EVALUATION OF NUTRITIONAL STATUS OF INFANTS IN RURAL AREAS OF BINDURA

A dissertation submitted in partial fulfilment of the requirements for the Master of Science Degree in Food Security and Sustainable Agriculture
(POLICY)

Bindura University of Science Education

Faculty of Agriculture and Environmental Science
Department of Agricultural Economics, Education and Extension

VONGAI PRAISE MACHENGETE
B1851514

SUPERVISOR: DR MUSEMWA

JULY 2020

RELEASE FORM

Name of Candidate: Vongai Praise Machengete
Reg Number: B1851514
Degree: Master of Science Degree in Food Security and Sustainable Agriculture

Project Title: Evaluation of nutritional status of infants in rural area of Bindura

Permission is hereby granted to **Bindura University of Science Education Library** to produce a single copy of this dissertation and lend such copy for private, scholarly or scientific research only.

Signed…….

Permanent Address: 261 WESTWOOD DRIVE, WESTWOOD, HARARE

APPROVAL FORM

The undersigned certified that they have supervised and recommended to Bindura University of Science Education for acceptance of dissertation entitled '**Evaluation of nutritional status of infants in rural areas of Bindura'** submitted in partial fulfillment of a Master of Science Degree in Food Security and Sustainable Agriculture.

Name of supervisor: Dr Lovemore Musemwa

Signature:

Date:

DECLARATION

I hereby declare that the research project entitled "**Evaluation of nutritional status of infants in rural areas of Bindura**" submitted to Bindura University of Science Education, Department of Agricultural Economics, Education and Extension is a record of an original work done by me under the guidance and supervision of **Dr Lovemore Musemwa** and this work is submitted in partial fulfilment of the requirements for the award of a Master of Science Degree in Food Security and Sustainable Agriculture. The results embodied in this thesis have not been submitted to any University or Institute for the award of any degree of diploma.

Author: Vongai Praise Machengete
Reg Number: B1851514
Signature:
Date:

DEDICATION

To my late mother, Ms Thamary Zvavanjanja.

ACKNOWLEDGEMENTS

I wish to acknowledge the assistance of many people which resulted in the completion of this research project who include the following: My supervisor, Dr L. Musemwa whose guidance and advice enabled the writing and completion of this research project, Mr P. Munyede who assisted in facilitating research work from home. Much appreciation also goes to Bindura DHE members who gave me the permission to carry out the research in the rural wards, Mr M. Machengete for his invaluable moral support and Jessica Muzamhindo my reading partner.

ABSTRACT

Stunting is a form of malnutrition that is common among children below the age of 5 years and it can only be prevented below the age of 2 years. In Bindura District stunting levels have been on the rise and government and other implementing partners have been trying food mitigation programs to curb this challenge but stunting is still prevalent. The above stated challenge prompted the researcher to make an analysis of nutritional status of children aged 6 to 23 months in Bindura District. A total of 153 households with children between 6 to 23 months were sampled. The primary data were obtained through the use of a survey questionnaire with closed and open-ended questions, while the secondary data was extracted from journals, newspapers and library sources. To assess nutrition status of infants the researcher collected anthropometric measurements revealing 22.9% of the infants were moderately stunted and 1.3% were severely stunted. Multiple linear regression was used to determine the factors that affect nutrition status of infants. The outcome of linear regression showed that gender of household head, age of household head, household size, source of income, food assistance, number of meals eaten per day, decline in level of access to food compared to previous income spent on food, and problems faced, significantly affect nutrition status positively ($P<0.05$). The regression results also revealed that coping strategies positively affect nutrition status ($P<0.05$). The majority of the caregivers resorted to limiting the number of meals, eating less preferred food, limiting portion of meal and restricting adult food consumption as infant food insecurity coping mechanisms. The government is recommended to design intervention strategies that prevent the current cases of moderate stunting to worsen. A move that incorporate Ministry of Health and Child Care.

Keywords: malnutrition, stunting, wasting, nutrition status, coping strategies.

LIST OF ACRONYMS AND ABBREVIATIONS

DHE:	District Health Executive
FAO:	Food and Agricultural Organisation
NNS:	National Nutrition Survey
UNICEF:	United Nations Children's Fund

TABLE OF CONTENTS

RELEASE FORM ii
APPROVAL FORM iii
DECLARATION iv
DEDICATION v
ACKNOWLEDGEMENTS vi
ABSTRACT vii
LIST OF ACRONYMS AND ABBREVIATIONS ix
LIST OF TABLES xii
LIST OF FIGURES xiii
LIST OF APPENDICES xiv
CHAPTER 1 1
INTRODUCTION 1
1.1 Background of the study 1
1.2 Statement of the Problem 2
1.3 Objectives of the study 3
1.3.1 Main objective 3
1.3.2. Specific objectives 3
1.4 Research Questions 3
1.5 Hypotheses 4
1.6 Significance of the study 4
1.7 Delimitations and Limitation of the study 4
1.8 Outline of Thesis 5
1.9 References 5
CHAPTER 2 6
LITERATURE REVIEW 6
2.0 Introduction 6
2.1 Food security situation 6
2.3 Nutrition status of infants 7
2.4 Nutritional assessment 8
2.5 Anthropometric measurements 8
2.5.1Weight 9
2.5.2 Height 9

2.6 Determinants of nutritional status 9
2.7 Coping strategies 10
2.7.1 Coping strategy Index 10
2.8 Policy and legal framework supporting Nutrition 11
2.9 Conceptual framework 12
2.10 Theoretical Framework 13
2.10.1 Human Security Theory 13
CHAPTER 3 16
METHODOLOGY 16
3.0 Introduction 16
3.1 Description of study area 16
3.2 Research Design 16
3.4 Data collection method 17
3.5 Data analysis methods 17
3.6 Expected results 17
3.7 Ethical Considerations 17
3.8 Summary 18
3.9 References 18
CHAPTER 4 19
RESULTS AND DISCUSSION 19
4.1 Introduction 19
4.2 Demographic information of participants. 19
4.3 Nutritional Status 19
4.4 Demographic and economic factors affecting nutrition status 20
4.6 Coping Strategies 24
4.6.1 Coping strategy Index 25
4.8 References 26
CHAPTER 5 27
SUMMARY, CONCLUSSION AND RECOMMENDATIONS 27
5.0 Introduction 27
5.1 Summary 27
5.2 Conclusion 27
5.3 Recommendations 28
5.4 Areas for Further Research 28

LIST OF TABLES

Table 1: Wasting and stunting rates in Zimbabwe: 2017-2019……3

Table 2: Categories of food insecurity coping mechanisms …….…….…….....11

Table 3: Demographic and economic factors affecting nutrition status …….....21

LIST OF FIGURES

Figure 1: Conceptual framework for the causes of undernutrition in young children …....13

Figure 2: Nutrition status of infants…….20

Figure 3: Gender distribution of household heads ……..20

Figure 4: Causes of food shortages……...…...……22

Figure 5: Frequency distribution of respondents by number of meals …….……..….23

Figure 6: Household coping mechanism to infant food insecurity……..……25

LIST OF APPENDICES

Appendix 1: Letter of permission for collection of data…….29

Appendix 2: Questionnaire…….30

CHAPTER 1
INTRODUCTION

1.1 Background of the study

Globally, malnutrition has become a challenge among children below the age of five years. Scalling Up Nutrition (2015) indicates that malnutrition is responsible for ill health of infants more than any other cause. All forms of malnutrition are associated with various forms of ill health and higher levels of mortality. Undernutrition explains around 45% of deaths among children under five, mainly in low and middle-income countries. Approximately 159 million of the world's children under the age of 5 are stunted, with an estimated 80% of these children being from mostly Asian and African countries. (UNICEF, 2016)

UNICEF,WHO and World Bank,(2015) presents global statistics of various forms of malnutrition with stunting levels at 23.8% which surpassed World Health Organisation threshold of 20%. A report by Unicef (2016), states that stunting and wasting are persistent in Africa and the number of stunted children in the region has increased. The report revealed that stunting prevalence decreased from the year 2000 to 2016 but the number of stunted children increased from 50.4 million in 2000 to 58.5 in 2016.

While undernutrition continues to affect children especially in developing countries various Non -Governmental Organisations and their implementing partners have resorted to providing relief programs to communities in fighting against stunting. Stunting and wasting have often been associated with lack of food. With the ambition of overcoming hunger sustainable development goals prioritise hunger eradication which is SDG no 2. To compliment this goal food distribution has been implemented as various NGOs have different Food Aid Relief Programs. According to Jere (2007), during periods of national food deficit in Malawi, food aid one of the key interventions to address food needs of the affected population. Food aid has taken several forms, with relief food aid being the largest proportion. Food aid has played a role in all the components of food security although the appropriateness of its role in each component differs.

The Government of Zimbabwe and various Development partners have also put in place several key programs with the aim of improving food security and nutritional status of children. Bindura District the area under study is no exception as the District has benefited from various programs since 2017 with UNICEF having implemented a nutrition relief

program in 2017 for children below the ages of five, WFP has been implementing Lean Season Assistance Program and F.A.O in partnership with ENTERPRIZE has also been implementing the Livelihoods and Food Security Program but despite all these interventions stunting is gradually increasing as reported by ZIMVAC (2017) when the stunting levels were at 26,2% , ZIMVAC (2018) reported stunting level of the district had risen to 27% and ZIMVAC (2018) reported stunting levels to have further risen to 28.3%. This rising trend calls for an evaluation of what could be the other possible causes of decline in nutritional status of infants.

UNICEF (2016) highlights undernutrition as a result of poor nutrition, disease and lack of psychosocial stimulation. It typically occurs to children below the ages of 2 and the long-term consequences include poor school performance, lost productivity and increased risks of nutrition related chronic diseases.

