 points as follows: low dietary diversity 1 – 3 points, minimum dietary diversity 4 – 5 points and high dietary diversity 6 – 11 points. The diversity of the diet was judged based on the scores.

2.4.3. Assessment of food security of the households

Household Food Insecurity Access Scale (HFIAS) was used to provide estimates of household food security of the participants. A scale of four (0, 1, 2, 3) was employed to categorize food security status of the household as food secure, mildly, moderately and severely food insecure in a respective order. In administering the HFIAS questionnaire, households were asked to respond to nine (9) food security questions and respondents were required to respond never, rarely, sometimes, and often which were assigned weights of 0, 1, 2 and 3 respectively mend¹⁰.

2.5. Data Analysis

Data were processed using the IBM SPSS Statistics, 2022 version. Data cleaning was performed daily during data collection by a qualified statistician and in case of missing data, the respective enumerator and participant were consulted to resolve the problem. Analysis involved mostly descriptive statistics with some few inferential statistics such as Chi square and logistics regression analysis. Anthropometric data were transferred from SPSS data set to ENA for SMART software to calculate z-scores (weight for height, weight for age and height for age z-scores). Thereafter, data were transferred back into SPSS for further analysis.

2.6. Ethical clearance and informed consent

Ethical clearance was obtained from the National Institute for Medical Research of Tanzania (NIMR). Informed written consent was sought from mothers or caregivers of children under

study. This was done by reading carefully the consent form to mothers and allowing them to sign prior administration of the questionnaire and taking anthropometric measurements. Confidentiality regarding the information collected from the survey was ensured. In addition, mothers were debriefed on the aim of the evaluation (Figure 8).



Figure 8: One of the evaluators debriefing mothers about the aim of the evaluation

2.7. Methodological limitations and mitigation strategies

A landscape analysis (cross-sectional study) was conducted to gauge the effectiveness of interventions offered through Reaching Children's Potential RCP program in reduction of stunting prevalence among children under the age of five enrolled in the program. The designed approach for gauging the effects of the program intervention using the baseline data collected between August 2017 and July 2018 and after (current data collected in May 2023) could not give the empirical evidence of the project. This is because the sample population used for drawing the sample size for the baseline study (187 children) was not similar to the sample population used in the present study (600 children). In addition, due to financial constraints, the team was not able to establish a control group for the study. To overcome this, information from TDHS 2015-16 and TDHS 2021/22 for the Iringa region was used to gauge the effect of the RCP program on stunting. Furthermore, the study did not allow randomization of study participants,

instead all children below five years of age under the RCP program were involved in the study and therefore establishment of mother-child-pairs to ensure proper methodological sampling approaches was limited.

3. CHAPTER THREE

3. 0. EVALUATION FINDINGS

This section provides key findings of the study based on implementation of the RCP program interventions. The key findings focus on program activities which provided contribution to stunting reduction, including food security, maternal and child health and feeding practices, nutrition education, WASH practices, in households to mention few. The section also presents the impact of program interventions on household income generated from small animal keeping and progress out of nutrition insecurity.

3.1. Program alignment with the national priorities

Based on the review of the program documents, literature and interviews with key informants; the evaluators found that the program is aligned and consistent with the national aspirations and directions. The program considered the following aspects of the national priority as summarized here; -

- National Multisectoral Nutrition Action Plan II (2021/22 – 2025/26): The NMNAP II focuses on five strategic outcomes to ensure desired change for all Tanzanians having/being better nourished and leading healthier and more productive lives to contribute to economic growth and sustainable development of the country. Out of five strategic outcomes, the program has fully adopted all the strategic outcomes on planning, designing and implementation of the program as a strategy to reduce stunting to ensure nourishment of individuals in the program. The assessment criteria ranked as fully aligned based on program goal, objectives and interventions achievements.
- Leaving no one behind: The NMNAP II accommodates interventions for all age groups, including those with special health and nutritional needs. The RCP program targets children, women, girls (women of reproductive age), and marginalized groups in the designed program interventions. Adolescent's boys and men are little involved in the program, considering the importance of this group and its influence on improving nutrition of the household. The assessment criteria ranked as largely aligned based on the gaps established.