ZIMVAC (2018) predicted approximately 2.4 million people in rural Zimbabwe which is 28 percent of the rural population would be severely food insecure by March 2019. With dry spells and erratic rainfall from October to January likely leading to a poor harvest and decreasing food availability for many households. To respond to the heightened level of need the World Food Program (WFP) is providing emergency food assistance to approximately 655,000 food-insecure people in Zimbabwe. For all the vulnerable house-holds children under the age of five were given a supply of supper cereal porridge.

Zimbabwe has been benefiting from emergency food relief programs since the country experienced El-Nino induced drought in 2016. Lentz and Barrett (2013) argues food aid is ineffective in reducing malnutrition as it causes lower levels of domestic food production.
Bindura District has been a beneficiary of food aid programs. Since 2017 the district benefited due to El-nino induced drought courtesy of UNICEF and World Food Program. In 2019 the District also benefited from the drought relief program under WFP and in 2019 and 2020 the district also was granted the Lean Season Assistance and Livelihood and Food Security program.

1.2 Statement of the Problem

Bindura District is one of the 8 administrative districts of Mashonaland Central Province. The District experiences normal to fair rainfall trends across the wards. Bindura District is known as the bread basket of Mashonaland Central Province and a great producer of grain at national

level but still has high levels of stunting and wasting as reported by annual ZIMVAC reports (2017, 2018, 2019) as shown in Table 1:

Table 1: Wasting and stunting rates for Bindura District: 2017-2019

Year	Stunting Rate	Wasting Rate
2017	26.2%	
2018	27%	3.8%
2019	28.3%	8.9%

Source: ZIMVAC, 2019

Government and donors have intervened with various food mitigation programs with the aim of reducing stunting and wasting in the District. Despite interventions by the government and developmental partners, stunting and wasting levels remain high in Bindura District. If this trend is not informed by a research study resources will continue to be disbursed without addressing the problem. This research therefore aims to carry out an in-depth evaluation on stunting and wasting among children 0 to 23 months. Stunting and wasting rates in Bindura have not improved despite the efforts by government and Non- Governmental Organisations to provide food security programs in the districts.

1.3 Objectives of the study

1.3.1 Main objective

- Evaluate the factors affecting undernutrition among infants aged 6-23 months in rural areas of Bindura District, Zimbabwe.

1.3.2. Specific objectives

1. Evaluate nutritional status of infants aged between 6 to 23 months.
2. Assess how demographics and economic factors affect nutritional status of infants aged 6 to 23 months.
3. Assess coping strategies utilized by caregivers to source for food for their infants aged 6 to 23 months to improve their nutritional status.

1.4 Research Questions

1. What is the nutritional status of infants aged between 6 to 23 months?
2. How do demographics and economic factors affect nutritional status of infants aged 6 to 23 months?

3. What are the coping strategies utilized by caregivers to source for food for their infants aged 6 to 23 months?

1.5 Hypotheses

Age of household head, household family size, employment status, monthly income, food aid handouts and coping strategies have an effect on the nutritional status of infants aged 6 to 59 months.

1.6 Significance of the study

This evaluation was conducted in Bindura District. NNS (2018) indicates stunting rate at 26% and ZIMVAC (2019) reports stunting rate to have risen to 28% which is significantly high according to WHO guidelines. Although the district has been benefiting from various food security programs in the rural wards there is no improvement. Therefore, there is need to further evaluate causes of stunting and wasting among children 6 to 23 months as current food aid interventions are not giving positive results and resources continue to be wasted. This evaluation will therefore contribute in the enhancement of stakeholders, community and development partners' accountability, effectiveness, and organizational learning to advance their work in stunting and wasting reduction among children 6 to 23 months. Stunting is most likely to occur within the first 1,000 days starting at conception through the child's first two years of life (UNICEF, 2016). This research concentrated on that age group rather than the usual 0 to 59 months which is the usual target for most researchers as the age group of 6 to 23 months is more vulnerable and stunting is reversible at that stage hence proper intervention strategies need to be designed using the results of this study to alleviate prevalence of undernutrition at an early stage.

1.7 Delimitations and Limitation of the study

Accordingly, delimitation addresses the issue of how a study will be narrowed in scope. Bindura has 2 local government authorities Bindura Municipality which governs the urban area and Bindura Rural District Council which governs 21 rural wards. This research focused on the rural area as it has more evidence of the nutritional status of children from previous researches which focused on the rural rather than the urban area. This study focused on children aged 6 to 23 months of Bindura District from 10 selected wards from communal and resettlement areas. Due to resource constrain not all children were screened but only those from families which were sampled.

1.8 Outline of Thesis

This thesis consists of six chapters including the introduction, literature review, methodology, results and finally the summary conclusions and recommendations. The first Chapter basically introduced the research by giving background of study, statement of the problem was explained followed by objectives, research questions which the researcher intends to address. Outlined also in chapter 1 were the hypothesis, justification, delimitations and limitations of study. Literature is reviewed in Chapter 2 while Chapter 3 describes the study area and highlights the sampling, data collection and analysis methods which were used in the study. Results are presented and discussed in Chapter 4. The recommendations, summary of research and conclusion are presented in Chapter 5.

1.9 References

1. Jere, P. (2007). The impact of food aid on food markets and food security in Malawi Regional Network for Equity in Health in Southern Africa (EQUINET) Table of contents, (45).
2. NNS. (2018). Zimbabwe National Nutrition Survey 2018.
3. Scaling up Nutrition. 2015. Sun Movement Annual Progress Report. Accessed April 9, 2016. http://scalingupnutrition.org/news/ the-2015-sun-movement-annual-progress-report-is-launched
4. Lentz, E. C., & Barrett, C. B. (2013). *The economics and nutritional impacts of food assistance policies and programs ESA Working Paper No. 13-04*.
5. UNICEF, WHO (World Health Organization), and World Bank. (2015) 2015. 2014 Joint Child Malnutrition Estimates: Levels and Trends (September 2015 update). Accessed April 17, 2016. http://data. worldbank.org/ child-malnutrition.
6. UNICEF. (2016). *Reducing stunting children under five years of Age: Acomprehensive evaluation of UNICEF's strategies and programme perfomance.* ICF International.
7. ZIMVAC (2017). Rural Livelihoods Assessment 2017 Report
8. ZIMVAC (2018). Rural Livelihoods Assessment 2020 Report
9. ZIMVAC (2019). Rural Livelihoods Assessment May 2019 Report

CHAPTER 2
LITERATURE REVIEW

2.0 Introduction

This chapter gives an overview of the relevant literature done by other researchers in relation to nutritional status of infants. This will bring out their findings and gives justification to this study. Literature review as defined by Borg (1996) is the body of text that determines the aim to review the critical points of current knowledge including the substantive findings as well as theoretical and methodological contributions to a particular topic. Bless (1995) concurs with the above as he states that literature review is a process which involve research and evaluation of the available literature in that given subject area. Accordingly, literature review should describe, summarise, evaluate and explain this literature. The objective of this chapter is to review relevant literature on the causes of undernutrition specifically stunting and wasting.

> In most developing countries there are high levels of stunting among children below the ages of two years (Unicef, 2016). Prior to high food insecurity, undernutrition rates are also high in the communal areas, ibid.

2.1 Food security situation

Food security remains a challenge in developing countries. Globally it is estimated that there are approximately 850 million people who are food insecure (FAO, 2011). The majority of the food insecure people are found in developing countries especially in Sub Saharan Africa. The problem is attributed to erratic rains, climate change and high morbidity rate which make it difficult to ensure access to enough food for everyone (Ingowsk, 2012). Gukurume, Nhondo and Dube (2010), noted that the problem of food insecurity has become more intensely pronounced in recent years with the threats posed by trends such as climate change, water and rainfall scarcity as well as ecosystems and biodiversity degradation exacerbating these problems. To overcome this challenge, The United Nations Development Programme (UNDP) which is one of the leading organizations working to fulfil the SDGs prioritized to end hunger. Hunger eradication tops the list of the sustainable development goals, (UN, 2015). Specifically goal 2 which states that end hunger, achieve food security and improved nutrition and promote sustainable agriculture.

The period between 2000 and 2008 in Zimbabwe saw a steady decline in the production volumes of staple commodities and increasing reliance on food aid and imports from

neighbouring countries The dimension of the food security problem changed after 2000 when Zimbabwe had national grain shortages amid a modest level of household food insecurity thereby moving from hunger amid plenty to hunger amid shortages. Food shortages effects are result in decline of nutritional status among people especially among infants.

2.3 Nutrition status of infants

Nutritional status can be defined as the physiological condition of an individual that results, from the balance between nutrient requirements and intake and the ability of the body to use these nutrients, (Pridmore and Hill, 2009).

Muir, Pretty, Robinson, Thomas, & Toulmin (2010) Define malnutrition as a condition that result from nutrient deficient or overconsumption. Types of malnutrition include undernutrition and over nutrition. Undernutrition leads to low weight-for-height (wasting), low height-for-age (stunting) and low weight-for-age (underweight). Over nutrition results from overconsumption of certain nutrients, such as protein, calories or fat which usually results in overweight or obesity.

Nutritional status is determined by a child's growth in height and weight and is directly influenced by food intake and series of infections. Food intake is not only a result of food availability at the household level but also of dietary quality and quantity and proper feeding practices. Infant feeding practices, which include breastfeeding and timely complementary feeding contribute to the level of food intake in infants and young infants, (Brown et al., 1998). In addition, acute and chronic infections have a major impact on nutritional status because they impair growth by limiting macro- and micronutrient intake and utilization (Stephensen, 1999).