3.2. Program objectives alignment with the perceived needs

Based on the information generated from review of the program documents, IDIs with the key informants, FGDs with communities and field sites visits, the evaluation found that the program objectives and ToC were consistent with the perceived needs of target communities by focusing on the following aspects; -

- **Human Needs and Vulnerabilities:** High morbidity and mortality rates of under-five children are directly related to malnutrition, lack of access to clean water and inadequate sanitation practices ⁷. The situation is further exacerbated in rural areas due to food insecurity, inequitable economic access by the poor, women and low literacy of women. In the given context, the evaluation confirms that the program was fully consistent with the human needs and vulnerabilities of the population, particularly children, women (including pregnant and lactating women) and girls (women of reproductive age).
- **Geographical Needs and Vulnerabilities:** The evaluation found that RCP program considered geographic needs and vulnerabilities in selection of districts through: child well-being index, prevalence of stunting and gaps in service provision on maternal and child health. The Iringa region, being among the regions with the highest prevalence of stunting in Tanzania, was a perfect area for consideration for the RCP program by the Global Volunteers Organization.

3.3. Efficient attainment of program objectives and results

The program adopted various measures to carry out result-based evaluation in a structured manner by reviewing the program documents, reports, data and IDIs with key informant's information. The key elements of the result-based evaluation include:

3.3.1. Stunting situation among under-fives

In comparison to WHO reference population growth standards, 24.5 % of children under-five years enrolled under RCP program were stunted where 16.5% had moderate chronic

malnutrition/stunting and 8% had severe chronic malnutrition/stunting. The findings revealed further that boys were more stunted (27.2%) than girls (22.1%). Furthermore, prevalence of stunting was high (34%) among children aged between 12-23 months when compared to the young ones (<6 months) who had an overall prevalence of 15.8%. The variation in stunting prevalence by age and sex of under-fives is in line with that of TDHS 2022 and TNNS, 2018 reports (Table 1).

Table 1: Stunting prevalence by sex and age group of under-fives

General characteristic	Chronic Malnutrition/Stunting (Height for Age)		
	Normal (z-score =>-2 and <2)	Moderate (z- score =<-2 and >=-3)	Severe (z- score =<-3)
Overall nutritional status	453(75.5%)	99(16.5%)	48(8%)
Sex			
Male	210(72.9%)	48(16.8%)	30(10.4%)
Female	243(77.9%)	51(16.3%)	18(5.8%)
Age Groups			
<6 months	48(84.2%)	2(3.5%)	7(12.3%)
6 – 11 months	49(80.3%)	7(11.5%)	5(8.2%)
12 – 23 months	84(75%)	29(26%)	9(8%)
24 – 35 months	90(68.7%)	23(17.6%)	18(13.7%)
36 – 47 months	92(78%)	22(18.6%)	4(3.4%)
48 – 59 months	90(81.1%)	16(14.4%)	5(4.5%)

High prevalence of stunting was observed in Lulindi village (32.8%) while the lowest prevalence was observed in Makungu village (16%) followed by Ipalamwa (18.1%). Figure 9 below shows the proportion of children with normal, moderate and severe stunting status by location.