According to Pridmore and Hill (2009), undernutrition leads to children being overall undernourished (low weight for age), too thin/wasted (low weight for height) or too short/stunted (low height for age). Wasting usually results from an acute, significant food shortage and/or disease; it is a strong predictor of mortality among children under five years. Stunting usually results from mild chronic undernutrition; it is increasingly used as the key measure of nutritional status in under two-year old's because it can lead to irreversible cognitive damage.

Undernutrition has been a major challenge in Africa. Stunting and wasting cases have been on the rise. This has also been the problem affecting Bindura District despite interventions

(ZIMVAC, 2019) reports Bindura District stunting rate is at 28.3% and the third highest district with high levels of stunting among children in Mashonaland central province. Due to the problem of erratic rains Zimbabwe has not been in a position to feed its population hence increased cases of malnutrition. Gukurume, Nhondo and Dube (2010) highlights that the problem of food insecurity has become more intensely pronounced in recent years due to climate change. This is supported by WFP (2019), which highlights that during 2017, world hunger increased for the third consecutive year. The number of undernourished people in 2017, estimated at 821 million or close to 11 percent of the world's population, was the highest for nearly ten years. Instability and large scale environmental global conflict are the consequences of climate change and extreme weather events, large-scale migration resulting from conflict and an economic slowdown are all contributing to the worsening situation. All these factors contribute largely to the food security status of various states. Children in rural areas are twice likely to be underweight compared to their counterparts in urban areas (UNICEF, 2007).

The World Bank (2006) report points out that macroeconomic policies can have negative as well as positive impacts on child undernutrition. The report argues that there is need for more analysis of the impacts of macroeconomic policies on nutritional status and the development of ways to enhance their positive effects and mitigate their negative ones.

2.4 Nutritional assessment

To detect nutritional status an assessment is essential. Upadhyay and Tripathi (2017) highlight that nutritional assessment should be done at regular intervals to check if there is any type of nutrition related disease in the body because if it is detected early at primary level it can be easily treated. It is important to check if there is any deficiency in the body. If we regularly assess the nutritional status of our body, many disorders of liver, intestine, kidney, etc. can be treated before the condition become worse. ibid

2.5 Anthropometric measurements

Anthropometric measurements quantify physical characteristics such as height, weight, as a function of height, circumference of body parts, and skinfold thickness. Assessment of these parameters allows comparison to population norms or to values collected over time in the same individual (Mogensen, 2013).

2.5.1Weight

Body weight ideally should be measured by the use of calibrated electronic scale. To monitor changes in weight over a period of time the use of the same scale is recommended. WHO (2008) recommends the use of a taring scale for reliable weight measurements. A taring scale is easy to use and reliable. However, there are other types of scales that may be reliable, for example, an electronic baby scale, or a pediatric beam balance that has been calibrated. Children who can stand alone can be weighed standing on a scale. Otherwise, the mother can be weighed alone; then the mother and child can be weighed together and the mother's weight subtracted to determine the child's weight. Bathroom scales are not recommended as they tend to be unreliable. Hanging scales are also not reliable when weighing agitated babies.

2.5.2 Height

Height measurement is necessary when conducting nutritional assessments. According to (Mogensen, 2013) measurement of height is necessary to calculate Body Mass Index (BMI), body surface area, and weight height z scores. When possible, height should be directly measured by a stadiometer. In infants, height or more accurate length measurement, is best obtained by use of a length or height board. WHO (2008) further explains that depending on a child's age and ability to stand, measure the child's length or height. A child's length is measured lying down (recumbent). Height is measured standing upright".

Anthropometric parameters such as weight-for-age, height-for-age and weight-for-height are commonly used for assessing child nutritional status. In practical terms, anthropometric values need to be compared across individuals or populations in relation to an acceptable set of reference values. Hence WHO guidelines need to be adopted as they are a standard for measuring nutritional status.

2.6 Determinants of nutritional status

Other than inadequate food supply there are other determinants of nutritional status among infants. Kumar (2015) conducted a study in India which proved that it was not only feeding practises that contributed to nutritional status of infants. The study revealed that there were other numerous factors that contributed to nutrition status of infants. The report show how demographics also affect nutritional status: Based on this analysis, females were more likely to be underweight (74.7%) as compare to males (57.2%). Gender of baby was found to be significantly associated ($P<0.001$) with WHO grade. Age at start of complementary feeding was also found to be significantly associated with being underweight. Children of low socio

economic status were more likely to be underweight as compare to their counterparts (P<0.001). Similarly birth order was also found to be significantly associated with being underweight (P=0.03) and children of lower birth order were less likely (60.3%) to be underweight as compared to children of higher birth order (70.3%). Age at previous delivery also came out to be a significant correlate of being underweight (P=0.04). Children were more likely to be under weight (68.7%) in case of being delivered up to 21 years of age of their mothers as compared to rest of the children (59.2%) rest of the variables were not found to be significant correlates of on the basis of bivariate analysis".

Mariaraa, Ndengeeb and Kirissi, (2006) supports that not only feeding patterns have an effect on nutritional status of infants but there are other determinants. The study by (Mariaraa et.al,2006) in Kenya indicates that if Kenya is to reduce the current high rates of malnutrition as stipulated in the strategic health objectives and the sustainable development goals, policies and strategies for poverty alleviation, promotion of post secondary education for women and provision of basic preventive health care are critical issues which need to be pursued because they have a big impact on childrens' nutritional status. Pridmore and Hill, (2009) concurs that child undernutrition requires also the attention of policy makers to address underlying and basic causes which also have an influnce on nutritional stastus of children other than dietary intake only.

2.7 Coping strategies

Coping strategy is defined as specific efforts that people employ to master, tolerate, or minimize stressful events (Taylor, 1998)**.** To battle the hardships caused by food insecurity, care givers may try other multitude of practices or behaviors to maintain an adequate food supply for themselves and their households, which is also known as food coping strategies (Anater, McWilliams, & Latkin, 2011). Coping strategies often differ with geographical location and whether it is an urban or rural set up.

2.7.1 Coping strategy Index (CSI)

There are even standard measures of these coping strategies. The CSI can be used as a measure of the impact of food aid programs, as an early warning indicator of impending food crisis, and as a tool for assessing both food aid needs and whether food aid has been targeted to the most food insecure households (Caldwell, 2008). During food aid needs assessments, the tool serves to identify areas and population groups where the needs are greatest. It can also shed light on the causes of high malnutrition rates, which are often very difficult to

identify. Finally, if coping strategies are tracked over a long period, CSI is useful for monitoring long-term trends in food insecurity.

According to ZIMVAC (2019), households employing more coping based strategies increased compared to the previous year. most of the coping strategies adopted were categorized into 3 parts as shown in Table 2.

Table 2: Categories of food insecurity coping mechanisms

Category	**Coping Strategy adopted**
Stress	Borrowing money, spending savings, selling assets and selling more livestock than usual.
Crisis	Selling productive assets directly reducing future productivity, including human capital formation. • Withdrawing children from school • Reducing nonfood expenditure.
Emergency	Selling of one's land thus affecting future productivity, more difficult to reverse dramatic in nature. • Begging of food. • Selling the last breeding stock to buy food.

Adopted from ZIMVAC 2019 ~~Rural livelihoods Report~~

2.8 Policy and legal framework supporting nutrition

Appropriate policies, declarations and charters provide a necessary base for effective action to promote food and nutrition security, (Kheralla,2002). At global level the 2030 Agenda for Sustainable Development is a policy that has been adopted by all countries and is being used as a guide. This agenda 2030 also aims to reduce hunger, goal 2 states that *end hunger, achieve food security and improved nutrition and promote sustainable Agriculture.* Agenda 2.2 specifically aims to end of forms of malnutrition including achieving by 2025 the internationally agreed targets on stunting and wasting in children under 5 years of age, nutritional needs of adolescent girls, pregnant and lactating mothers.

Africa as a continent formulated the Agenda 2063 which also aim for substainable development which aims eradicate poverty and hunger as well (African Union, 2015). Modern agriculture for increased production, productivity and value addition contributes to farmer and national prosperity and Africa's collective food security. Upon noticing the continuation of food and nutrition security challenge, the Government of Zimbabwe addressed the issue by coming up with a food and nutrition security cluster in the economic blueprint the ZIMASSET which was implemented from 2013 -2018 in support with the Food and Nutrition Policy. The food and nutrition cluster were still adopted in the current blue print Transitional Stabilisation Programme.

It is actually a legal right for citizens to access proper food and nutrition, infants are no exception to these fundamental rights. The constitution of Zimbabwe guarantees citizen's rights to food by saying legislation and other measures must be put into place to make sure that these rights are observed. According to the Constitution of Zimbabwe Amendment (No 20) Act 2013 Section 15(C) the state must grow and store adequate food, secure food reserves, promote adequate and proper nutrition through mass education and appropriate means. Section 77(1) award the right to sufficient food for all citizens. Section 81(1)(f) elaborates further on the rights to education, health care services, nutrition and shelter. The constitution assigns duty bearers to fulfil obligations concerning rights holders enjoy the benefits of their rights. Hence policy formulation aids in putting in place measures that also seeks to fulfil achievement of adequate nutrition for all.

2.9 Conceptual framework

This study is informed by the UNICEF conceptual framework for the causes of undernutrition in young children. This framework is important because it reflects relationships among factors and their influences on children's nutritional statuses. It tackles immediate, underlying and basic causes of undernutrition.

According to this conceptual model by UNICEF (1998), malnutrition is not a simple problem with a single solution. Multiple and interrelated determinants are involved in rising statistics of malnutrition, with immediate causes being food intake and diseases. Underlying caused which have to do biological and behavioural influences of individuals and households. Basic influences also contribute in influencing malnutrition rates as political and economic policies influence food security status which has a great impact on nutritional status.