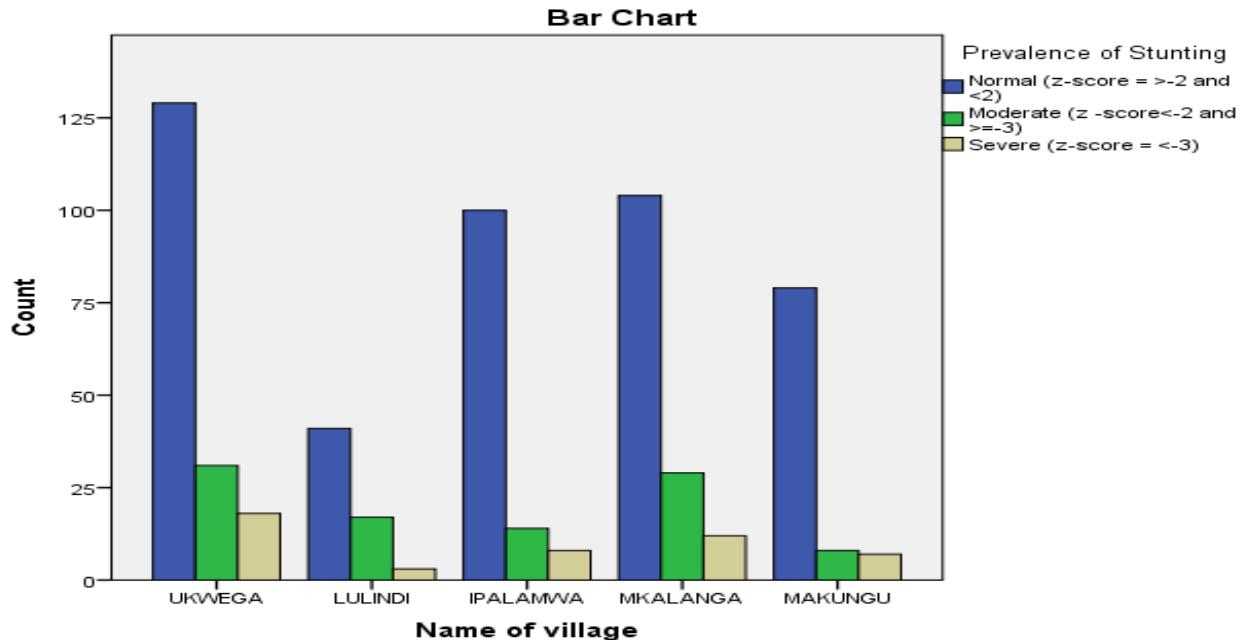


Figure 9: Proportions of stunting prevalence by village

Further, figure 10 below shows that the normal distribution curve of stunting for the study population skewed to the left and slightly deviates from the mean when compared to that of the reference population of WHO. In addition, referring to the WHO cut-off points, a prevalence of stunting $\geq 15\%$ is regarded as high. Based on the current evaluation, the program has made good progress in achieving the set target of stunting reduction among children of under-five years based on the criteria of reducing the prevalence at the baseline which was 37.4% in 2018. Furthermore, the current prevalence of stunting in the RCP program area has been cut by half less than the current prevalence of Iringa region of 56.9% and slightly less than the national prevalence of 30% (TDHS, 2022). The good progress towards stunting reduction is due to implementation of on-going interventions under the RCP program.

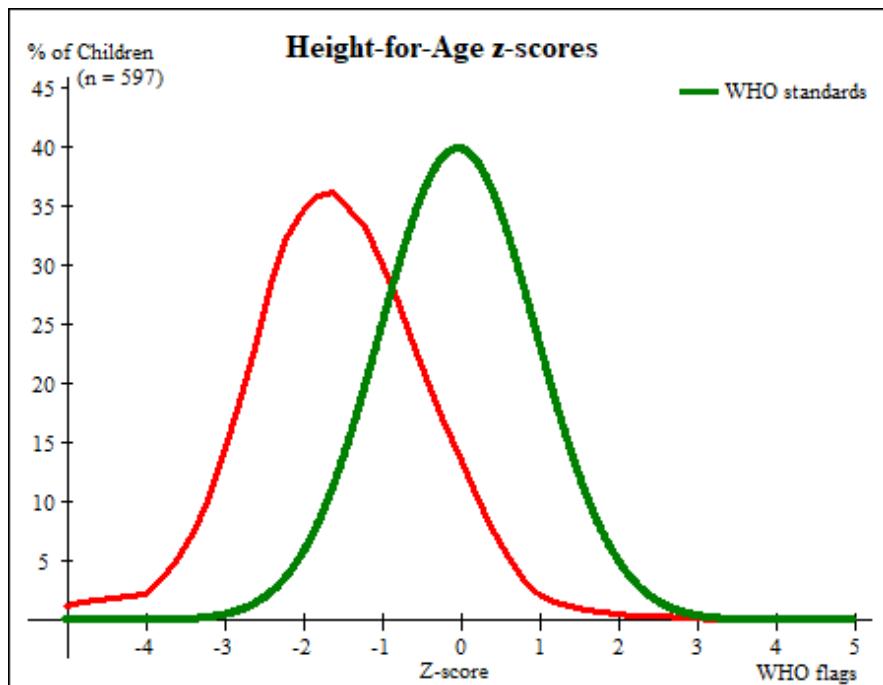


Figure 10: Distribution of height for age z-scores as compared to WHO growth standard curve

3.3.2. Demographic characteristics of program beneficiaries

Impact evaluation involved a total of 600 children (48% male and 52 % female) enrolled in the RCP program, among them, 9.5% were below six months of age, 30.7% aged between 06 - 23 months and 59.8% between 24 - 59 months. The mean age of caregivers was 29 ± 7.148 years, the highest age was 71 years and minimum age was 14 years. The majority of children were from households involved in agricultural activities (97.4%), with a range of one to 10 children in the household. The number of household members ranged between 2 and 20 people, with a mean of 5 people per household. The majority of mothers (69.5%) attained primary education. Table 2 below summarizes key demographic information of program beneficiaries.

Table 2: Key demographic information of the program beneficiaries

Variable (N)	n (%)
<i>Children requited in the program N = 600</i>	
Children per village	
Ukwega village	178 (29.7%)
Lulindi Village	61(10.2%)
Ipalamwa	122(20.3%)
Mkalanga	145(24.2%)
Makungu	94(15.7%)
<i>Marital status of caregivers</i>	
Married	395 (74.3%)
Cohabitating	6 (1.1%)
Divorced	5 (0.9%)
Widowed	2 (0.4%)
Never married	124 (23.3%)
<i>Caregiver's level of education</i>	
No formal education	49 (9.2%)
Primary education	370 (69.5%)
Secondary education	107 (20.1%)
Tertiary education	6 (1.2%)
<i>Father's level of education</i>	
No formal education	15 (3.8%)
Primary education	277 (70.1%)
Secondary education	85 (21.5%)
Tertiary education	18 (4.6%)
<i>Father's economic activities</i>	
Agriculture	371 (93.9%)
Employed	26 (6.5%)
Business	47 (11.7%)
Fisherman	9 (2.2%)
Keeping animals	13 (3.2%)
<i>Household size</i>	
1 -4	229 (38.7%)
5 - 9	295 (49.8%)
Above 10	8 (1.4%)
<i>Head of household</i>	
Male headed	424 (79.7%)
Female headed	58 (10.9%)
Another person	50 (9.4%)

3.3.2. Immunization and child health status

The RCP program promotes the health of children by providing various training to caregivers on the importance of immunization to child health. The majority of children below five years of age were immunized with BCG vaccine (96.5%), DPT vaccination (89.2%), polio (89.2%) and measles vaccination (90.2%), few children who did not receive/or completed immunization schedule for BCG, DPT and polio vaccination were below 6 months of age. The findings suggest that achieving the milestones of immunization is a stepping stone in ensuring good health among children. Vaccines safely reduce the scourge of diseases like polio, measles and smallpox, helping children grow up healthy and happy. Additionally, immunization reduces the burden of disease on individuals, families and communities, including savings from medical expenses, as well as productivity and educational gains.

Regarding child health, the findings revealed that 6.9% of children below five years of age had incidences of diarrhea in the 2 weeks before conducting the evaluation. In the preceding 2 months before evaluation of RCP program, the incidences of cough, diarrhea, fever, malaria, and skin problems were 30.6%, 5.2%, 19.4%, 11.1, 0.5% and 11.7%, respectively, for caregivers who brought their children to the dispensary, health center or hospitals for medical care. The findings also revealed that the majority of caregivers sought health care from different sources, the most common health seeking behavior was reported being going to hospital for treatment (36.1%) and going to pharmacy (5.6%), no child reported being taken to traditional healers for treatment. The evaluation found out further that the low levels of diarrhea incidences is an indication of good health which lowers the susceptibility of acquiring diseases. Diarrhea is the second leading cause of deaths among children under-five years globally and accounts for about 1.5 million deaths each year⁹. Low prevalence of diarrhea could be attributed to various interventions implemented by RCP programs such as awareness creation on improved WASH practices including drinking clean and safe water, use of improved sanitation, and hand washing with soap. The TDHS report of 2022 revealed that about 9% of children below five years of age reported having episodes of diarrhea 2 weeks preceding the survey.

Additionally, the evaluation found out that appropriate health-seeking behavior of caregivers can help reduce morbidity and mortality associated with inappropriate health seeking behaviors. The

majority of caregivers went to hospital when their children fell sick, which is accredited to Global Volunteers providing free medical services to all children enrolled in the RCP program at their hospital, which is located in Ipalamwa, one of the villages under the program.