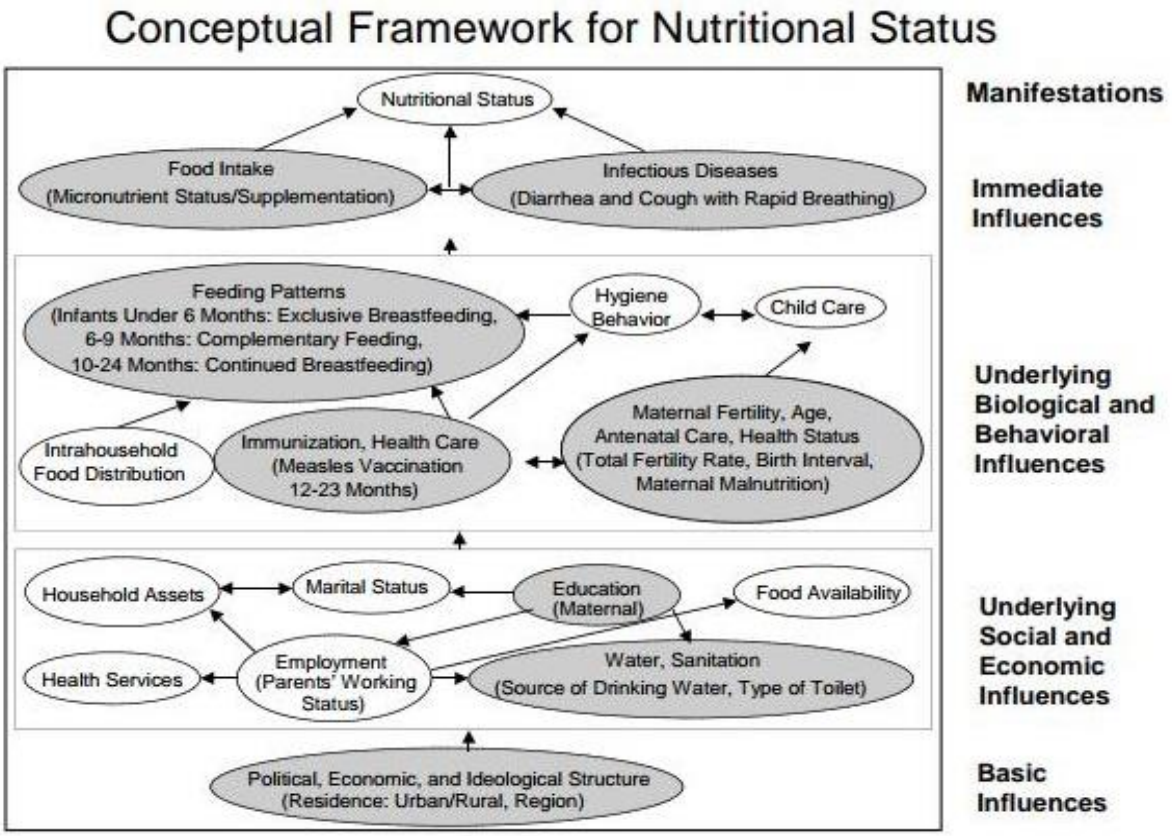


Figure 1: Conceptual framework for the causes of undernutrition in young children

Source: UNICEF, 1998

2.10 Theoretical Framework

Theoretical framework refers to the assortment of interrelated concepts (Borggat, 1996). It's a research compass which regulates issues to measure and relationships to look for. It is crucial as it clarifies the problem and assists in determining best approach to coming up with a solution (Anderson and Arsenaut,1999). Grant and Osanloo (2014), highlighted the theoretical framework is the foundation from which all knowledge is constructed (metaphorically and literally) for a research study. It serves as the structure and support for the rationale for the study, the problem statement, the purpose, the significance, and the research questions. The theoretical framework provides a grounding base, or an anchor, for the literature review, and most importantly, the methods and analysis.

2.10.1 Human Security Theory

United Nations Human Security Unit (2009) highlighted the need to protect the vital core of all human lives in ways that enhance human freedoms and human fulfillment. Human security means protecting fundamental freedoms – freedoms that are the essence of life. It

means protecting people from critical (severe) and pervasive (widespread) threats and situations. It means using processes that build on people's strengths and aspirations. It means creating political, social, environmental, economic, military and cultural systems that together give people the building blocks of survival, livelihood and dignity.

2.9.3 References

1. African Union (2015). *Agenda 2063 The Africa We Want.* Addis Ababba: African Union Commission.
2. Anater, A., McWilliams, R., & Latkin, C. (2011). Food acquisition practices used by food insecure individuals when they are concerned about having sufficient food for themselves and their households." Journal of Hunger & Environmental Nutrition, 6(1), 27-44. doi:10.1080/19320248.2011.549368
3. Borg, W R.et al. (1996), Educational research. Longman: New York
4. Bless (1995) Fundamentals of Research. An African Pespective, SA Juta Company
5. Brown, K., K. Dewey, and L. Allen. (1998). Complementary feeding of young children in developing.
6. Constitution of Zimbabwe Amendment (No 20) Act 2013
7. D. Kumar, N. K. (2015). Socio-demographic Factors Affecting the Nutritional Status of the Under ThreeChildren in Chandigarh, UT. *Healthline Journal Volume 6 Issue 1 (January - June 2015)*, 46-52.
8. FAO (2011). *The State of Insecurity in the World: How does international price volatility affect domestic economies and food security*, Rome Italy.
9. Gukurume, S., Nhondo, L. and Dube, C. (2010). conservation farming and food security-insecurity matrix in Zimbabwe, A Case of Ward 21 Chivi Rural, *Journal of Sustainable Development in Africa* 12 (7)
10. Ingowsk, E., A. (2012). *Food Security in Zimbabwe*, Msc Thesis, University of Illinois, Urbana Illinots
11. Jane Kabubo-Mariaraa, G. K. (2006). *Determinants of Children's Nutritional Status in Kenya: Evidence from Demographic and Health Surveys1*. Nairobi: ResearchGate.
12. Taylor, s. (1998). *coping stratergies.* California: University of California.
13. Mogensen, K. M. (2013). *Physical andClinical Assessment of Nutrition Status.* Bouston: researchgate.

14. Muir, J. F., Pretty, J., Robinson, S., Thomas, S. M., & Toulmin, C. (2010). Food Security : The Challenge of, *327*(February).

15. Dr. Pat Pridmore and Professor Roy Carr Hill. (2009). *Addressing the Underlying and Basic Causes ofChild Undernutrition in Developing Countries:*. London: Institute of Education, University of London.

16. Osanloo, C. G. (2014). Administratives issues Journal : connecting Education and Research. *Understanding, Selecting, And Integrating Atheoretical Framework In Dissertation Research:Creating The Blueprint For Your "House"*, 14-26.

17. Stephenson, C.B. (1999). Burden of infection on growth failure, Symposium: Causes and Etiology of Stunting, April, 1998, San Francisco, California. *Journal of Nutrition* 129 (2S Suppl.) 534S-538S.

18. UNICEF, WHO, World Bank Group. Joint malnutrition estimates, 2016 edition. http://www.who.int/nutrition/publications/jointchildmalnutrition_2016_estimates.pdf?ua=1

19. UN. (2015). *Transforming Our World:The 2030 Agenda For Sustainable Development.* NewYork: United Nations.

20. UNICEF, (1998) State of the World's Children. Geneva

21. Upadhyay and Tripathi. (2017). How Can We Assess the Nutritional Status of an Individual? *Journal of Nutrition & Food Sciences* , 6-7.

22. WFP. (2019). *WFP Management Plan (2019-2021).* Rome

23. World Health Organisation. (2008). *Training Course on Child Growth Assessment WHO Child Growth Standards.* Geneva: WHO .

24. World Bank, & IFPRI. (2007). *From Agriculture to Nutrition: Pathways, Synergies and Outcomes.* Washington, DC: World Bank

25. ZIMVAC (2019). Rural Livelihoods Assessment May 2019 Report.

CHAPTER 3
METHODOLOGY

3.0 Introduction

This chapter presents a description of the study area, research design, sampling procedure, data collection method, data analysis methods, expected results and ethical considerations.

3.1 Description of study area

The study was conducted in Bindura District of Mashonaland Central Province, Zimbabwe. In terms of economic activities mining and agriculture plays an integral role in the district. The area falls in agroecological region 2 thus generally the District receives good rain that sustains agriculture. The area is endowered with loam and partly sand soils. People in the area mainly grow maize, roundnuts, groundnuts, sugar beans and cowpeas. Cattle, goats, sheep and chickens are also reared in the district. There are 25 wards in the district and they receive different rainfall patterns as wards 1-3 fall under commercial farming area, 5 to 9 resettlement area whilst wards 10 to 21 are in communal areas. In terms of food production communal areas depend on government and NGO support and they mainly practise horticulture. Bindura is also known for mining of gold.

3.2 Research Design

The assessment was conducted using a cross sectional study design which gave the researcher an opportunity to carry out an in-depth assessment of the problem. Hemed (2015) explained that cross sectional study can also be called a prevalence study. Creswell (2008) also highlights that cross-sectional design is less costly and data can be collected in a short space of time. This makes it the most suitable research design to be used for an evaluation of nutritional status. The assessment looked at the availability and accessibility of food in household of food aid beneficiaries. The assessment also focused on the effect of food aid on nutritional status of children 6-59 months.

3.3 Sampling procedure

Burns and Grove (2003) defined sampling as a process of selecting a group of people, events or behaviour with which to conduct a study. Target population was households with infants

aged between 6 to 23 months. Systematic random sampling was adopted to select 100 households. Of the households 50 were beneficiaries of food aid programs and 50 were non-beneficiaries of food aid programs.