3.3.3. Dietary diversity status of children

The typical dietary patterns of children were characterized by high consumption of cereal-based foods (100%), vegetables (99.4%), fruits (71.2%), legumes, nuts and seeds (82.3%). Based on dietary diversity categorization, 66.5% of children had high scores on dietary diversity, 30.3% minimum and 3.5% low dietary diversity. Meat, milk, fish, eggs were the least consumed by 16.8%, 3.7%, 26.9% and 4.6% respectively. Figure 11 below shows a comparison pattern of DDS among children in the study population. The evaluation found out that the majority of children attained high dietary diversity which possesses a crucial interplay with the health status of children since it is a significant protective determinant of good nutritional status. Investment of the RCP program to improve dietary intake contributed to an increase in the likelihood of children attaining high and minimum scores, some of the initiatives include; increasing knowledge of child feeding among caretakers, provision of additional foods to expecting mothers (from first trimester) and infants (6-30 months) and micronutrients supplementation, keeping small animals (chicken and pigs) and vegetables gardens. Though consumption of meat and dairy products was observed to be low, <20%), it is the expectations of the RCP program that the situation will soon improve due to ongoing income generating activities done by women groups. During FGDs with women small business groups, one of the group members from “*Tunaweza*” group told her story on how she borrowed money from the group to buy pulses, cook them, and then sell them to generate profit out of it. This is what she said; “*I purchased chickens with the little profit I made, and I raised them so they would produce meat and eggs for my kids*”. Another group member from “*Amani*” group stated, “*I started a small business with a loan, selling tomatoes and peanuts, and when I made a profit, I used the money to buy necessities like soap, cooking oils, and the rest of the money used to change the children's diets.*”

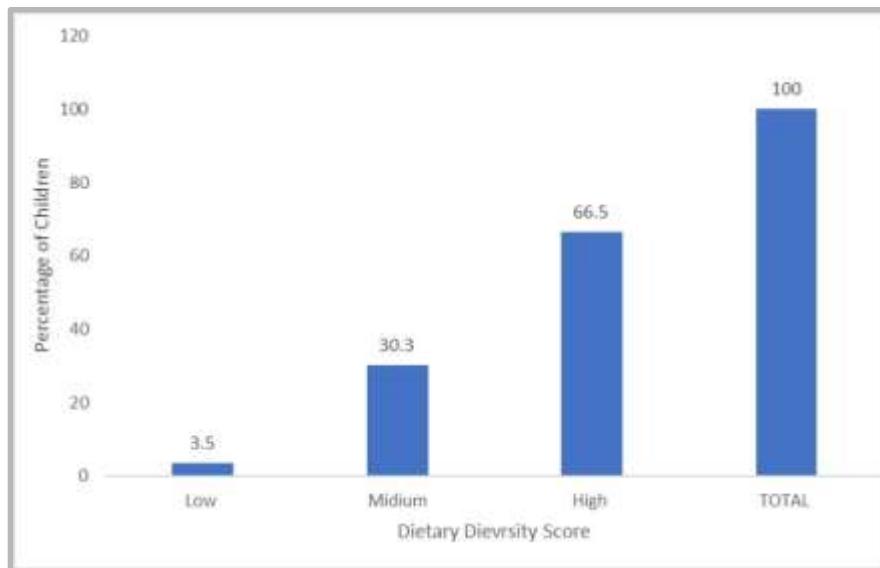


Figure 11: Distribution of Dietary Diversity Score among Children under five years of age

In addition, the evaluation team noted that hygiene related infections, particularly skin infections, were extremely common among children who participated in the evaluation. This suggests that more emphasis on WASH is needed to reduce illnesses associated with poor WASH practices in vulnerable populations.

3.3.4. Food Security situation of the Households

An estimated 60% of households under RCP program were food secure, having access to adequate food for an active, healthy life for all household members at all times. About 36.4% had food but worried about not having enough food and were unable to eat preferable foods at some point throughout the year. About 3.2% of the households were moderately food insecure that they had to sacrifice quality more often or eat monotonous diets at some point throughout the year. About 0.4% of the households experienced severe food insecurity at some point in time (Figure 12). During Focus Group Discussion, a member from the “Amani” women group said; “*being a part of a group has its benefits,I've learned how to produce a variety of the things from the group the group including boutiques*”. “*As a mother, the group has given me the confidence I need to deal with challenges at home and lessen my reliance on my husband*”. “*And now I am able to buy a stalk of food for my family without even waiting for money from my husband*”.