3.4 Data collection method

Mixed methods were used in this study. Mixed method is a method for conducting research that integrates qualitative and quantitative research in a single study (Creswel,2008). Data collection comprised administering of the questionnaire and taking weight for age measurements which are the indicators for stunting. Weight for height measurements were conducted by trained personnel at local health facilities to maintain quality control. Demographic and economic information which includes age, gender, marital status and highest level of education for household head were collected. For economic factors source of income, sources of food, causes of food shortages, income spent of food, household production and number of meals eaten per day were also collected.

3.5 Data analysis methods

Prior to analysis data were checked for consistency and completeness. Data entry and analysis was done using SPSS. Regression model was also used to determine the significance of demographic and economic factors on nutrition status, with dependent variable being nutrition status and independent variables; gender of household head, age of household head, household size, source of income, food assistance, number of meals eaten per day, decline in level of access to food compared to last year, income spent on food and problems faced during production. Nutrition status was presented using frequencies.

3.6 Expected results

Demographic, economic factors and coping strategies do have an impact on stunting rates.

3.7 Ethical Considerations

The researcher ensured consent was fully informed by signing of a consent form. Participants were informed that the information collected is only for academic purposes and their responses will be kept confidential.

3.8 Summary

This chapter elaborated on description of the study area, research design, sampling procedure, data collection method, data analysis methods, expected results ethical considerations, work plan and budget.

3.9 References

1. Burns and Grove (2003) Practise of nursing Research,8th edition, Saunders Company, Philadelphia
2. Creswell, J., W. (2003). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches.* London Sage Publications Inc
3. Hemed, M. (2015). Cross-sectional studies. Educational research. Longman: New York

CHAPTER 4
RESULTS AND DISCUSSION

4.1 Introduction

The chapter presents and discusses findings of this research collected through anthropometric measurements, coping strategy index tool and use of a questionnaire. To facilitate the discussion tables of findings were used for analysis.

4.2 Demographic information of participants.

Information was collected from caregivers of the infants and all these respondents were females. Though respondents were females most households were headed by males 79.1% and 20.3% were headed by females. Most household heads' age range was between 29-40years. 83.7% were married while 8.5% were single with all single households' heads being female, 1.3% were divorced and 5.9% widowed.

4.3 Nutritional Status

To determine nutrition status for children 6 to 23 months, weight for height scores were recorded. As guided by WHO (2008), Z scores were used to determine nutritional status and children those less than -2 SD were ranked as stunted. Those with -2 and -3 were classified as moderate stunted while <-3 SD were classified as severe stunted. Out of 152 infants assessed the results indicated that stunting level in the District is at 24. 1% with moderate stunting being the most prevalent at 22.9% compared to severe stunting which is at 1.3% as shown in Figure 2. ZIMVAC (2019) reported Bindura District stunting rate of 28.3% and the third highest district with high levels of stunting among children in Mashonaland Central Province. This ZIMVAC report gave a generalised stunting report whereas this study further evaluated the severity of stunting and revealed 22.9% were moderate stunted while 1.3% had severe stunting and the target age groups for ZIMVAC and this study were different. ZIMVAC (2019) targeted children between 6 to 59 months while this study targeted those 6 to 23 months which is the age group that stunting can be corrected. Pridmore and Hill (2009) highlights that stunting is increasingly used as the key measure of nutritional status in under two-year old's as beyond this age it can lead to irreversible cognitive damage.

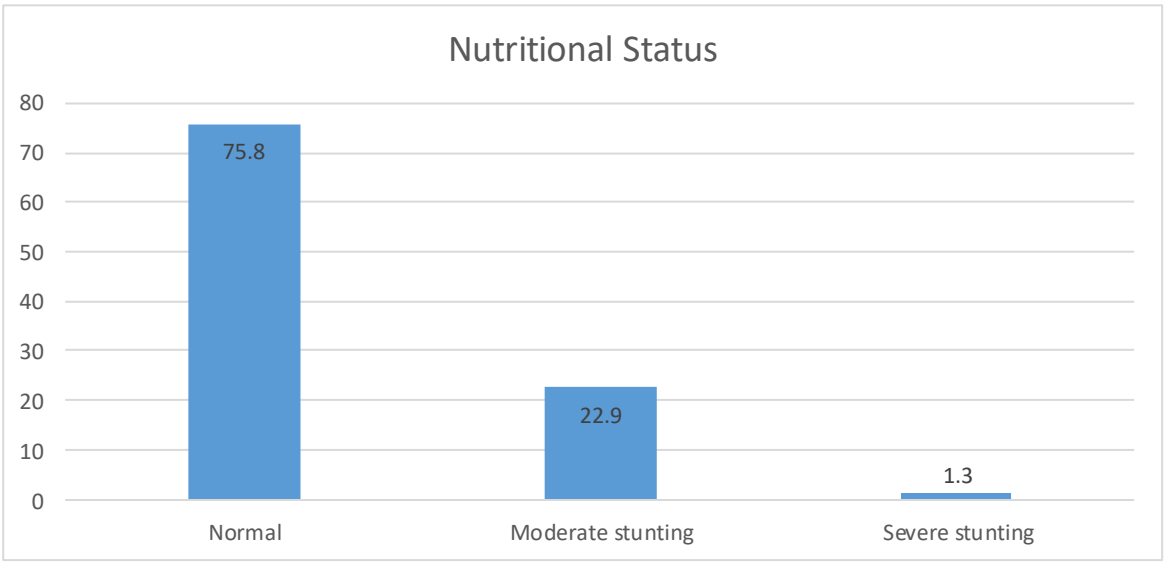


Figure 2: Nutrition status of infants.

4.4 Demographic and economic factors affecting nutrition status

To determine the factors affecting nutrition status, multiple linear regression analysis was used.

Gender of household head, age of household head, household size, source of income, food assistance, number of meals eaten per day, decline in level of access to food compared to last year, income spent on food and problems faced during production were statistically significantly associated with nutrition status of infants as shown in

Table 3: Demographic and economic factors affecting nutrition status

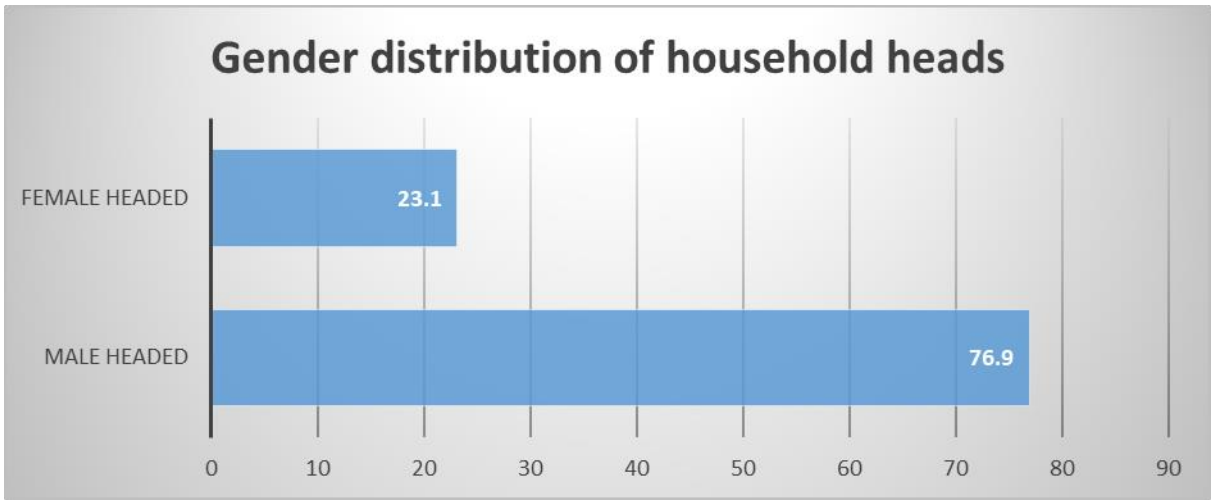


Figure 3: Gender distribution of household heads

Model		Unstandardized Coefficients		Sig.	Collinearity Statistics	
		B	Std. Error		Tolerance	VIF
1	(Constant)	-.815	.539	.133		
	Household head's gender	-.368	.111	.001	.304	3.290
	Household head's age	-.009	.004	.015	.546	1.832
	Marital status	.131	.075	.084	.320	3.128
	Level of Educ	-.253	.056	.000	.456	2.193
	malesabove18	.302	.064	.000	.346	2.888
	malechnbelow18	-.177	.037	.000	.520	1.923
	femalesabove18	.270	.069	.000	.477	2.096
	femalechnbelow18	-.171	.051	.001	.364	2.745
	Source of income	.042	.020	.033	.161	6.221
	Receiving food assistance	-.588	.204	.005	.086	11.642
	Market value	.027	.005	.000	.096	10.366
	Sources of food	-.042	.030	.158	.335	2.987
	HDDS	-.027	.034	.429	.388	2.579
	Meals per day	-.219	.071	.003	.394	2.541
	Access to enough food	-.200	.149	.183	.374	2.677
	Compare rate of access	.078	.025	.002	.453	2.206
	HFIAS	.215	.082	.010	.320	3.124
	Causes of food shortages	.251	.057	.000	.250	4.008
	Period of encountering food shortages	-.003	.023	.899	.602	1.660
	Income spent on food	.180	.050	.001	.337	2.969
	CSI	.243	.072	.001	.363	2.757
	Agric activities practiced	.084	.065	.198	.195	5.121
	Reason for production	.135	.083	.106	.164	6.108

Problems faced in production	.110	.024	.000	.565	1.769

Gender of household head was statistically significant (0.001) P<0.05. This signifies that gender of household head significantly has a distribution factor on nutritional status. Of the 24.1% stunted children, 76.9 of them were from male headed families while 23.1% were from their counterpart's female headed families. Table 3:

Highest level of education was also statistically significant (0.001) P<0.01. Infants with household heads who had secondary education had shown 60% reduced odds of being stunted compared to infants who had households' heads with primary and informal education. This is supported by Kaarlsen *et.al.,* (2011) who concludes that caregivers of higher educational status are unlikely to accept unorthodox practices in child care. Household size had also shown a positive significant association with stunting (0.00) P<0.01. Analysis had shown that those households with more children below the of 18 their infants were stunted. Causes of food shortages had shown positive significance (0.00) P<0.001. Results of this study revealed 68% of food shortages were caused by inflation which might have contributed to low food supply in families hence increase in stunting levels as shown in Figure 4.