Figure 12 below shows the status of food security in the household.

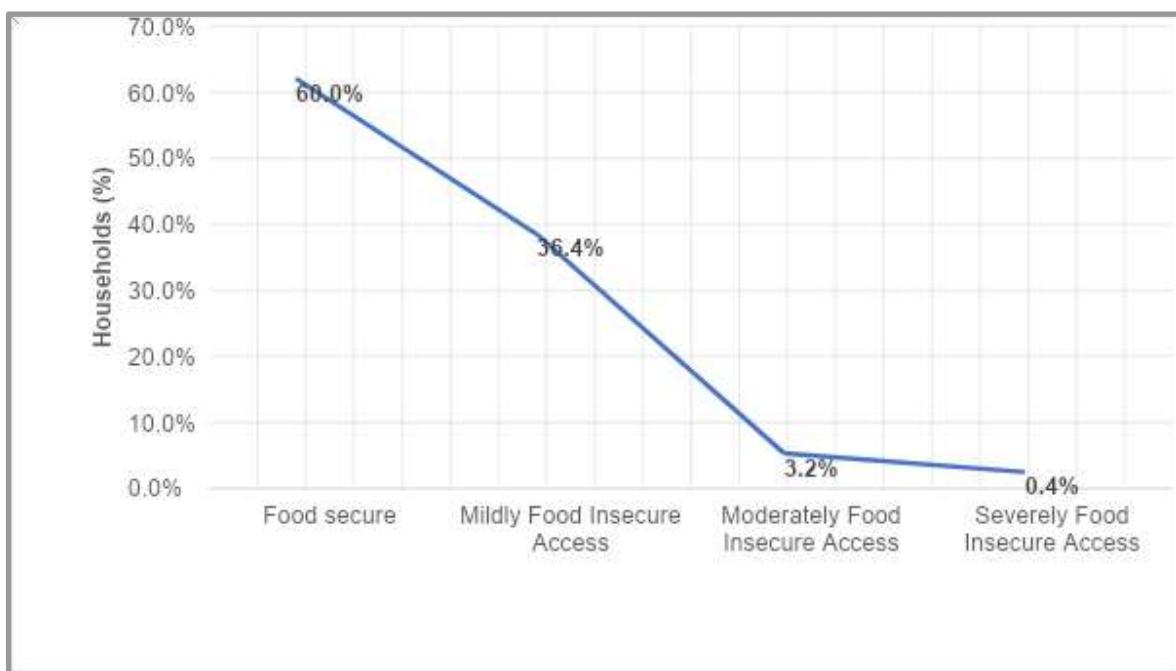


Figure 12: Proportions of households experienced specific food insecurity condition

3.3.5. Water availability and accessibility

The findings revealed that the main source of water supply for domestic use in the households was public taps 67.3%, protected-well 13.5%, and unprotected-well 10.7% and spring 5.5% among households in the program. The majority of households enrolled in the program, (92.7%) reported treating water to make it safe and clean for drinking purposes and 7.3% did not. The most common method used for water treatment was boiling, at 99.5%. Access to safe drinking water was linked with a lower risk of diarrhea and a lower risk of stunting. Household water treatment has been regarded as an important and frontline procedure to achieve safe water supply, improving the quality of drinking water and decreasing human health risks associated with diarrhea.

3.3.6. Sanitation practices

Sanitation plays a significant role in disease causation and transmission; however, improved sanitation practices have been a major challenge in developing countries due to limited resources for constructing sanitation infrastructures. Results indicated that about 99.8% of households had latrines of which 80% were improved pit latrines and 19.8% were traditional pit latrines. Households that did not have latrines (0.2%) were reported to practice toilet sharing with their neighborhoods. None of the participants were practicing open defecation. The evaluation found out further that access to improved sanitation services is crucial for reducing water borne diseases such as diarrhea associated diseases. Studies done elsewhere in Tanzania, India and Ethiopia reported reduction in stunting among under-five children from families with improved sanitation facilities when compared with those without such facilities^{12 13 14}. Poor sanitation practices in any community could lead to oral-fecal bacteria infections particularly *Escherichia coli* (*E. coli*) infections and finally poor nutritional status among individuals. In addition, poor sanitation could lead to a condition known as environmental enteropathy (EE) to children, a condition which is among the potential predictors for stunting. Again, communities practicing poor sanitation are likely to have unsanitary behaviors which could lead to contamination of soil and water especially during rainy seasons which could later infect individuals especially children. Knowing the burden of poor sanitation in causing diseases, the RCP program has invested in creating awareness of the importance of having improved sanitation services as well as introducing a technology for improving sanitation in households enrolled in the program.

3.3.7. Hand washing practices

Hand washing involves the use of soap and water to physically remove dirt, organic material, and microorganisms from hands. The finding revealed that all households used water and soap when washing hands and 96.8% of caregivers established local hand washing stations at home commonly known as “*Kibuyu Chirizi*” which were mostly affordable and mostly used at the households. Figure 13 below presents results on hand washing practice situation during the five critical moments (before eating, before preparing food, after using the toilet, before feeding a child and after touching dirty/attending a child) among caregivers in the program. The evaluation found further that understanding the changing behavior of hand washing in the intervention areas

was the major concern of the design of the program to protect health and well-being of children. Hand washing was one of the factors which may have reduced the incidences of diarrhea in intervention areas.

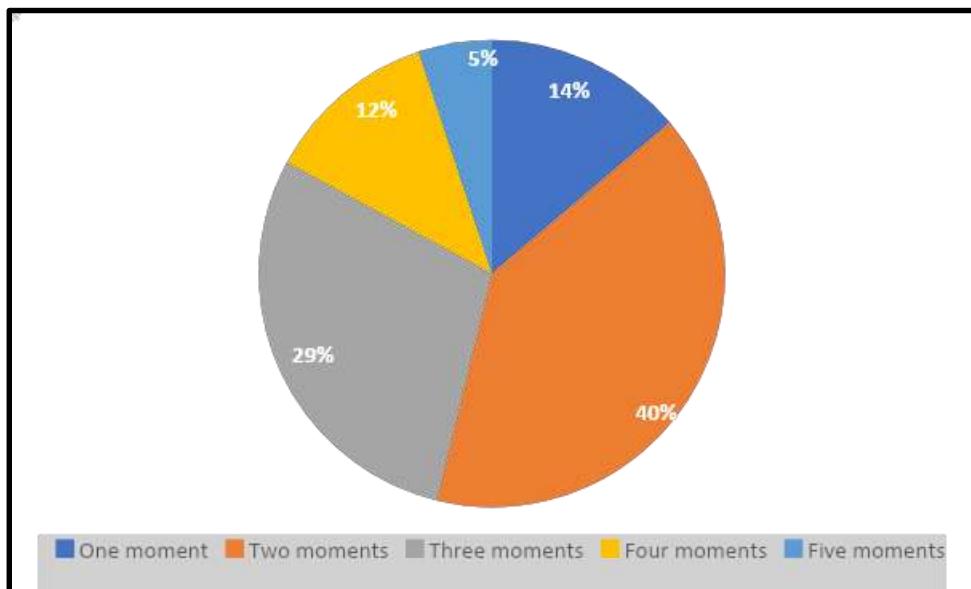


Figure 13: Hand washing practices during five critical moments among caregivers

3.3.8. Predictors of Stunting among under-fives

The findings revealed that; child having diarrhea 2 weeks preceding survey, low birth weight, being a boy, improper child feces disposal practice and children being on medication during evaluation were associated with stunting among under-fives in the study area. Children with low birth weight (<2.5kgs) were more likely to be stunted (49%) when compared to children with normal birth weight (23%), $p<0.001$. However, the findings revealed further that the majority of children in the study area had normal birth weight (92.5%), indicating excellent performance of maternal care services under RCP program. Likewise, children reported having diarrhea 2 weeks preceding the evaluation period were more likely to be stunted (41.5%) compared to those reported with no diarrhea (23.6%), $p=0.008$. This finding could relate to the fact that diarrhea tends to affect absorption of nutrients by the body due to limited time the food spends in the stomach, lowers appetite, and the uptake of the nutrients for recovery from the infection rather than growth. In addition, diarrhea is a proxy for under-fives' poor health condition thus could

lead to poor nutritional status of the child. The findings are similar to studies done in Tanzania and Kenya^{15 16}.