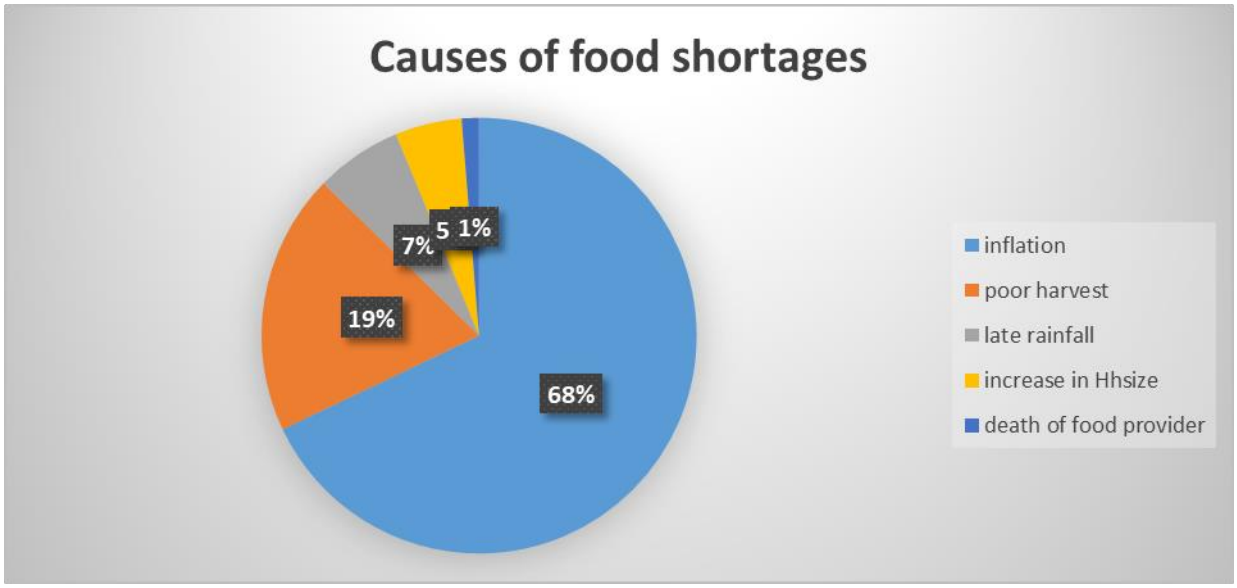


Figure 4: Causes of food shortages

Number of meals eaten per day (p<0.05) signifies that number of meals consumed per day significantly had a positive contribution factor on nutrition status. Of all the participants'

52.3% households consumed 2 meals per day while 44.4% had 3 meals and 1.3% had 1 and 4 meals per day respectively.

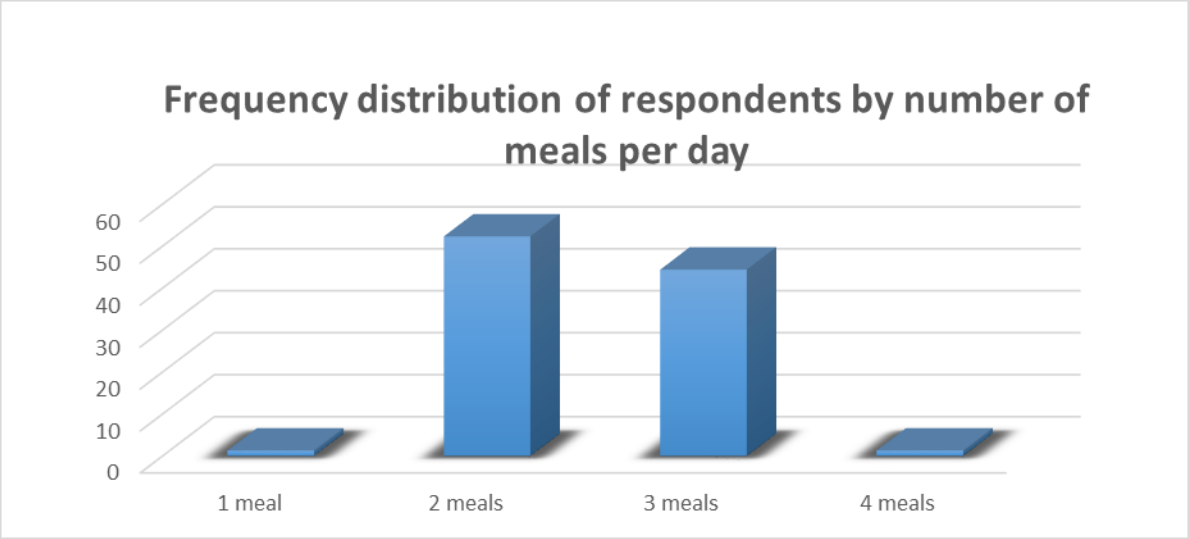


Figure 5: Frequency distribution of respondents by number of meals

Other than inadequate food supply there are other determinants of nutritional status among infants. Kumar (2015) conducted a study in India which proved that it was not only feeding practices that did not contribute to nutritional status of infants. The study India revealed that there were other numerous factors that contributed to nutrition status of infants. Children of low socio economic status were more likely to be underweight as compare to their counterparts (P<0.001) Similarly birth order was also found to be significantly associated with being underweight (P=0.03) and children of lower birth order were less likely (60.3%) to be underweight as compare to children of higher birth order (70.3%). Age at previous delivery also came out to be a significant correlate of being underweight (P=0.04). This study has also revealed that demographic and economic factors had a significant contribution on nutrition status. The following determinants were statistically significant for this study gender of household head, age of household head, household size, source of income, food assistance, number of meals eaten per day, decline in level of access to food compared to last year and income spent on food and problems faced during production (P< or =0.001)

Results from a linear regression model showed that CSI is statistically significant and has a positive relationship with nutrition status. The coefficient indicated that one more unit increase in coping strategies resulted in about 0.01 increase in nutrition status. The regression results indicated that, relying on less preferred food, reducing meal size, limiting portion size

and restricting consumption by adults for small children to eat statistically significant and positively affect nutrition status at 0.01 significance level (P<0.01) hence a 1% increase CSI, resulted in an increase in nutrition status. Results of the study show the VIF value of CSI (2.75) <10 and tolerance (0.36)>0.1 Therefore, multicollinearity problem does exist in this model.

R Value of 80% in this study indicates a good level of prediction. The value of R can be considered to be one measure of the quality of predication of dependent value (Dhakal, 2018). Value of R square 0.646 shows that the independent variables which are determinants of demographic, economic factors and Coping Strategy Index, explain 64.6% of the variability of the independent variable. 35.4% of the variation is caused by factors other than the predictors included in this model hence high degree of goodness of fit of the model.

According to Katundu *et al*., (2014), Variance Inflation Factor (VIF) and tolerance level are the most common tools used to detect the presence of multicollinearity in a regression model. He further emphasised that multicollinearity is a matter of degree and if you measure it using VIF, the average value should not exceed the value of 10. Therefore, multicollinearity problem does not exist in this model as average for all variables is (VIF)<10 and tolerance >0.1.

4.5 Coping Strategies

To combat the hardships caused by food insecurity, individuals may turn to a multitude of practices or behaviors to maintain an adequate food supply for themselves and their household, which is also known as food coping strategies (Anater, McWilliams, & Latkin, 2011). According to ZIMVAC (2019), households employing more consumption-based strategies increased compared with 2018. This study also revealed all households all sampled households had adopted coping strategies. These strategies can include behaviors used to stretch the food supply or any other strategies used when a household's food supply runs out. This study revealed that 100 % relied on less preferred foods, 3.23% purchased food on credit, 98% resorted to reducing number of meals per day, 94.7% limited portion size, 46% sending children to eat elsewhere and 95% restricted consumption by adults for small children to eat.

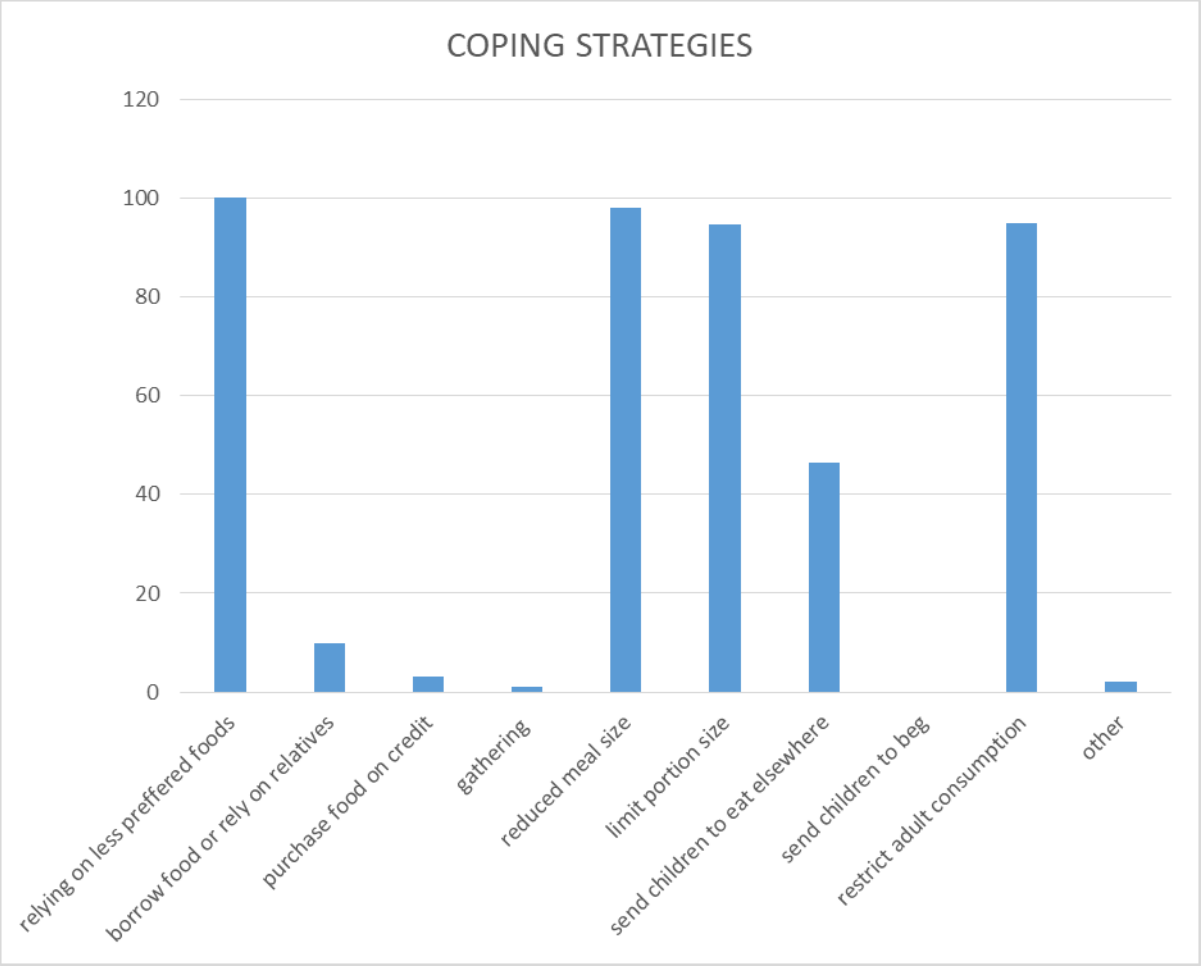


Figure 6: Household coping mechanism to infant food insecurity

4.6 Coping strategy Index

Coping Strategy index is explained by Caldwell (2008) as a measure of the impact of food aid programs, or an early warning indicator of impending food crisis. The average coping strategy index for the studied households was 105 and ranged from 0 to 285. The greater the CSI score the higher the household is food insecure.

4.8 References

1. Anater, A., McWilliams, R., & Latkin, C. (2011). Food acquisition practices used by food insecure individuals when they are concerned about having sufficient food for themselves and their households." *Journal of Hunger & Environmental Nutrition, 6*(1), 27-44. doi:10.1080/19320248.2011.549368
2. Dhakal P. D, (2008) Interpreting the Basic Outputs (SPSS) of Multiple Linear Regression, International Journal of Science and Research (IJSR) ISSN: 2319-7064
3. D. Kumar, N. K. (2015). Socio-demographic Factors Affecting the Nutritional Status of the Under ThreeChildren in Chandigarh, UT. *Healthline Journal Volume 6 Issue 1 (January - June 2015)*, 46-52.
4. Dr. Pat Pridmore and Professor Roy Carr Hill. (2009). *Addressing the Underlying and Basic Causes ofChild Undernutrition in Developing Countries:*. London: Institute of Education, University of London.
5. Karlsen, S., Say, L., Souza, J. P., Hogue, C. J., Calles, D. L., Gülmezoglu, A. M., & Raine, R. (2011). The relationship between maternal education and mortality among women giving birth in health care institutions: Analysis of the crosssectional WHO Global Survey on Maternal and Perinatal Health. BMC Public Health, 11, Article No. 606. doi:10.1186/1471-2458-11-606
6. Katundu M. A, M. L Mhina, A. G Mbeiyererwa and N. P Kumburu, (2014). Socioeconomicfactors limiting smallholder groundnut production in Tabora Region. Research on Poverty Alleviation (REPOA) Tanzania.
7. World Health Organisation. (2008). *Training Course on Child Growth Assessment WHO Child Growth Standards.* Geneva: WHO
8. ZIMVAC (2019). Rural Livelihoods Assessment May 2019 Report

CHAPTER 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter serves the purpose of concluding the whole research work. The research comes up with conclusions from the array of findings as well as proffering recommendations to the Government and community in factors affecting nutritional status of infants in Bindura District.

5.1 Summary

The study evaluated nutritional status of infants 6 to 23 months in Bindura District. The District had been having high stunting prevalence despite governments efforts to eliminate this problem. This study evaluated nutritional status of children using survey questionnaire and data collection was done using face to face approach. Nutrition status was assessed using anthropometric measurements. To evaluate demographic and economic factors influencing nutrition of infants, a linear regression model was used with dependent variable nutrition status and independent variables; gender of household head, age of household head, household size, source of income, food assistance, number of meals eaten per day, decline in level of access to food compared to last year, income spent on food and problems faced during production. The majority of the caregivers resorted to limiting the number of meals, eating less preferred food, limiting portion of meal and restricting adult food consumption as infant food insecurity coping mechanisms

5.2 Conclusion

The main objective of the study was to evaluate nutritional status of infants aged 6 to 23 months in Bindura District and the study indicated that most of the infants are moderately stunted while few are severely stunted. Nutritional status was affected by gender of household head, age of household head, household size, source of income, coping strategies employed, food assistance, number of meals eaten per day, decline in level of access to food compared to last year, income spent on food and problems faced. Relying on less preferred food, reducing number of meals eaten per day, limiting portion size, sending children to eat elsewhere and restricting portions eaten by adults to cater for children were the most common coping strategies.

5.3 Recommendations

The government is recommended to design intervention strategies that prevent the current cases of moderate stunting to worsen and become severe, a move that incorporate Ministry of Health and Child Care.

Education has also proved to be vital in nutrition issues hence need to come up advancement of informal education by coming up with community nutrition groups where people learn at community level.

Since most household heads are male, male involvement in nutrition activities need to be strengthened.

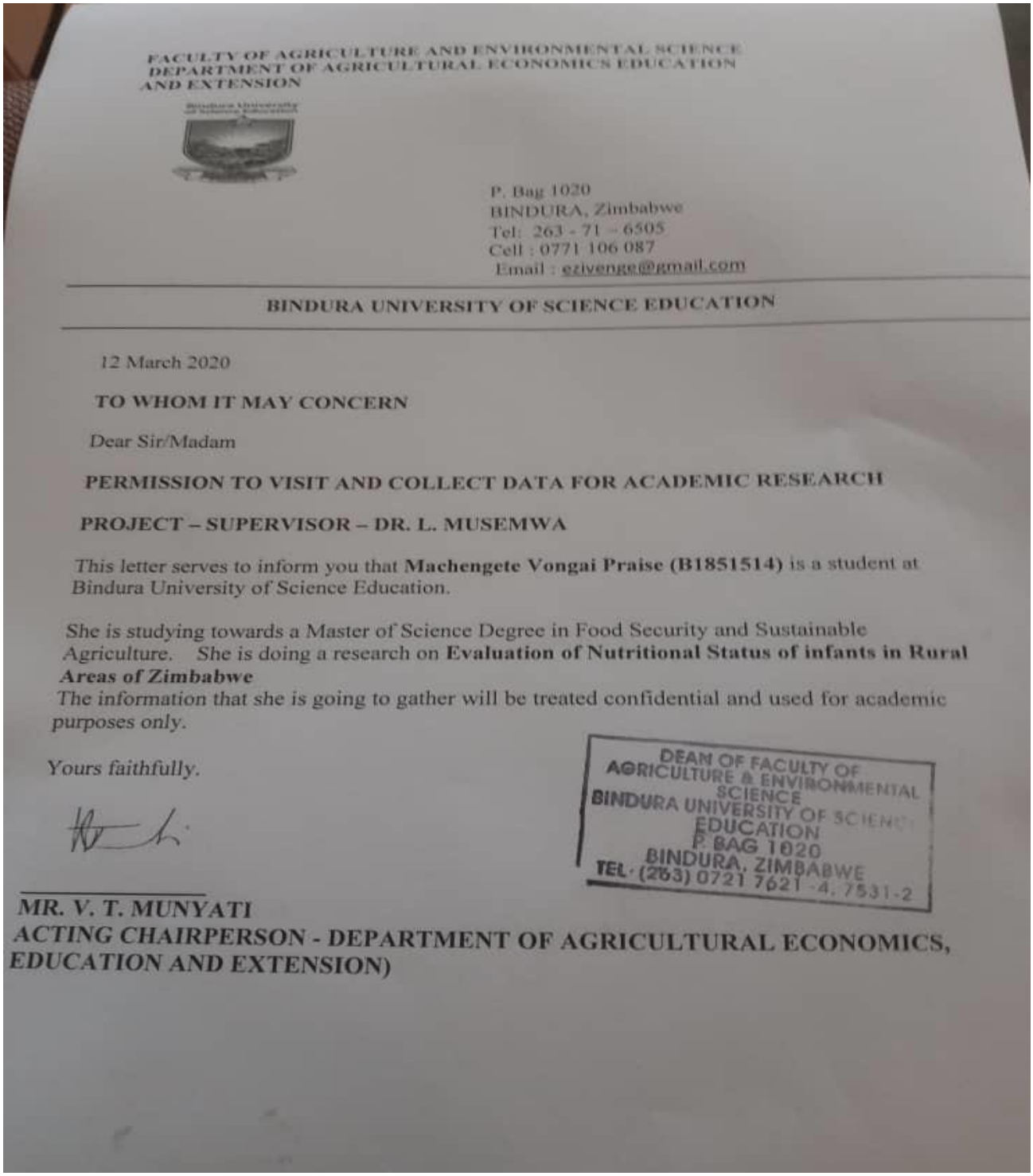
Coping strategies have a greater effect on nutritional status of infants hence communities need to modify them through nutrition clubs.