Furthermore, children reported being on medication during the evaluation were more likely to be stunted (44.1%) compared to those who were not under medication (23.6%), p=0.004. Proper disposal of child feces reduced the likelihood of being stunted where caregivers who reported disposing children feces in the toilets were less likely to have stunted children (22.7%) when compared to those who reported disposing children feces in places other than the toilets (44.4%), p=0.006. In addition, prevalence of stunting was high among boys (27.3%) compared to girls (22.6%), p=0.04. The TDHS report of 2015/16 and 2021/22 came up with similar findings where child birth weight, sex, diarrhea and poor hygiene were reported being among the predictors of stunting in children below five years of age.

4. CHAPTER FOUR

4. 0. CONCLUSION AND RECOMMENDATION

4.1. Conclusion

Despite decreasing national trends, stunting is still widely prevalent in the southern Tanzanian highlands. Stunting grew by 35% between 2016 and 2022 in the Iringa region but in Ukwega ward it decreased by 57%. The findings reflect the efforts by the Global Volunteers who implemented the RCP program to support households in ensuring that their children attained their full potential. The study suggests adoption of RCP program approaches such as child-focused, parent-driven, community-led, and volunteer-supported interventions, benefited caregivers in providing critical services that helped to minimize risk factors contributing to stunting.

In general, the findings suggest that there is a great scope for improving child nutritional status once key constraints such as quality childcare, poor access to health services, nutrition education, lack of macronutrients and other food supplements and reliable/effective markets for products produced by women groups. Caregivers/women in Ukwega ward have gained a deep understanding of nutritional and health care for their children but vibrant assistance for children to attain their full potential needs to be maintained to catalyze nutrition awareness in other communities with similar settings.

4.2. Recommendations

Based on the findings from the evaluation, the following are recommended;

- Replication and scale up of the interventions under RCP program is crucial to accelerate efforts towards reduction of stunting among children below five years of age across the country and even beyond. However, due to high costs associated with implementation of such interventions, Global Volunteers needs to consider engaging beneficiaries and other stakeholders to come up with low cost implementation approaches. For example, the

beneficiaries could be trained on means and technologies of obtaining complementary foods for themselves and their children rather than being offered such foods. In addition, strengthening of income generating activities currently carried out under the program may improve standards of lives among the beneficiaries as well as ensure sustainability of the interventions already in place.

- Despite the fact that, RCP program under Global Volunteers is currently addressing the concerns related to WASH in the program area, much need to be done to reduce incidences of diarrhea and other illnesses associated with poor WASH among children which contribute to the stunting prevalence in children. In addition, the evaluation team noted that hygiene related infections, particularly skin infections, were extremely common among children who participated in the evaluation. This suggests that more emphasis on WASH is needed to reduce illnesses associated with poor WASH practices in vulnerable populations.
- The evaluation team recommend further that health and nutrition education given to mothers by the program through workshops and home visits, should also consider addressing overweight and obesity problems in children (the leading risk factor for Non-Communicable Diseases globally), to tackle the triple burden of malnutrition (under-nutrition, micro-nutrients deficiencies and overweight/obesity). Based on the findings, the prevalence of overweight/obesity among children below five years of age was found to be 4.2% which is closely similar to that of TDHS, 2021/22 of 4.5%.
- Reinforcing collaboration with government institutions such as Tanzania Food and Nutrition Centre (TFNC), Agriculture, Livestock sectors, local government authorities (LGAs) and other stakeholders working on maternal health and nutrition may help the program and beneficiaries gain technical support and increase visibility and sustainability of the RCP program in future.

- Strengthening of monitoring and evaluation processes of the program including mid-term reviews are recommended for early identification of the program progress, gaps and proposed areas for improvements.
- To effectively gauge the performance as well as nutritional and health outcome of the RCP program in future, a landscape analysis study (baseline study) is recommended especially when scaling up the program in new villages for the first time for comparison purposes.
- The RCP program should consider the possibility of involving men in the implementation of the program. Men have influence on decision making and household income; their involvement could have an impact on increasing dietary diversity of the household, food security, health and nutritional status as well.

5. CHAPTER FIVE

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