5.4 Areas for Further Research

There is need for conducting the following further research:

- Effects of COVID-19 on Nutrition status of infants 6 to 23 months.
- Evaluation of coping strategies being adopted on nutrition status of caregivers.

Appendix 1: Letter of permission for collection of data



FACULTY OF AGRICULTURE AND ENVIRONMENTAL SCIENCE
DEPARTMENT OF AGRICULTURAL ECONOMICS EDUCATION
AND EXTENSION

P. Bag 1020
BINDURA, Zimbabwe
Tel: 263 - 71 - 6505
Cell : 0771 106 087
Email : ezivenge@gmail.com

BINDURA UNIVERSITY OF SCIENCE EDUCATION

12 March 2020

TO WHOM IT MAY CONCERN

Dear Sir/Madam

PERMISSION TO VISIT AND COLLECT DATA FOR ACADEMIC RESEARCH

PROJECT – SUPERVISOR – DR. L. MUSEMWA

This letter serves to inform you that **Machengete Vongai Praise (B1851514)** is a student at Bindura University of Science Education.

She is studying towards a Master of Science Degree in Food Security and Sustainable Agriculture. She is doing a research on **Evaluation of Nutritional Status of infants in Rural Areas of Zimbabwe**
The information that she is going to gather will be treated confidential and used for academic purposes only.

Yours faithfully.

DEAN OF FACULTY OF AGRICULTURE & ENVIRONMENTAL SCIENCE
BINDURA UNIVERSITY OF SCIENCE EDUCATION
P. BAG 1020
BINDURA, ZIMBABWE
TEL: (263) 0721 7621 -4, 7531-2

MR. V. T. MUNYATI
ACTING CHAIRPERSON - DEPARTMENT OF AGRICULTURAL ECONOMICS, EDUCATION AND EXTENSION)

Appendix 2

QUESTIONNAIRE ON AN EVALUATION OF NUTRITIONAL STATUS OF CHILDREN AGED 6 TO 23 MONTHS

My name is Vongai Praise Machengete. I am a student at Bindura University of Science Education studying for a Master of Science Degree in Food Security and sustainable Agriculture. I am doing an Evaluation of nutritional status of infants in rural area of Zimbabwe. May you provide me with the relevant information to the questions below.The interview may take a maximum of 45 minutes. The recommendations of the study are going to be shared with interveners, policy makers and nutrition expects.

All information provided by interviewee will be treated as STRICTLY CONFIDENTIAL for mutual benefit of both the researcher and the respondents.

Enumerator name……..…… Name of respondent……
District name……. Village name…….....
Ward……..... Date...…….....

A. CAREGIVER'S DEMOGRAPHIC AND SOCIO ECONOMC INFORMATION					
1. Head of household					
a. Gender	Male			Female	
b. Age					
c. Marital status	Married	Single		Divorced	Widowed
d. Highest level of education of household head					
	No formal or informal education	Informal education	Primary	Secondary	Tertiary education
e. Highest level of education of any household member					
	No formal or informal education	Informal education	Primary	Secondary	Tertiary education
2. What is your principal occupation?					
3. What is the size of your household?		Adults (≥18)	Children (<18)		
	Male				
	Female				

4. What are your sources of income? (Rank 1 as the most important source of income)

	Source	**Amount in the last 4 weeks**	**Rank**
	Crops		
	Vegetables		
	Livestock		
	Poultry		
	Salary/wages		
	Pension/grants		
	Trade (transport, resale of goods)		
	Sale of wild foods		

	Craftwork (mats, baskets, pots)		
	Community projects		
	Other (specify)		

5. Are you receiving any assistance from the government or food assistance?		
Organization	Handout description	Market value

B. HOUSEHOLD FOOD SECURITY STATUS			
1. What are your sources of food? (Rank 1 as the most important source of food)			
Own crop production	Purchase	Wild food collection	Food aid
Own livestock products	Barter	Food for work	Steal
Food at work	Gifts of food	Loans	Stocks
Food at school	Fishing	Hunting	Friends/relatives
Other sources of food (Specify):			

2. What types of foods did you or anyone else in your household ate yesterday during the day and night at your home. (didn't eat=0 and ate=1)	
Any foods made from maize, wheat, rice or any other locally available grain e.g samp, pap, bread	
Any potatoes or any other food made from roots or tubers,	
Any vegetables	
Any fruits	
Any meat, poultry or offal	
Any eggs	
Any fresh or dried fish and seafood	
Any foods made from beans, peas or nuts	
Any cheese, yogurt, milk or other milk products	
Any food made from oil, fat or butter	
Any sugar or honey	
Any other foods such as coffee, tea and condiments	

3. On average, how many meals do you have per day?		
4. Do you think you have access to enough food?	Yes	No

5. How do you rate your level of access to food nowadays as compared to last year?			
No change	Better	Fair	Worse off

Please note: **Question 6 is about food accessibility in the past 4 weeks (1 month)**
6. If yes to the following questions, how often did this happen? **0=** Never**; 1** = Rarely (once or twice in the past four weeks); **2** = Sometimes (three to ten times in the past four weeks); **3**= Often (more than ten times in the past four weeks)

a. Did you worry that your household would not have enough food?	
b. Were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	
c. Did you or any household member have to eat a limited variety of foods due to a lack of resources?	
d. Did you or any household member have to eat some foods that you really did not want because of a lack of resources to obtain other types of food?	
e. Did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	
f. Did you or any household member have to eat fewer meals in a day because there was not enough food?	
g. Was there ever no food to eat of any kind in your household because of lack of resources to get food?	
h. Did you or any household member go to sleep at night hungry because there was not enough food?	
i. Did you or any household member go a whole day and night without eating anything because there was not enough food?	

7. When do you encounter food shortages? (you may tick more than once)

Any time of the month	Just before month end	Before harvesting	After drought	**Other times:**

8. What is causing food shortages in your household? (Rank)

	Income not increasing at the rate of inflation	
	Poor harvest due to drought	
	Poor harvest due to high temperatures	
	Poor harvest due to low temperatures (snow)	
	Poor harvest due to pests and diseases	
	Poor harvest due to hail storm	
	Poor harvest due to late rainfall	
	Loss of livestock due to pests and diseases	
	Loss of livestock due to snow	
	Loss of livestock due to drought	
	Loss of livestock due to high temperatures	
	Lack of water sources/reservoirs	
	Lack of agricultural inputs	
	Poor salaries	
	Retirement	
	Retrenchment	
	Grants not increasing at the rate of inflation	
	Increase in household size	
	Death of the main food provider	
	Other (specify)	

9. What adjustments or possible solutions have you made to feed the infants in your household? (you may tick more than one option)

Coping strategy in the past 7 days	**Frequency; No of days you adopted coping strategy (0-7days) use NA if**

	not applicable
Rely on less preferred or less expensive foods?	
Borrow food or rely on relative?	
Purchase food on credit?	
Gather wild food, hunt or harvest immature crops?	
Consume seed stock held for next season?	
Reduce the number of meals per day?	
Limit portion size?	
Send children to eat elsewhere?	
Send children to beg?	
Restrict consumption by adults for small children to eat?	
Other adjustment mechanisms:	

10. On average, what percentage of your income did you spend on food?			
<25%	25%-50%	51%-75%	>75%

C. AGRICULTURE

1. What agricultural activities do you practice?			
Livestock	Crop	Vegetable	None

2. Which crops and vegetables did you grow last season? (Rank 1 as the most commonly grown crop/vegetable)

			Purpose of production	
Crop/vegetable	Rank	Area (L x W)	Consumption	Sale

3. What do you consider to be the main problem in crop and vegetable production? (Rank 1 as the most important problem)

Problem	**Rank**	**Problem**	**Rank**
Labour		Low temperature	
Input supply		Low rainfall	
High costs of inputs		Hail storm	
Lack of equipment		Lack of water sources	
High temperatures		Theft	
Snow		Lack of Capital	
Land shortage		No proper structures (no fence)	
Late planting		Lack of skills	

No markets		Pests	
Other (specify):			

4. What type of livestock species do you keep? (Rank specie)

	Class	Cattle	Goats	Sheep	Chickens	Pigs	Other (specify)
	Number						
	Rank						

5. Why do you keep livestock? (Rank 1 as the most important reason)

Use	**Rank**	**Use**	**Rank**
Meat		Sales	
Milk		Status	
Draught power		Dowry	
Manure		Ceremonies	
Skin		Other	

6. What problems are you facing in raising your livestock? (Rank 1 as the most important)

Problem	**Rank**	**Problem**	**Rank**
Shortage of feed resources		Lack of organized markets	
Low bull numbers		Poor extension	
High mortality and reproductive wastage		Veterinary services	
Lack of suitable breeding stock		Institutional support	
Lack of control of parasites and disease		Lack of infrastructural	
Lack of community rangeland management		Stock theft	
Lack appropriate skills for livestock production		High temperatures	
Low rainfall		Floods	
Snow		Predators	
Other (specify)			

D. NUTRITIONAL STATUS OF CHILDREN TO 23 MONTHS IN THE HOUSEHOLD

NAME OF CHILD			
DATE OF BIRTH			
AGE			
WEIGHT			
HEIGHT			
MUAC			

THANK YOU